

Organic Matter

An Archive of News Relating to Organic Farming, Gardening and Consuming

Welcome to Organic Matter! This column is the creation of Jean English, editor of The Maine Organic Farmer & Gardener from 1988 to 2020. Jean has a Ph.D. in plant and soil sciences, taught horticulture and writing at Unity College and gardens organically in Lincolnville. She also raises nursery stock for Fedco Trees, and she and her family raised Christmas trees organically for more than 30 years.

Many others have contributed to Organic Matter, creating an unrivaled narrative of key developments in agricultural science, toxicology and health and of the efforts of public policy, from local to international, to incorporate that knowledge into the way we work and live. They are credited in the items below.

When MOFGA's website was converted to a new format in 2021, we lost the ability to access many years of Organic Matter online. We are delighted to restore Organic Matter here, in a word searchable format, for the years 2005 until 2020, when English retired. All references were accessed close to the time of MOF&G publication. Some links are no longer active, as other entities have also changed their websites.

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Spring 2005

Agricultural Funding

Subsidies Increase for Industrial Agriculture

Farm policies are squeezing small U.S. family farms out of business and fail to support nontraditional practices such as organic farming. Even though organic farming is one of the most promising and fastest growing agricultural sectors, federal subsidies continue to promote industrialized agriculture that places profit before sustainability and relies on pesticides and unproven genetically modified organisms.

The USDA's most recent agricultural census shows a drop in the number of U.S. farms while gross output remains stable, suggesting that production is consolidating in a smaller group of large farms. For example, in the past five years, the number of farms producing rice has fallen by more than 16%, as more than 1,500 farms have closed. Gross national rice production, meanwhile, has increased by 14 percent.

USDA funding practices, meanwhile, place a greater percentage of subsidies with a smaller percentage of farms. In 1995, the largest farms received \$3.98 billion, or 55% of all federal farm payments. In 2002, their portion increased to \$7.8 billion, or 65% of all federal payments. Almost 30% of agricultural subsidies go to the top 2% of farms and over four-fifths of subsidies are awarded to the 30% largest farms in the nation.

While traditional family farms are closing, sustainable and organic farming practices are rapidly expanding with certified organic acreage doubling between 1992 and 1997 and doubling again between 1997 and 2001. Organic lettuce acreage now accounts for 5% of the nation's total, and 4% of carrot acreage is certified organic.

Yet the only government funding currently committed solely to organic farming is a certification cost share program established in the 2002 Farm Bill. Five million dollars of the Farm Bill's \$248.6 billion budget is available through this program.

Other federal programs designed to support struggling farms or promote environmental conservation often do not reach those most in need. Most subsidies issued by the Environmental Quality Incentives Program (EQIP), a Bush Administration initiative that directs 60% of its funds toward helping livestock producers meet environmental regulations, end up in the hands of large-scale farmers, because only operations with more than 1,000 animals are regulated.

The Conservation Security Program (CSP) in the 2002 Farm Bill provides significant support for sustainable farming practices, but USDA has waited two years to implement this program. According to the Land Stewardship Project, CSP draft regulations limit the program to eligible watersheds, do not provide enough cost incentives for farmers and ranchers, require some farmers to wait eight years to apply, and discriminate against farmers on smaller acreages engaged in highly effective conservation management.

Crop insurance and disaster payment programs are also biased against nontraditional farming practices. Insurance companies generally use pesticide-based farming as their best-practice standard to determine premiums and reimbursements. A lack of research-based standards for organic yields and crop values makes it difficult to determine what constitutes a disaster and just how much money the farmer lost. The emerging threat to organic farms of contamination by nearby genetically modified crops is also not covered.

While farming subsidies remain stagnant, funding for research into organic and sustainable farming practices has shown modest gains. Two competitive grant-making programs, the Organic Transitions Program and the Organic Research Extension initiative of the 2002 Farm Bill, provide a combined \$5 million per year, while the USDA's Agricultural Research Service has dedicated about \$3 million per year to researching organics. Still, the \$3.5 million spent by the ARS in 2003 represents a disproportionately small one-third of 1% of its annual budget. Based on relative market size, organic farming should receive at least three times that.

Similarly, an article in *Environmental Health Perspectives* asks whether agricultural subsidies for commodities are contributing to the nation's growing problems of obesity and poor nutrition. For several generations, American farmers have received various forms of federal support in an effort to keep farmers farming and provide Americans with an affordable, stable food supply. Wheat, soybeans, and especially corn are currently the most highly subsidized crops; products made from these crops, including high-fructose corn syrup and hydrogenated fats, have flooded the market as cheap means for making foods tastier, though not healthier. "There are a lot of subsidies for the two things we should be limiting in our diet, which are sugar and fat, and there

are not a lot of subsidies for broccoli and Brussels sprouts," said the president of the American Obesity Association.

Sources: Pesticide Action Network Updates Service, Nov. 11, 2004; Organic Farming Research Foundation. Information Bulletin, www.ofrf.org; Common Dreams, "More Family Farmers Failing Under Bush Administration—Small Farmers Struggle as Programs Benefit Corporate Agribusiness," Sept. 31, 2004, www.commondreams.org ; Land Stewardship Project, www.landstewardshipproject.org; USDA National Agricultural Statistics Service, 2002 Census of Agriculture, www.nass.usda.gov/census; ATTRA Weekly Harvest Newsletter, Oct. 27, 2004, <http://attra.ncat.org/newsletter/archives.html> ; <http://ehp.niehs.nih.gov/members/2004/112-14/spheres.html>

Antibiotics

Antibiotic-Resistant Urinary Infections a Growing Health Problem for Women

New research strengthens the possibility that antibiotic-resistant urinary tract infections (UTIs), which lead to about 8 million physician visits a year for U.S. women, may originate from antibiotic use in food animals, according to experts at the School of Public Health of the University of California at Berkeley. UTIs leading to kidney infections in women cause an estimated 125,000 hospitalizations and a quarter million ambulatory cases a year.

The new research, appearing the January 15 issue of *Clinical Infectious Diseases*, identified *E.coli* bacteria from animal guts that are highly similar to the multi-drug resistant bacteria previously associated with an outbreak of urinary tract infections in women in California. The identification of the bacteria in food animals strengthens the case that antibiotic-resistant urinary tract infections have a food animal origin.

Industrial animal operations routinely give the same antibiotics, such as sulfa drugs and penicillin, to animals that doctors use in human medicine. The Union of Concerned Scientists estimates that over 13 million pounds of such drugs are used every year in swine, poultry and cattle--not for therapy, but for to promote growth and to compensate for stressful, crowded conditions that typify industrial agriculture.

Source: Union of Concerned Scientists Press Release, Jan. 3, 2005; Contact: Margaret Mellon or Rich Hayes, 202-223-6133

Bioenergy

Bioenergy Projects Could Benefit from Local Green Tags

A column in the *Sustainable Industries Journal* suggests that green tags, the premiums that consumers pay for electricity generated from renewable energy, could help promote bioenergy projects, which in turn could help resolve other local environmental issues. "A local green tag for bioenergy could be a new mechanism that enables farmers to turn the environmental liabilities of modern farming into assets for their community," writes Chad Kruger, director of outreach for

the Climate Friendly Farming Project at Washington State University. "For instance, anaerobic digestion of dairy manure reduces foul odors and associated human health concerns, reduces ground and surface water pollution by facilitating the export of excess nutrients off-farm, and contributes toward maintaining the economic vitality of farms and rural agricultural communities... Generating renewable energy is a valuable, but secondary, benefit."

Source: ATTRA Weekly Harvest Newsletter, Dec. 22, 2004, <http://attra.ncat.org>; and http://csanr.wsu.edu/whatsnew/Kruger_commentary_reprint.pdf

Community Sustainability

Join a Community Sustainability Co-op

A new Maine cooperative is forming in an effort to strengthen community and sustainability. Those interested would be divided regionally into groups of six, and each group would meet six times a year, once at each home, for a work day and potluck dinner. Work projects would be aimed at increasing an individual's self-sufficiency and could include building a hoop house, butchering livestock, raising a barn, harvesting potatoes, building a rainwater collection system, building raised beds... almost anything. One day a year, you would have a free, five-person work force descend on your home, and five other times, you would be acquiring skills and ideas to apply to your own purposes. Each group would meet once to discuss the group's skills and schedules and to brainstorm ideas. The possibilities are limitless!

No skill is required--just a willingness to work hard. Write or call Christine Baker to be put in touch with others interested in fostering community and self-sufficiency: heybakes@prexar.com or Christine Baker at 284-9638

Crop Rotation

Organic Crop Rotation Study Shows Favorable Results

An organic crop rotation is at least as sustainable as no-till farming or chisel tillage in terms of nitrogen loss and corn yields, according to an Agricultural Research Service (ARS) study. The five-year study showed that a three-year rotation of organic corn, soybeans, wheat and a legume cover crop had nitrogen losses and corn yields similar to those on land where either chisel-tillage or no-till farming had been used. The organic rotation relied on poultry litter, soybeans and a hairy vetch legume cover crop as nitrogen sources. The highest risk of leaching nitrogen to groundwater was on fields with no-till or chisel tillage where both commercial fertilizer and poultry litter had been used.

Source: Source: ATTRA Weekly Harvest Newsletter, Dec. 1, 2004; <http://attra.ncat.org/newsletter/archives.html>; <http://www.ars.usda.gov/is/pr/2004/041126.htm>

Factory Farms

Children Raised on Factory Farms Have More Asthma

A University of Iowa study shows that children raised on hog farms have a higher rate of asthma than children who are not, and children raised on hog farms where antibiotics were added to the feed have an even higher rate of asthma. The study tested 644 kids from age 0 to 17 and found that 55.8 % of children living on antibiotic treated hog farms had asthma symptoms, compared with 26.2 % of children on farms that do not raise hogs. The study also found that the larger the size of the hog farm, the greater the incidence of asthma.

Source: Organic Bytes #46, 12/17/2004; www.organicconsumers.org/organicbytes.htm

Fluoride in Food

Tracking Fluoride in the National Food Supply

For more than 50 years, fluoride has been added to many U.S. municipal water supplies to reduce tooth decay. That fluoride, as well as naturally occurring fluoride from wells and other water sources, subsequently finds its way into water-based beverages and foods. An Adequate Intake level has been set at 3 mg fluoride daily for women and 4 mg daily for men. Until now, scant data existed on the quantity of fluoride in the national food supply. Now, an Agricultural Research Service database lists the level of fluoride in 400 food and beverage items at www.nal.usda.gov/fnic/foodcomp/Data/Fluoride/Fluoride.html.

Source: Agricultural Research Service News Service, USDA; Rosalie Marion Bliss, (301) 504-4318, rbliss@ars.usda.gov; Nov. 9, 2004. Read more in the Nov. issue of Agricultural Research magazine at www.ars.usda.gov/is/AR/archive/nov04/fluoride1104.htm

Food Waste

Valuable Leftovers

A recent study shows that Americans throw out nearly half of their food. Discarded table scraps and rotted food in the back of the fridge add up to an average of \$590 in wasted food per family per year, or roughly \$43 billion nationally. According to United Nations' figures, America's wasted food would feed over 10% of the world's 835 million starving people. Researchers point out that reducing waste by freezing, canning or eating leftovers would also reduce the amount of land under chemically-intensive cultivation, reduce landfill input, reduce methane (a potent greenhouse gas), and save money for consumers.

Source: Organic Bytes #46, 12/17/2004; www.organicconsumers.org/organicbytes.htm

Genetic Engineering

Bayer Backs Out of GE in India

Greenpeace India announced in November 2004 that Bayer Crop Science has ended efforts to commercialize genetically engineered (GE) crops in India. Bayer's announcement came after

weeks of protests, including an 11-hour protest in Mumbai, during which Greenpeace activists chained themselves to Bayer headquarters and unfurled banners proclaiming, "Bayer Poisons Our Food." Bayer's intention to withdraw from GE research in India was expressed in a letter to the environmental organization on November 4, 2004, in which the agrochemical giant admitted that "the future lies in conventional breeding." Greenpeace termed Bayer's withdrawal "an admission of immense significance for the entire genetic engineering industry." Bayer, a leading agrochemical company, holds 22% of the market share in the Indian pesticides industry, with 52 products, including formulations.

The Department of Biotechnology (DBT) in India disclosed earlier in 2004 that Pro Agro (a wholly owned subsidiary of Bayer) had conducted field trials of cabbage and cauliflower that were genetically modified with the controversial Cry9C gene. This gene is one of a family of crystalline (Cry) endotoxin proteins produced by ****Bacillus thuringiensis**** (Bt), a naturally occurring soil bacterium. The Bt gene is inserted into GE crops to kill pests by disrupting their digestive system. Because Cry9C is less affected by heat than other Cry proteins and resists degradation by gastric juices, it is considered likely to cause allergic reactions in humans and was certified by the U.S. Environmental Protection Agency (EPA) as unfit for human consumption.

The Cry9C gene protein is present in StarLink corn, which was widely grown in the United States for animal feed and industrial purposes and in 2000 was found in 300 corn food products in U.S. grocery stores. The contamination caused massive recalls and lawsuits that may ultimately cost Aventis, StarLink's developer and a subsidiary of Bayer, as much as \$1 billion in damages.

In the last few years, the Bush Administration has moved to loosen U.S. regulations regarding contamination of food with experimental genetic material, reducing the liability of biotech companies for transgenic contamination. On November 19, 2004, the Food and Drug Administration (FDA) proposed new guidance for industry that would allow companies to voluntarily consult with the FDA in order to have their experimental biotech traits deemed "acceptable" as contaminants in food. The draft guidance states, "FDA believes that any potential risk from the low level presence of such material in the food supply would be limited to the possibility that it would contain or consist of a new protein that might be an allergen or toxin."

Friends of the Earth and others argue that no level of this contaminant is safe, noting that after StarLink was found in the food supply, expert scientific advisors to the EPA concluded, "there was no minimal level of StarLink's Cry9C insecticidal protein that could be judged safe for human consumption."

While FDA regulations may encourage GE experimentation in the United States, difficulties encountered by biotech companies in other parts of the world appear to be having an effect. Bayer's retreat from testing GE crops in India is only its most recent demur. In March the company pulled out of GE crop research in the United Kingdom, and in June it dropped plans to commercialize GE canola in Australia. Monsanto has also limited its research and testing of GE foods, discontinuing plans for GE wheat in the United States and Canada and for GE canola in Australia.

Greenpeace credits consumers for this turnaround. "It is clear that popular resistance to genetic engineering is not diminishing as the industry had hoped it would," said Doreen Stabinsky of Greenpeace International. "No matter what country we're talking about, consumers are on the same page. They don't want to eat genetically engineered food. That's good news for farmers and good news for the environment."

Sources: Pesticide Action Network Updates Service, Dec. 20, 2004, www.panna.org; "Giving Up on GE: Greenpeace Exposes Truth About Bayer's Crop Science," Nov. 15, 2004, Greenpeace India, www.greenpeace.org/india_en/; Coalition against BAYER-dangers, www.CBGnetwork.org; "FDA Proposes Draft Guidance for Industry for New Plant Varieties Intended for Food Use," Nov. 29, 2004, www.fda.gov/bbs/topics/ANSWERS/2004/ANS01327.html; Friends of the Earth, Briefing Paper, Nov. 2004, www.foe.org. Contact: PANNA, Greenpeace India, namrata.chowdhary@dialb.greenpeace.org.

Study Warns of Risks of GM Pharmaceutical Crops

For more than a decade, corn, soybeans and other food crops genetically engineered to produce drugs, vaccines and industrial chemicals have been grown on American farms. A Union of Concerned Scientists' report by agricultural experts now warns that the food supply is vulnerable to contamination by these "pharmaceutical crops" unless substantial changes are made in how these crops are grown and managed. The UCS convened the panel of experts to determine whether pharmaceuticals can be produced in such familiar food crops as corn or soybean (the plants most often used for pharmaceutical production) without contaminating human food or animal feed. The panel acting independently of UCS analyzed the current system for growing food- and feed-grade corn and soybeans and identified many points where drugs and plastics could pass to the food supply if pharmaceutical crops were grown under the same system. After evaluating ways to block contamination at those points, the panel concluded that the current corn and soybean production system cannot be used for pharmaceutical corn and soybean in the United States while ensuring virtually no contamination of the food and feed system. Source: ATTRA Weekly Harvest Newsletter, Dec. 22, 2004, <http://attra.ncat.org>; and www.ucsus.org/news/press_release.cfm?newsID=444

Monsanto Fined Over Bribes in Indonesia

The U.S. Department of Justice has revealed that Monsanto paid more than US \$700,000 in illegal bribes to Indonesian officials, including \$50,000 to an environmental ministry employee to forestall environmental reviews of the company's genetically engineered (GE) cotton. These payments did not lift controls on Monsanto's GE cotton in Indonesia but did result in criminal and civil charges against Monsanto in U.S. courts under the Foreign Corrupt Practices Act, which prohibits bribing foreign officials.

On January 6, 2005, Monsanto and the Justice Department announced that Monsanto would pay penalties and fines of US \$1.5 million to the Justice Department and the Securities and Exchange Commission (SEC). Monsanto will also submit to independent audits of its business practices for

the next three years. Under the Foreign Corrupt Practices Act, companies paying bribes to foreign officials can be fined a maximum of \$2 million for each violation, and responsible corporate executives can face up to five years in prison.

Monsanto accounts for 91% of GE food and fiber crops sown worldwide. Herbicide resistance represents 77% of all GE plantings. Herbicide tolerant crops allow farmers to spray broad-spectrum herbicides to control weeds while leaving crops unharmed. A January 2004 report found that farmers growing herbicide resistant crops in the U.S. incrementally spray more herbicides to keep up with increasingly resistant weeds.

In addition to fiber, GE cotton provides cottonseed oil for a variety of foods, including cooking oils, salad dressing, peanut butter, chips, crackers, cookies and pastries.

Sources: Pesticide Action Network Updates Service, Jan. 11, 2005, www.panna.org; St. Louis Post Dispatch, Jan. 6, 2005; Wall Street Journal, March 22, 2004; BBC News, Jan. 7, 2005; Greenpeace International Genetic Engineering Campaign, www.greenpeace.org; "Impact of GE Crops on Pesticide Use in the U.S.," Ag BioTech Info, www.biotech-info.net/technicalpaper6.html.

International Organic Movement Fights GMOs

The International Federation of Organic Agriculture Movements (IFOAM) participated at the World Conservation Union's (IUCN's) World Conservation Congress in Bangkok, Thailand in November 2004 to facilitate passing a motion requesting IUCN to substantiate the impact of genetically modified organisms (GMOs) on biodiversity. Increasingly, organic agriculture, which fundamentally excludes GMOs, is gaining recognition by governments and NGOs for its positive effects on biodiversity and nature conservation, and IFOAM is playing a leading role in making that connection.

Major parts of IUCN general assembly were devoted to some 120 motions and recommendations. The most controversial asked for a moratorium on the release of GMOs until their safety can be demonstrated beyond reasonable doubt and was approved by both the governmental and the NGO chamber with a total of over 70% yes votes.

IFOAM had submitted a separate motion requesting that IUCN undertake significant work on the impact of GMOs on biodiversity and develop a plan to guide its members on this issue. This motion also was approved from both chambers, with almost unanimous NGO support (181 Yes and 4 No).

Bernward Geier from IFOAM expressed excitement about these landmark decisions and breakthrough for the struggle to protect nature and its biodiversity against the invasive impact of GMOs by noting that "... this clear positioning and mandate of IUCN's membership is a strong signal to governments and the genetic engineering multinational corporations that not only the concern, but the opposition to this high risk technology continues to grow.â

Source: IFOAM Press Release, Dec. 1, 2004; Gerald A. Herrmann, Executive Director, IFOAM Head Office, Charles-de-Gaulle-Str. 5, 53113 Bonn, Germany.
www.ifoam.org, mail to: headoffice@ifoam

Americans Divided on GM Foods But Favor Regulation

A new study from the Pew Initiative on Food and Biotechnology finds that Americans' attitudes about genetically modified (GM) foods remain divided, although their opinions appear not be deeply held and can be influenced by new information and events. The analysis, developed from a survey and focus groups, also shows that regardless of their attitudes about GM food, a majority of Americans support a strong regulatory system for GM foods, and that their discomfort increases as GE technology shifts from plants to animals.

Source: ATTRA Weekly Harvest Newsletter, Dec. 1, 2004;
<http://attra.ncat.org/newsletter/archives.html>;
<http://pewagbiotech.org/newsroom/releases/112404.php3>

Genetically Engineered Crops Up Worldwide

Genetically engineered crop plantings increased 15 percent in 2003 despite continued consumer resistance. According to the International Service for the Acquisition of Agri-Biotech Applications, seven million farmers in 18 countries grew engineered crops on 167.2 million acres in 2003, compared with 145 million acres in 2002. In 1996, the first year GE crops were commercially available, about 4.3 million acres were under biotechnology cultivation.

Associated Press Newswires, 1/13/04

Organic Advocates Respond to Biotech Study

Organic advocates reacted strongly to a study released by the National Center for Food and Agricultural Policy that describes genetically engineered (GE) crops as "environmentally friendly farming" and claims that six GE crops have boosted U.S. farmers' yields as well as their overall income. With this explosive growth of the biotech industry, the Organic Trade Association (OTA) continues to warn of potential organic contamination and calls for stricter containment strategies for biotech crops. Since 2000, the OTA has called for a moratorium on the use of GE organisms in all agricultural production because of the possibility of contamination and other detrimental effects on the organic industry, and ultimately consumer choice. Findings in a 2004 report, "Biological Confinement of Genetically Engineered Organisms," released by the National Academy of Sciences confirmed that GE contamination is possible and could potentially cause unintended effects on the environment.

Source: Source: ATTRA Weekly Harvest Newsletter, Oct. 27, 2004,
<http://attra.ncat.org/newsletter/archives.html>; www.ota.com/news/press/155.html

Land Use

Oregon Land Use Laws Protect Farmland

Northwest Environment Watch of Seattle analyzed growth in 15 similar U.S. cities and found that Oregon's land-use policies excel in protecting rural land. Person for person in the last decade, new development in metropolitan Portland consumed less than half as much land as it did in the average city in the study. From 1990 to 2000, if greater Portland had sprawled like Charlotte, North Carolina, the city in the study with the worst record, it would have lost an additional 279 square miles of farmland and open space, an area more than twice as large as the city of Portland itself.

Source: ATTRA Weekly Harvest Newsletter, Oct. 27, 2004,
<http://attra.ncat.org/newsletter/archives.html>; see
www.northwestwatch.org/scorecard/portland04_release.asp

Landscape Care

Growing a Better Homeowner

Can anything be more satisfying to the suburban homeowner than a fertile carpet of green grass? How about a healthy landscape grown without excessive use of pesticides, fertilizers and water? This is the message a new campaign called YardScaping will bring to homeowners and landscapers this spring.

The campaign also hopes to shed light on the statistical dark side of the yard obsession: In 2001, 1.8 million pounds of yard care pesticides were brought into Maine. This figure has more than doubled since 1995 and coincides with a triple explosion in the number of yard care companies in Maine in the last seven years.

The YardScaping initiative formed out of rising concern among state agencies and other organizations over possible pollution caused by yard care chemicals washing into water bodies and the risks of pesticide exposure to people, pets and wildlife. Gary Fish, a member of the YardScaping coalition and certification specialist at the Maine Board of Pesticides Control, knows how deep the pursuit for the perfect yard can go after working for the nation's largest yard care company. "YardScaping hopes to change the way people think about their yards," he says. "We hope to grow a better homeowner, so to speak."

A "better" yard lover would lower the bar on perfection, accept a few weeds and insects, leave grass clippings, reduce the size of the lawn, consider groundcovers in shady areas, add vegetative buffers around sensitive areas like lakes, to name a few actions.

To help spread the word about the program at the neighborhood level, property owners who have a YardScape or pledge to grow one can display a weather resistant YardScaping sign in their yards--much like the ones used by commercial lawn care companies after pesticides are applied.

The coalition is also developing its first YardScaping demonstration site. Working with the city of Portland, a public area has been selected for the site along the Back Cove. Once completed in

2006, it will showcase appropriate plantings in a beautiful, homeowner-doable way, plus serve as a model for municipalities across the state. The demonstration is funded in part by a \$35,000 grant from the Environmental Protection Agency.

Key YardScaping partners include the Maine Board of Pesticides Control, University of Maine Cooperative Extension, Maine Department of Environmental Protection, Congress of Lake Associations, Friends of Casco Bay, Soil & Water Conservation Districts, Maine Organic Farmers & Gardeners Association, Southern Maine Community College, City of Portland, and landscape companies and nursery owners.

For more information on YardScaping, contact the Board of Pesticides Control at 207-287-2731.

Livestock

Free-Range Pork Favored for Flavor

The Boston Globe recently ran a feature on the increasing number of farmers producing free-range pork. Their product is finding favor with restaurant chefs who prize the meat for its flavor and are willing to pay a premium to obtain it. According to the article, the pork industry carried the quest for a leaner pig too far, to the point where the meat became dry and tasteless, and production methods stress the pigs, all detracting from pork's flavor. The feature includes stories on the production of Berkshire hogs for premium pork, and a look at local prices for free-range and natural pork brands.

Sources: ATTRA Weekly Harvest Newsletter, Dec. 8, 2004, [http://attra.ncat.org;
www.boston.com/ae/food/articles/2004/12/01/putting_flavor_back_into_pork/](http://attra.ncat.org/www.boston.com/ae/food/articles/2004/12/01/putting_flavor_back_into_pork/)

Less Natural Immunity in Cloned Pigs

Studies by scientists with the USDA and the University of Missouri indicate that the natural immune system of young cloned pigs does not appear to fight diseases as effectively as the immune system of non-cloned pigs. Scientists gave a naturally occurring toxin called lipopolysaccharide to seven young, cloned pigs and 11 genetically similar, non-cloned pigs. Although the non-cloned pigs' immune response was adequate, the cloned pigs' did not produce sufficient quantities of natural proteins called cytokines, which fight infections. Animals must have an adequate cytokine response to survive infections.

Cloned pigs and cows have had more deaths than normal around the time of birth. Many die from bacterial infections.

The cloned pigs were used only for research and are not part of the food supply.

Source: ARS News Service, Agricultural Research Service, USDA; David Elstein, (301) 504-1654, delstein@ars.usda.gov; October 26, 2004

Meat Goat Market Grows and Improves

Meat goats are among the fastest-growing sectors of the livestock industry, with demand fueled by Muslims and other ethnic populations, according to a Chicago Tribune article posted by The Billings Gazette. No taboos exist against eating goats, and the animals do well in many conditions. Several states are encouraging producers to tap into the growing market. The Boer goat species has been introduced specifically as a meat breed. In Texas, the state that produces the most meat goats in the country, researchers are improving genetics of Boer goats, says The North Texas E-News. The Boer Goat Improvement Network (BGIN) was initiated by the American Boer Goat Association and the Texas Agricultural Experiment Station to help breeders evaluate a goat's genetic potential as a parent. The program aims to improve the genetics of the breed industry-wide by selecting for seven desirable traits.

Source: ATTRA Weekly Harvest Newsletter, Dec. 22, 2004, <http://attra.ncat.org>; See also ATTRA Publication: "Sustainable Goat Production: Meat Goats."

Nutrition

Apples Protect Against Digestive Cancers

Eating more fiber- and phytonutrient-rich fruits and vegetables, including flavonoids found most abundantly in apples may significantly reduce the risk of developing digestive cancers. Digestive cancers are those of the pharynx, esophagus, stomach, colon and rectum and account for 23% of new cancer cases worldwide. They don't develop from exposure to carcinogens but primarily from cell damage. Professor Ian Johnson of the United Kingdom's Institute for Food Research reviewed epidemiological literature regarding digestive cancers and concluded that better diets especially diets rich in micronutrients, fiber and plant-based phytonutrients, including flavonoids can significantly help reduce the human toll caused by these cancers. His analysis was recently published in the peer-reviewed journal Mutation Research.

Apples are one of the richest fruit sources of dietary fiber, and one of the leading sources of phytonutrients among all plant foods. One medium apple contains five grams of fiber, 20% of the recommended daily value.

Source: Agriculture Today, Maine Dept. of Ag., Jan. 10, 2005; www.maine.gov/agriculture/newsletter.

Stressed? Have Some Cold Vegetable Soup

Volunteers who ate vegetables consistently for two weeks as part of a nutrition study had significant increases in blood levels of vitamin C and decreases in key stress molecules associated with health impairment. Researchers fed 12 healthy volunteers two bowls (17 ounces, total) of gazpacho every day for two weeks. The antioxidant-rich soup was made from tomatoes, cucumbers, green peppers, olive oil, onions and garlic. Blood samples for each volunteer were taken before soup consumption and on the seventh and fourteenth days of the study. Starting on the seventh day, levels of vitamin C in volunteers' blood samples had increased by 27% in men and 22% in women, and they remained elevated for the rest of the study.

Stress molecules are secreted by the body as a normal response to stress, but continuous, high blood levels of these chemicals increase vulnerability to illness due to inflammation and oxidative stress. One of the stress molecules measured, uric acid, was reduced by 18% in male volunteers and by 8% in females. High blood levels of uric acid, which causes gout, have been associated with an increased risk of cardiovascular disease.

Three other stress molecules measured were also significantly lower after soup consumption.

Source: Agricultural Research Service News Service, USDA; Rosalie Marion Bliss, (301) 504-4318, rbliss@ars.usda.gov; Nov. 3, 2004.

Consumer Campaign Helps Families Eat Healthier

The Global Resource Action Center for the Environment (GRACE) Sustainable Table campaign educates consumers about shopping smarter, eating healthier and enjoying the abundance of fresh, nutritious meat and produce grown by local family farmers. From the benefits of pasture-raised meat to the overuse of antibiotics in factory farms, www.SustainableTable.org presents issues in a clear, easy-to-understand format that makes it easier for consumers to make healthier choices about what their families eat. Until now many consumers have been confused by labels defining organic, antibiotic-free, and free-range products.

At www.SustainableTable.org, consumers can find the Eat Well Guide, a directory of meat, poultry, dairy and eggs produced sustainably, by entering their zip code. The Guide lists nearby farms, stores and restaurants that sell sustainable foods.

The Web site features The Meatrix, the most successful online advocacy film in history. Over 6 million online viewers have watched this critically acclaimed, award-winning, flash-animation film that humorously spoofs The Matrix movies while educating viewers about issues surrounding factory farming. Offline, the movie has been screened at conferences, film festivals and special events around the world and has been translated into several languages.

The site's Sustainable Kitchen has recipes, cookbook reviews, cooking tips and articles on sustainable food and cooking. Sustainable Table includes a Teacher Resource section for educators interested in developing curricula around healthy eating and sustainable agriculture. The site takes students to working farms that double as educational centers, shows which schools are serving sustainable foods, and profiles successful school garden projects.

Consumers who want to make a difference in their communities can use "Care" cards that let local grocers and restaurant owners know that they care about where their food comes from. These cards can be downloaded and printed from the Sustainable Table site.

Source: GRACE Press Release, Oct. 22, 2004; Chris Cooper, 212-726-9161; ccooper@gracelinks.org; www.gracelinks.org.

Information on Healthy Eating, Nutrition, Obesity Prevention

A website launched in December helps people answer nutrition- and food-related questions. The site, www.nutrition.gov, is a comprehensive source of information on nutrition and dietary guidance from multiple government agencies. It includes databases, recipes, interactive tools and special information for infants and children, adult women and men and seniors.

Source: Agricultural Research Service News Service, USDA; Len Carey, 301-504-5564, lcarey@nal.usda.gov; December 22, 2004

Organic Milk Has More Omega-3s and Other Nutrients

Organic milk contains 71% more omega-3 essential fatty acid than ordinary milk, according to research at Aberdeen University. Omega-3 helps maintain a healthy heart, supple and flexible joints, healthy growth, and strong bones and teeth. The increase in organic milk comes from the higher ratio of clover that organic cows consume. Organic cheese may be an even better source of omega-3 than milk.

Jamie Robertson, livestock projects manager at Aberdeen, said: "Polyunsaturated fats are broken down into two groups, omega-3 and omega-6, and ideally an equal ratio should be consumed. Most people in the UK eat too much omega-6 and are deficient in omega-3 fatty acids, therefore drinking organic milk could redress the balance."

Source:
www.dailymail.co.uk/pages/live/articles/health/dietfitness.html?in_article_id=330120&in_page_id=1798; 9/12/04

Likewise, research in the United Kingdom showed that organically reared cows, which eat high levels of fresh grass, clover pasture and grass clover silage, produced milk that is on average 50% higher in vitamin E (alpha tocopherol), 75% higher in beta carotene (which our bodies convert to vitamin A) and two to three times higher in the antioxidants lutein and zeaxanthine than non-organic milk. (www.soilassociation.org/)

Organic News

Fourth National Organic Farmers' Survey Available

The Organic Farming Research Foundation's "Fourth National Organic Farmers' Survey: Sustaining Organic Farms in a Changing Organic Marketplace" shows that many benefits exist for farmers in the organic marketplace, but also highlights areas of need. Organic price premiums are key to organic farmers' economic success, and a primary goal of the industry should be to help farmers expand markets for organic product and obtain premiums that maintain economic success and stability. The survey gathered information on organic markets and marketing in 2002, as well as other issues. One ominous finding was organic farmers' observations regarding the adverse financial and operational impacts associated with contamination of organically certified crops by genetically modified organisms (GMOs).

The survey included eight sections: Farm profile; Production and product detail; Marketing your organic products; Organic market conditions, 2001; Information and services; Marketing orders and organic; GMOs and organic; and More about you and your farm (demographics).

Printed results are available for a suggested donation of \$10 to cover printing and postage, and results are posted at www.ofrf.org.

Source: Organic Farming Research Foundation, P.O. Box 440, Santa Cruz, CA 95061-0440; 831-426-6606; research@ofrf.org; www.ofrf.org

Organic Food Popularity Keeps Growing

An annual survey commissioned by Whole Foods Market shows that more than one-quarter of Americans are eating more organic products than just one year ago; that more than half of Americans have tried organic foods and beverages; and that nearly one in 10 use organic products regularly or several times per week. Fifty-eight percent of respondents believe organic foods are better for the environment; 54% believe they are better for their health; 57% believe buying and using organic products supports small and local farmers; 32% believe organic products taste better; and 42% believe organic foods are better quality. "The survey results echo national sales trends, with recent reports indicating organic food sales hit \$10 billion and 20% sales growth last year," says Margaret Wittenberg, Whole Foods Market vice president of governmental and public affairs.

Source: ATTRA Weekly Harvest Newsletter, Oct. 27, 2004, <http://attra.ncat.org/newsletter/archives.html> ; www.wholefoodsmarket.com/company/pr_10-21-04.html.

Funding for Organic Programs Holds Steady for 2005

The 2005 Appropriations Omnibus bill funds key organic agriculture programs at amounts equal to those appropriated in 2004. Organic advocates call these funding measures a small victory during a difficult fiscal year, in which many substantial cuts have been made to federal programs. "Level funding for these programs this year is evidence that Congress is increasingly aware of the value of organic farming to both farmers and consumers," said Brise Tencer of the Organic Farming Research Foundation.

Source: ATTRA Weekly Harvest Newsletter, Dec. 22, 2004, <http://attra.ncat.org>; and www.ofrf.org/press/Releases/PR.122004.2005OrganicApprops.html.

Organic Valley Announces 'Transition to Organic Fund'

Organic Valley Family of Farms, the nation's largest independent farmer-owned organic dairy cooperative, has announced the 'Transition to Organic Fund' to help offset costs of transition for dairy farmers who become members of the Organic Valley cooperative. "The farmers of Organic Valley are committed to helping dairy farmers make the transition to organic. We know how tough the transition process can be, and we hope our 'Transition to Organic Fund' can help

farmers meet the challenge,” said Tim Griffin, Organic Valley National Milk Procurement Manager. For information about the Fund, farmers can call the Producer Hotline at Organic Valley at 888-809-9297. Farmers in Vermont, New Hampshire, Maine, Massachusetts, Rhode Island, Connecticut, New York and Pennsylvania can contact Peter Miller, Organic Valley’s East Region Pool Coordinator, at 888-444-6455, ext. 407, or 612-801-3506 (cell), or peter.miller@organicvalley.coop.

School Foods Go Organic

Mother Earth News profiles the work of California restaurateur Alice Waters. Through her organization Edible Schoolyard, Waters persuaded the Berkeley Unified School District to adopt food and agriculture issues as part of its curriculum for K-12 students. “We are going to take school lunch out of the fast food market and put it into academia,” Waters said. “We want to teach students about the consequences of the decisions they make about food, their relation to the land; we want to instill basic values. What we are doing is creating a new way of thinking about food. Making food an academic subject will give it legitimacy.” (ATTRA Weekly Harvest Newsletter, Dec. 22, 2004, <http://attra.ncat.org>; and www.motherearthnews.com/article/2150/)

Likewise, the organic salad bar at Lincoln Elementary School in Olympia, Washington, was so popular and economical that all Olympia grade schools installed one, according to AP writer Rebecca Cook; and more and more schools are doing the same to promote health and fight obesity. Schools in Seattle; Berkeley, Calif.; Santa Monica and Paol Alto also have organic food programs, while Stonyfield Farm has promoted vending machines with organic foods in six states. Lincoln Elementary, attempting to meet the request for organic foods from parent Vanessa Ruddy, covered most of the added cost of organic foods by eliminating dessert. (<http://lincoln.osd.wednet.edu>; www.stonyfield.com/MenuForChange)

Perchlorate Contamination

Perchlorate Found in Food Samples

Data posted by the Food and Drug Administration in November 2004 show perchlorate contamination in samples of lettuce, bottled water and milk tested in August 2004. Most perchlorate manufactured in the United States is used as the primary ingredient of solid rocket propellant, and FDA acknowledges the potential for perchlorate contamination in food through the use of contaminated irrigation water, processing water, and source waters for bottling. In its testing, the FDA found perchlorate in 217 of 232 samples of milk and lettuce in 15 states. Samples included both conventional and organic milk and lettuce. The Organic Trade Association pointed out that perchlorate contamination is not exclusively an organic agriculture concern.

In January, a National Academy of Sciences (NAS) report said that perchlorates, which contaminate drinking water in 35 states, are roughly 10 times more toxic to humans than the Department of Defense has been claiming. Perchlorates can inhibit thyroid function, cause birth defects and lower IQs. They are considered particularly dangerous to children.

In monitoring wells across the country, scientists have found perchlorate levels as high as 30,000 times what the NAS report indicates would be "safe" exposure. Due to pressure exerted on Congress by military officials and defense contractors, no federal restrictions or tolerance levels regulate perchlorates. California Senator Diane Feinstein has proposed legislation that would clean up perchlorate pollution and make the military and other perchlorate polluters pay for this clean-up.

The Organic Consumers Association urges citizens to write to Congress to support Feinstein's bill to create federal perchlorate safety regulations and to allocate funding for its clean-up. See www.organicconsumers.org/perchlorate.htm.

ATTRA Weekly Harvest Newsletter, Dec. 8, 2004, <http://attra.ncat.org>;
www.cfsan.fda.gov/~dms/clo4data.html

Pesticides

EPA Studies Children and Pesticide Exposure

Children's advocates were stunned in November 2004 as the U.S EPA announced a new study of pesticide impacts on children that planned to offer money and camcorders to families that had exposed their infants and toddlers to pesticides, without warning them of the risks of these exposures. After a chorus of opposition, EPA postponed but didn't cancel the industry-funded Children's Environmental Exposure Research Study (CHEERS) in Duval County, Florida.

Testing the effects of pesticides on infants and children has clear ethical implications. Scientific evidence clearly suggests that children in homes where home and garden pesticides are used are more likely to develop serious diseases, including asthma and childhood cancers. A recent study reports children with early persistent asthma were 10 times more likely to have been exposed to herbicides and insecticides in their first year. Children under five who live in homes where pesticides are applied may face a risk of childhood leukemia 11 times greater than those who live where no pesticides are applied. Home use of insecticide foggers has been associated with a 10-fold risk of brain tumors in children.

As more organophosphorus (OP) insecticides are replaced with pyrethroids--many of which are endocrine disrupting compounds--new adverse effects are likely to surface. Exposure to neurotoxic pesticides, including OPs and pyrethroids, is a suspected cause of learning disabilities such as Autism Spectrum Disorder and Attention Deficit Hyperactivity Disorder/Attention Deficit Disorder, conditions that have reached epidemic proportions in the United States. While the epidemiological data are not in yet, animal models suggest reason for concern.

The CHEERS project was criticized for its offers of cash rewards and camcorders to families that regularly spray pesticides in their home. Although the Web site for the study promised, "EPA will not ask parents to apply pesticides in their home to be a part of this study," offering prizes may encourage families unaccustomed to using pesticides in the home to change their habits to become eligible. Clinics and hospitals selected as recruitment sites in Duvall County predominantly serve low-income communities and a greater proportion of African Americans

than the rest of the county, thus children from low income communities of color are likely to bear the greatest risks in this EPA-led study.

EPA plans to accept \$2.1 million from the American Chemistry Council (ACC) to fund this ethically questionable study. Instead of allowing the pesticide industry to direct its research priorities, the agency should be doing all it can to prevent children's exposure to toxic pesticides. EPA should be informing parents of the risks of home pesticide use and promoting alternatives. Instead it has chosen collaboration with the industry that produces these chemicals to see how much exposure is "acceptable."

The Pesticide Action Network organized a petition asking EPA to firmly and permanently back away from the CHEERS study and begin speaking the truth to parents about pesticide risks. (www.petitiononline.com/NoCheers/)

Sources: Pesticide Action Network Updates Service Press Release, Dec. 1, 2004; EPA CHEERS website: www.epa.gov/cheers; Buckley, J.D., L.L. Robinson, R. Swotinsky, et al. 1989, "Occupational exposures of parents of children with acute nonlymphocytic leukemia: A report from the Children's Cancer Study Group," *Cancer Research* 49: 4030-37; Lowengart, R.A., J.M. Peters, C. Cicioni, et al. 1987, "Childhood leukemia and parents' occupational and home exposures," *Journal of the National Cancer Institute*, 79(1): 39-46; Pogoda, J.M. and S. Preston-Martin, 1997, "Household pesticides and risk of pediatric brain tumors," *Environmental Health Perspectives*, 105(11): 1214-20.

Rat Poisoning Rate in Kids Triples

In 2001, the Bush-led EPA struck a deal with chemical companies to remove two important rat poison regulations designed to protect the safety of children. The safety measures had required that rat poisons contain an ingredient that makes the candy-like pellets taste bitter to kids and a dye to make ingestion by children more obvious to adults. As a result of no longer requiring those safety additives, the nation is now seeing a record number of children poisoned by the toxic pellets. This year more than 50,000 children were poisoned by rodenticides--three times as many as were affected before safety regulations were removed. According to a recent article in the Los Angeles Times, the EPA met five times behind closed doors with representatives of the chemical industry, which ultimately resulted in the removal of the safety regulations.

Source: Organic Bytes #44 12/1/2004 www.organicconsumers.org/epa.htm

U.S. Muscles Montreal Protocol on Methyl Bromide Limits

Methyl bromide (MB) use in the United States will increase this year, despite provisions added to the Montreal Protocol in 1997 to eliminate production and use of the fumigant in industrial nations by 2005. On November 29, 2004, in Prague, the 16th Conference of Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer approved the U.S. government's request to increase exemptions for continued use of MB in "critical uses." The exemption will increase the U.S. consumption of this cancer causing, ozone-depleting chemical to 37% of the

1991 baseline level, or about 9,400 tons, in 2005--more than the total amount used by all U.S. agricultural and other users in 2003.

The U.S. had also requested continued exemptions for 2006 at 37% of baseline levels. The Protocol's technical panel opposed the request, because exemptions of only 27% could be justified. David Doniger of the Natural Resources Defense Council (NRDC) reports that U.S. officials balked at the technical panel's conclusions, claiming they were "arbitrary." "The technical committee did a good job of standing its ground," Doniger said. "They sent a strong message that reductions are possible and they need to be undertaken." By the meeting's end, the full conference of Parties accepted the technical panel's recommendations but also agreed to consider increasing the 2006 exemptions at a special meeting next summer.

According to U.S. EPA data, total U.S. use of MB in 2002 fell to 30% of the baseline level, or 7,674 metric tons. The recent "Critical Use" exemptions will nearly double the nation's MB use, with California strawberry growers and Florida tomato farmers the main beneficiaries.

U.S. officials argue that alternatives for soil sterilization or grain storage are not yet available, despite an investment of \$150 million in research by the USDA. A fact sheet on Non-Chemical Alternatives to Methyl Bromide on the PANNA Web site lists five commonly used alternatives and several experimental procedures for soil sterilization. Eighty countries are phasing in such alternatives.

While growers and millers are reducing their consumption worldwide, MB use is growing for sterilizing raw wood pallets and crates to reduce risks of invasive pests on imports and exports. International Plant Pest Convention guidelines require treatment of raw wood packaging material by heat or by MB before intercontinental shipping. Total world use of MB was about 50,000 tons in 2000, and declining rapidly. About 10,000 tons used in 2000 was attributed to all quarantine purposes. But the U.S. Animal and Plant Health Inspection Service estimates that as much as 102,000 tons could be required worldwide for treating wood packaging, expanding quarantine treatment by a factor of 10 and more than doubling total world usage. Concrete figures are unknown.

At the Prague meeting, countries adopted two resolutions regarding use of MB in wood packaging. One, supported by the U.S., Australia, Canada and others, encourages all countries to compile and submit data on uses of MB for quarantine purposes. The second, supported by Colombia and Guatemala, encourages countries to prefer heat treatment or alternative materials for packaging, however this resolution is not binding.

In addition to ozone depletion, MB presents serious risks to those handling and applying the chemical. The EPA classifies MB in Toxicity Category I, the category of most deadly substances, for its potential for neurological damage and reproductive harm. Many farmworkers and residents near fumigated fields have experienced these symptoms, and communities have restricted its use in fields near homes and schools. Improper handling of MB during fumigation has killed workers in foreign ports and other facilities. In May 2003, the National Cancer Institute reported that MB has been linked to increased prostate cancer risks in a study of 55,000

pesticide applicators, including farmers, nursery workers, and workers in warehouses and grain mills.

The Montreal Protocol has succeeded enormously in reducing worldwide consumption of chlorofluorocarbons, and until recently, also achieved encouraging results for MB; as of 2003, use in developed countries had been reduced to 70% of 1991 levels. Yet, to heal the hole in the ozone, the phase-out must be fully implemented.

Sources: Pesticide Action Network Updates Service, Dec. 10, 2004; NRDC Fact Sheets, USDA Proposed Rules for "Official Quarantine Use, and Actual Data on Methyl Bromide Use in the U.S."; Non-chemical Alternatives to Methyl Bromide, Excerpts from Technical Literature, PANNA; "Agricultural Pesticide Use May Be Associated With Increased Risk of Prostate Cancer," National Cancer Institute, Cancer.gov, www.nci.nih.gov/newscenter/pressreleases/AgricultureHealthStudy.
Contact: NRDC, www.nrdc.org, 202-289-6868.

Common Pesticide Causes Aggression and Brain Damage

The pesticide glufosinate is used widely in the United States, and its residues have been found in the food and water supply. Now Japanese government studies have confirmed previous research that glufosinate sets off violent behavior in lab animals. Male rats exposed to the chemical aggressively attack each other, while female rats remain peaceful. But female offspring of rats previously exposed to the pesticide "became aggressive and started to bite each other, in some cases until one died," said Yoichiro Kuroda, principle investigator of the study, adding, "That report sent a chill through me." Glufosinate is used as an herbicide on several varieties of genetically modified canola and corn.

Source: Organic Bytes #46, 12/17/2004;
www.organicconsumers.org/organicbytes.htm

Plastics

Maine Ranks First in Nation in PVC Waste Incineration

The Environmental Health Strategy Center documented the health and environmental hazards posed by PVC (polyvinyl chloride, the "poison plastic") during manufacturing, product use and disposal. Maine incinerates more PVC waste than any other state (as a percent of total PVC waste generated), according to estimates in the report. PVC is widely used in plastic pipes, building materials (such as vinyl siding), consumer products (such as toys, tablecloths, shower curtains) and disposable packaging (such as bottles and blister pack containers).

"When you burn PVC in waste incinerators, backyard burn barrels or on construction sites, you form deadly dioxin, toxic air emissions and hazardous ash," says Michael Belliveau, executive director of the Environmental Health Strategy Center and co-author of the report.

“PVC, Bad News Comes in 3s: The Poison Plastic, Health Hazards, and the Looming Waste Crisis,” concludes that 7 billion pounds of PVC are thrown ‘away’ in the U.S. each year and this waste poses perpetual hazards.

"You can't recycle PVC, and this poison plastic also contaminates the recycling process for plastic beverage bottles and other reusable goods," said Amanda Sears, campaign director of the Environmental Health Strategy Center.

Maine relies on waste incineration to a greater extent than any state, burning two-thirds of its household trash in four municipal waste incinerators in Portland, Biddeford, Auburn and Orrington. Discarded PVC plastic is the major source of chlorine in trash, which forms dioxins, the most toxic chemicals known to science, when burned.

The report estimates that 70 billion pounds of PVC plastic are slated for nationwide disposal in the next decade, and disposal rates are expected to increase sharply as some 125 billion pounds of PVC installed in the last 40 years in construction and other long-lasting uses will reach the end of its useful life and be disposed.

The Environmental Health Strategy Center and the Center for Health, Environment & Justice are campaigning to convince Johnson & Johnson and Microsoft to phase out PVC use. These corporate targets are large users of PVC packaging, such as Microsoft's blister packs on computer software and Johnson and Johnson's Kids Detangling Shampoo bottles. A growing number of corporations, such as Nike and Firestone, are phasing out PVC use.

"At a 'send back the vinyl' event in Portland, the Environmental Health Strategy Center boxed PVC packaging and returned it to the companies, urging them to endorse the PVC-Free Pledge. The Environmental Health Strategy Center urges consumers to check for a "3" or "V" to identify and avoid PVC products, noting "bad things come in 3s—pollution, health hazards and the looming waste crisis."

PVC is estimated to contribute 38 to 67% of the total chlorine found in solid waste, 90 to 98% of phthalates, 1 to 28% of lead, and 10% of cadmium. Cadmium, lead, organotins and phthalates are commonly released from PVC waste in landfills.

The report was co-released by the Center for Environment, Health and Justice's BE SAFE precautionary campaign and the Environmental Health Strategy Center. Based in Maine, the Environmental Health Strategy Center is a public health think-tank that advocates protection from toxic chemical exposures.

Source: Environmental Health Strategy Center Press Release, Dec. 7, 2004; Contacts: Mike Belliveau, 827-6331; Amanda Sears, 939-7333. Visit www.preventharm.org for more information or www.besafenet.com/pvc.htm for full documentation.

Water in Agriculture

Farmers Need Incentives to Conserve Water

In a world plagued by water shortages, three facts stand out in an analysis by Cornell University ecologists: Less than 1% of water on the planet is fresh water; agriculture in the United States consumes 80% of available fresh water each year; and 60% of U.S. water intended for crop irrigation never reaches the crops. "Water Resources: Agricultural and Environmental Issues" (BioScience, Vol. 54, No. 10, Oct. 2004) names farmers as "the prime target for incentives to conserve water." The report particularly criticizes irrigation practices in the United States, where subsidized "cheap water" offers scant incentive for conservation. "Part of the problem is the decision by farmers on what to grow where," says David Pimentel, a Cornell professor who led nine student ecologists through an exhaustive analysis of research conducted at other institutions and government agencies. "We learned, for example, that to produce wheat using irrigation requires three times more fossil energy than producing the same quantity of rain-fed wheat. The next time you make a sandwich, think about this: One pound of bread requires 250 gallons of water to produce the grains that go into the bread."

Source: Source: ATTRA Weekly Harvest Newsletter, Oct. 27, 2004,
<http://attra.ncat.org/newsletter/archives.html>;
www.news.cornell.edu/releases/Oct04/water_resources.hrs.html.

Summer 2005

Agricultural Funding

Western Maine Farm Fund Makes Record Loans

Western Mountains Alliance recognizes that if agriculture in western Maine is to be stabilized and/or grown, a loan program needs to reflect the reality of the small farms in Oxford, Somerset, Piscataquis, northern Androscoggin and Franklin counties. The Alliance established the Western Maine Farm Fund: A Loan With Local Roots in January 2003, through the generosity of an anonymous donor who wants to enhance agriculture in the region by funding a loan program that is accessible and attractive to the agricultural community. "As of March 2005 the Farm Fund has guaranteed 12 low, fixed-interest rate loans for eight farms in four western Maine counties, totaling \$223,000, through partnerships with Bangor Savings, Franklin Savings, Skowhegan Savings, Androscoggin Bank and UnitedKingfield Bank," says Tricia Cook, Farm Fund Coordinator at the Alliance. "With loans currently under advisement we will soon be over the quarter million dollar mark." This innovative loan program helps farmers buy equipment or land, make improvements and/or meet marketing costs.

Western Maine has a rich agricultural heritage. As in the past, the region's approximately 1,000 farms are still mostly small (averaging a little more than 200 acres), family-owned and diversified, and their farmers continue to recreate themselves to adapt to changing times. Yet fewer and fewer farmers seek loans now, because they know they are not necessarily the best of risks. Also, banks are often reluctant to make small loans to farmers due to a lack of understanding of agriculture and farming. A Piscataquis county farmer who learned about the Farm Fund from his banker said, "Finally, a program that the farmers and commercial bankers – both sides of the desk – embrace."

Western Mountains Alliance's Farm Fund is designed to meet the credit needs of farmers in the region. Participating banks offer low-interest loans, currently fixed at 4.5% and ranging from \$1,000 to \$25,000 with terms ranging from 120 days to eight years. The farmers must be able to demonstrate a "reasonable" credit history. The loans may cover up to 85% of the cost of the project. Loans can be made for purchase of new and used equipment, improvement or expansion of farm infrastructure, purchase or lease of land, working capital, and marketing. They support primarily profit-motivated agricultural enterprises raising field crops, animals and fruit trees.

Established in 1987, The Western Mountains Alliance strives to improve the quality of life and to strengthen the regional identity of the western mountains region of Maine. It is committed to sustaining and growing the region's farms. Interested farmers may stop at a participating bank for a brochure, contact Tricia Cook, Farm Fund Coordinator at 778-8143, or visit www.westernmountainsalliance.org.

Loans and Grants for Renewable/Efficient Energy Systems

USDA has announced the availability of \$22.8 million to support investments in renewable energy systems and energy efficiency improvements by agricultural producers and rural small businesses. Funds will be available to support a wide range of technologies encompassing biomass (including anaerobic digesters), geothermal, hydrogen, solar and wind energy, as well as energy efficiency improvements. Of the funding, \$11.4 million is available immediately for competitive grants. Renewable energy grant applications must be for a minimum of \$2,500 and a maximum of \$500,000. Energy efficiency grant applications may range from \$2,500 to \$250,000. The grant request may not exceed 25% of the eligible project cost. Applications must be submitted to the appropriate Rural Development State Office postmarked no later than June 27, 2005. The remaining \$11.4 million will be set aside through August 31, 2005, for renewable energy and energy efficiency guaranteed loans. Source: Agriculture Today and www.rurdev.usda.gov/rd/nofas/2005/reeigp032805.html

Maine Producers Receive SARE Farmer/Grower Grants

In October 2005, organic standards will no longer permit use of synthetic methionine in organic poultry production. Methionine is an essential supplement in the production of eggs and meat. In its natural form, methionine is available in meat, sunflower seeds and some algae. Many organic poultry growers are ethically opposed to feeding meat to their poultry. Catherine Albert of Jalko Farms in Madawaska produces organic grains and is looking for an alternative for small flock poultry producers. She has received a small Sustainable Agriculture Research & Education (SARE) Farmer/Grower grant to determine the merits of using sunflower seeds as the organic source of methionine. This summer she will conduct sunflower variety trials, determine an efficient method for de-hulling seeds and conduct feeding trials on Jalko Farm's small poultry flock.

Day-neutral strawberry production in the Northeast is difficult for organic producers due to tarnished plant bug (TPB) damage. Mark Jacoby of Columbia, Maine, will compare conventional methods of scouting TPB nymphs with a method that traps and counts flying adults. The project manager will use these scouting techniques to assess the effectiveness of a screen barrier deterrent to TPB and an organic pyrethrum control.

Mia Morrison of Charleston, Maine, is involved with two SARE Farmer/Grower grants. As Secretary for the Maine Organic Milk Producers Association (MOMPA), she and other organic dairy producers will research the quality of feed they provide to their dairy herds. A group of dairy farmers has started producing its own grain and experimenting with different stored forages. The project will sample the nutrient quality of the feed being produced over the year. They will analyze feed characteristics to try to determine the variation in purchased feed, the quality of organic grain grown on their own farms, and the variation in quality of their stored forages.

In a separate grant, Morrison will research alternative forage programs. Purchased concentrates are the largest expense on organic dairy farms, so identifying alternative forage programs is important. This project will investigate the efficacy of growing winter barley in central Maine and will look at integrating combinations of intensive grazing with round bale harvest of winter barley in the soft-dough stage. Many organic dairy producers have attempted to extend grazing by keeping cattle on pastures later in the season. Morrison will plant winter barley in the fall and extend grazing by putting cattle on the pasture in the early spring. She will then harvest and store the matured barley. The harvested barley will all be cut at its dough stage. The variables will be barley that was grazed at early, mid and late season. The quality of the stored forage will be analyzed.

John O'Meara of New Sweden received a grant to evaluate the effectiveness of northern white cedar in controlling varroa mites, a pest that has devastated honey bee populations. One test group will have hives treated with cedar shavings, one will have hives constructed of cedar, and one will have untreated hives. Varroa mite populations will be monitored over one year, and hives will be evaluated for honey production, overall strength, and winter survival.

Susan Sharpe of Franklin, Maine, will investigate the potential for growing broomcorn in Maine. Local broom makers do not have a domestic supply of broomcorn and have to import their supplies from Mexico.

Source: Agriculture Today, April 17, 2005; Maine Dept. of Agriculture;
www.maine.gov/agriculture/newsletter/feature_6.htm

Antibiotics

Tracking Antimicrobial-Resistant Organisms

Agricultural Research Service microbiologist Paula Fedorka-Cray, research leader of the agency's Bacterial Epidemiology and Antimicrobial Resistance Research Unit at Athens, leads a team that is testing for antimicrobial resistance in food-borne microbes. Bacterial samples are

taken from sick and healthy farm animals and animal slaughter facilities. The scientists test more than 17,000 bacterial samples a year.

Patterns of resistance are difficult to discern, because bacteria don't react predictably and uniformly to antibiotic treatment. For instance, the many types of *Campylobacter* respond differently to antimicrobial drugs; and *Salmonella* has more than 2,400 types, each apparently developing resistance to antibiotics at a different rate. Of all *Salmonella* types tested from 1997 to 2003, the rate of single-drug resistance has remained relatively stable at 9.5% of samples; but the number of *Salmonella* types that are resistant to more than five drugs rose from 11 to 20 percent. Those that are resistant to more than 10 drugs rose from 0.8 to almost 6 percent.

The researchers have the nation's largest descriptive database of resistant populations of bacteria recovered from animals over time. The data will be used to determine the probability that resistance will occur or be maintained if antibiotics are used. Changes in antibiotic use in food-animal production are being made in response to the development of resistance to the drugs.

Source: Agricultural Research Service News Service, USDA, Sharon Durham, (301) 504-1611, sdurham@ars.usda.gov; March 8, 2005. Read more in the March 2005 issue of Agricultural Research at www.ars.usda.gov/is/AR/archive/mar05/organism0305.htm.

Biopiracy

Victory Against Biopiracy!

European Patent Office Upholds Decision to Revoke Neem Patent

In a landmark decision on March 8, 2005, the European Patent Office (EPO) upheld a decision to revoke in its entirety a patent on a fungicide derived from seeds of the Neem, a tree indigenous to the Indian subcontinent. The historic action resulted from a legal challenge mounted 10 years ago by Indian environmentalist Vandana Shiva; Magda Aelvoet, then MEP and President of the Greens in the European Parliament; and the International Federation of Organic Agriculture Movements (IFOAM). Their joint Legal Opposition claimed that the fungicidal properties of the Neem tree had been public knowledge in India for many centuries and that this patent exemplified how international law was being misused to transfer biological wealth from the South into the hands of a few corporations, scientists and countries of the North. On March 8, the EPO's Technical Board of Appeals dismissed an appeal by the would-be proprietors—the United States and the company Thermo Trilog—and maintained the decision of its Opposition Division five years ago to revoke the Neem patent in its entirety, thus closing this 10-year battle in the world's first legal challenge to a biopiracy patent.

Dr. Vandana Shiva commented at the hearing, “What a lovely celebration for the women of India that this long-awaited decision falls on March 8th, International Women's Day. Denying the patent means upholding the value of traditional knowledge for millions of women not only in India, but throughout the South. The FREE TREE WILL STAY FREE. This victory is the result of extremely long solidarity. It is a victory of committed citizens over commercial interests and big powers.”

Magda Aelvoet noted: "Our victory against biopiracy is threefold. First, it is a victory for traditional knowledge and practices. This is the first time anybody has been able to have a patent rejected on these grounds. Second, it is a victory for solidarity: With the people of developing countries—who have definitively earned the sovereign rights to their natural resources—and with our colleagues in the NGOs, who fought with us against this patent for the last 10 years. And third, coming as it does on International Women's Day, this is also a victory for women. The three people who successfully argued this case against the might of the U.S. administration and its corporate allies were women: Vandana Shiva, Linda Bullard and myself. It can also inspire and help people from developing countries who suffer the same kind of theft but did not think it was possible to combat it."

Linda Bullard, former President of the International Federation of Organic Agriculture Movements (IFOAM), stated, "We were able to establish that traditional knowledge systems can be a means of establishing "prior art" and thus used to destroy the claims of "novelty" and "inventiveness" in these biopiracy patents. This now becomes case law, but the historic precedent must be further developed and transposed into overall international legal frameworks so that this type of theft is no longer possible."

Source: Research Foundation for Science, Technology and Ecology, New Delhi, India; The Greens/European Free Alliance in the European Parliament; and International Federation of Organic Agriculture Movements (IFOAM) Press Release, March 8, 2005. For further information, contact: Research Foundation for Science, Technology and Ecology: +91/11-26561868, -26968077, 26535422; vshiva@vsnl.com; www.navdanya.org; The Greens/European Free Alliance in the European Parliament: +32 2 284-1692; msomville@europarl.eu.int; www.greens-efa.org; IFOAM: +49 228 926-5016; n.sorensen@ifoam.org; www.ifoam.org

Cannabis

Industrial Hemp Gains Ground in Four States

Industrial hemp may be on the threshold of enjoying a new renaissance. On March 9, Governor John Hoeven of North Dakota signed House Bill 1492, which directs the North Dakota State University to start storing "feral hemp seed" in preparation for the day when growing industrial hemp becomes legal under federal law.

On March 23, New Hampshire House Bill 55-FN-A passed; this would let farmers apply for a state license to grow industrial hemp. The bill was headed for the Senate for consideration as we went to press.

On April 6, a hearing was held in Oregon for Senate Bill 294, which permits production and possession of industrial hemp and trade in industrial hemp commodities and products. And on April 27, a California hearing was to consider Assembly Bill AB 1147, which, if passed, would give farmers the right to apply for state licenses to grow industrial hemp.

Source: Source: Organic Bytes #55, April 12, 2005, Organic Consumers Association;
<http://www.organicconsumers.org/politics/hempgrowing32905.cfm>

Dairy

Virginia Bans All Raw Milk Production

As of January, all dairy products, from goats, sheep and other animals, produced in Virginia must be pasteurized—or producers can face a year in jail and/or a fine of up to \$2,500 per offense plus civil fines of up to \$1000. Since 1986, the sale of raw cow's milk has been banned there. Joel Salatin, president of the 300-member Virginia Independent Consumers and Farmers Association, says, "If regulations continue, individuals will lose heritage, home, hearth and indigenous foods, and be forced to eat only global government industrial stuff." And this statement was overheard at the National Campaign for Sustainable Agriculture Annual Conference in Washington, D.C., in February: "When raw milk is outlawed, only outlaws will have raw milk."

Source: Regional Farm & Food Project, New Connections, Spring 2005 Newsletter

Maine Cheese Guild's Cheese and Wine Festival October 15 and 16

Maine cheesemakers now craft exciting new and traditional cheeses from on-farm or local goat, sheep and cow milk that truly reflects the season and region of their creation: tangy goats' cheese pyramids that crumble on the tongue; sharp, full-bodied, aged cheeses made from sheep, cow and goat milk; delicate scoops of fresh cheese mixed with herbs; rustic blue cheeses; creamy cheese discs marinated in olive oil.

Farmers' markets, shops and restaurants around Maine now feature these and other handmade cheeses that "...rival the best of any cheeses produced in Europe," according to DownEast magazine, while The New York Times recently declared that "New England has become the most important center of American cheese craft east of California. While California has more sunshine, New England has better grass -- the finest pasture land in the country, some say."

But don't take their word for it: Find out for yourself at the third annual Maine Cheese and Wine Festival at the Samoset Resort in Rockport, Maine, on Saturday, October 15th. This celebration will feature tastes of all Maine's premium cheeses and wines, seminars about Maine cheesemaking and cheesemakers, plus demonstrations of how to make fresh and delicious products with Maine's abundant, quality milk. This year Maine's wine makers will join the festivities, highlighting their growing industry and products, as well as offering advice on the proper pairing of wine and cheese.

Many of Maine's premier and award winning artisan cheesemakers will be on hand to sample and sell their cheese, and to answer questions about their artisanal cheeses. The Maine cheesemakers will include Silvery Moon Creamery at Smiling Hill Farm from Westbrook; Sunset Acres Farm in Brooksville; 1797 Farm in Auburn; Appleton Creamery in Appleton; State

of Maine Cheese Co. in Rockport; Hahn's End in Phippsburg; York Hill Farm in New Sharon; Seal Cove Farm in Lamoine; and more. Maine winemakers will include Winterport Winery, Bartlett Wine, Blacksmith Winery and Cellar Door Winery.

Live demonstrations on making cheese and other artisanal milk products will include: making yogurt; making sweet and cultured butter; making quick and simple Queso Blanco cheese; making an aged French Tomme cheese; and cooking with artisan cheeses.

Cheese and other milk products start with the care and feeding of dairy livestock; the festival will feature examples of these dairy breeds along with the farmers who tend them, who will be available to demonstrate husbandry techniques as well as to answer questions.

Cheese can be made from the milk of any animal, and you can sample milk and cheese from sheep, goats and cows to compare. Antique cheese making tools and fixtures will be displayed to help describe Maine's long history of making cheese and to show how the process has changed very little over hundreds and thousands of years. Other information, such as books about cheeses and cheesemaking, from beginning to technically advanced, will be available for browsing and for sale.

On Sunday, October 16, many of the participating cheesemakers and winemakers will host Open Farms, Wineries and Creameries. Festival attendees are invited back to the farm to see how artisan cheeses and wines are made.

The Samoset has made rooms available for a reduced rate for anybody who attends. The Maine Cheese Guild will raffle several gift baskets of artisanal cheeses to raise funds for the organization and will have a booth where interested attendees can learn about becoming a member.

For more information, please visit www.mainecheeseguild.org or call 207-785-4431 or 207-236-9591.

Maine Grass Farmers Network Annual Conference and Pasture Walks Scheduled

The Maine Grass Farmers Network (MGFN) had seven Farm Table Talks this winter. Each meeting included lots of good discussion about what folks were doing on their farms, and everyone gained good ideas to try this season. We also participated in the Maine Agricultural Trades Show, where Ken Spaulding spoke on using Boer goats to revitalize pasture, and Rick Kersbergen, Paula Roberts and Diane Schivera discussed the rationale for grass-fed livestock. The MGFN also had a table at Ag Day in the State House, where we educated legislators about why pastured livestock are vital to Maine. We mailed our first newsletter, and our Web site (www.umaine.edu/umext/mgfn/) is running.

The Second Annual Maine Grass Farmers Network Conference will be held on August 27 at MOFGA's Common Ground Education Center in Unity, Maine, with keynote speakers Temple

Grandin, Ph.D., assistant professor at Colorado State University, and Ridge Shinn from the Bakewell Institute. The schedule is:

9 a.m.-- Registration

9:30 to 10:30 Keynote -- Temple Grandin -- Livestock Grazing Behavior

10:30 to 11 Break

11 to 12:30 Morning Sessions

Livestock Handling Facilities for Small Farms--Dee Potter

Horses on Pasture -- Donna Lamb

Dairy Ration Management on Pasture -- Rick Kersbergen

Katahdin Sheep and Parasite Resistance -- Dick Brzozowski

12:30 to 1:30 Lunch

1:30 to 2:30 Keynote -- Ridge Shinn--European Style Marketing

2:30 to 3:00 Break

3:00 to 4:30 Afternoon Sessions

Forages and Pasture Improvement -- Rick Kersbergen and Chris Reberg-Horton

Pastured Poultry -- Dick Brzozowski

Beef and Dairy Genetics for Grazing -- Ridge Shinn

Panel Discussion on Direct Marketing -- John O'Donnell, Ken Spaulding, Wendy Reinemann and others

This summer The MGFN will also hold pasture walks throughout the state. The schedule is:

June 7, 6 to 8 p.m. Steve Hobart, Blanchard. Stream powered water pump and grazing buffalo and deer. 997-3922

June 14, 6 to 8 p.m. Mike Russell and Cooperative Extension Educator Donna Lamb, Atkinson. Pasturing Horses. 564-3080.

June 15, 6 to 8 p.m. Cheryl Denz and Cooperative Extension Educator Dee Potter. Portable and Temporary Fencing Systems. 785-3118.

June 17, 10 to 12 a.m. Henry Hardy, Farmington. Rotations and Alternative Species Planting. 778-6446. Co-sponsored by Maine Organic Milk Producers.

June 21, 6 to 8 p.m. Aldemere Farm with Clint Giustra from the Maine Department of Agriculture. Handling Systems.

June 27, 6 to 8 p.m. Dennis Wilk, Industry. Rotational Grazing Old and New Pastures. 778-0154.

July 6, 10 to 12 a.m. King Hill Farm, Penobscot. Integrated Farming and Pasture Systems. 326-9701.

July 10, 2 to 5 p.m. Crystal Springs Farm, Brunswick. FAMACHA Training. Determining and controlling parasite infection in sheep and goats. Registration: \$30/farm payable to MOFGA at MOFGA, P.O. Box 170, Unity ME 04988. Contact Diane Schivera, 568-4142 for more information.

July 18, 6 to 8 p.m. Izzy McKay and Rick Thompson, Stantial Brook Farm, Brooks. Reclaiming Worn Out Pastures, and Multispecies. 722-3430.

July 19, 10 to 12 a.m. Jeff Bragg, Sydney. Pasture Layout and Crossing the Road. 547-3814. Cosponsored by Maine Organic Milk Producers.

July 23 to 24. Border Collie Training Clinic with Denise Leonard of Tanstaaf Farm at Nanney Kennedy's Meadowcroft Farm, Hopkins Rd., off Route 17, Washington, Maine. FMI: Nanney Kennedy, 207-845-2587.

July 26, 10 a.m. to 1 p.m. Doaks, Clements and Roberts, Monroe and Swanville. Watering Systems and Nose Pumps. 338-1265.

July 28, 6 to 8 p.m. Jim Jaeger, Vienna Farm, Gorham. Pasturing Horses. 839-4495.

August 9, 6 to 8 p.m. Margesons Farm, Westmanland. Backgrounding Beef and Grazing Grains. 896-3081.

August 10, 6 to 8 p.m. David Craven, Bucks Harbor. Multispecies, Stock Dogs and more. 255-4224.

August 17, 6 to 8 p.m. Fred Sherburne, Dexter. Watering Systems. 924-3057

August 27, 9:30 to 4:00 Maine Grass Farmers Network Annual Conference. See above.

September 14, 6 to 8 p.m. John O'Donnell's, Monmouth. Managing Water and Wildlife Areas in the Pasture, and Marketing Grassfed Beef. 933-3052.

Environmental Stewardship

British Farmers to be Paid for Environmental Stewardship

On March 3, 2005, the British government changed its agricultural funding so that farmers will become eligible for payments to protect and enhance the environment in addition to earning money for food production. The new funding will encourage farmers to maintain hedgerows, provide habitat for birds and small mammals, tend wildflower plots for beneficial insects, protect ponds from farm chemicals and encourage amphibians.

Every farmer will be encouraged to partake in this "Environmental Stewardship," which will shift British agriculture away from the European Union's Common Agricultural Policy (CAP) funding. The CAP linked production directly to earnings and promoted excess production and

environmental damage. The EU reformed the CAP two years ago, paying farmers based on the area they farm rather than how much they harvest. This payment required meeting minimum environmental standards. With the new Environmental Stewardship payments, farmers can increase their income substantially.

Source: "Farmers to be paid for protecting countryside," by Michael McCarthy, The Independent, London, March 4, 2005

Events

Herb Fest on June 4

Every year, on the first Saturday of June, Herb Fest offers a great line-up of classes by some of the state's finest herbalists and master gardeners. Wild plant identification walks are offered along with classes, t-shirts, plants, herbal and garden products, food, music and free activities in the children's tent.

Classes for this year include: A Traditional Northern Maine Herbal Apothecary; Healing Properties of Our Beloved Wayside Herbs; Growing Herbs; Healthful Culinary Herbs; Herbal Alternatives to Chemical Body Care; Cooking with Wildgathered & Homegrown Herbs; Chinese Medicine; Calendula from Seed to Salve and Beyond.

The 11th Annual Herb Fest will take place on June 4, 2005, at MOFGA's Common Ground Education Center in Unity, Maine, from 9 a.m. to 4 p.m. Admission is \$6.

For more information call 207-696-5759 or visit www.stonybrookherbfarm.com/herbfest.htm.

Herb Fest is organized by Herb Fest of Maine, a nonprofit corporation that educates the public about identification, cultivation and uses of culinary and medicinal herbs.

Factory Farms

Don't Eat Farmed Shrimp

Shrimp, now the most popular seafood in the United States, was once a delicacy reserved for Asian royalty. Now it can be consumed all-you-can-eat style at chain restaurants throughout the United States. In 2003, the United States imported 1.1 billion pounds of shrimp, worth nearly \$3.8 billion.

How did this happen? Until recently, shrimp were caught in the open ocean, but today most shrimp are "farmed" in tropical coastal areas where saltwater is available and waste can be flushed into the ocean.

Industrialized shrimp aquaculture is causing environmental, economic and social disasters in many nations—particularly in Asia and Latin America. It is devastating the U.S. shrimp industry and is creating potential health hazards for the consuming public as the price of shrimp has fallen from approximately \$18 to \$10 a pound.

The top producers of farmed shrimp, Brazil, China, Mexico, Thailand and Vietnam, use chemicals that have been banned in the United States and use up to 3 pounds of wild fish to produce 1 pound of marketed shrimp. Meanwhile the top importers are the United States, Japan and the European Union. Nearly 90% of the shrimp consumed in the United States is imported

Public Citizen has started a campaign urging U.S. citizens not to eat farmed shrimp but to ask for local or wild-caught “pot” shrimp instead. For more information, see the February/March issue of the Food Alert! Newsletter at www.citizen.org/documents/FoodAlertFeb05.pdf, or see “Chemical Cocktail—The Health Impacts of Eating Farm Raised Shrimp,” by Public Citizen at www.citizen.org/documents/ChemicalCocktailBooklet.pdf.

Genetic Engineering

Thousands of Field Tests of Genetically Engineered Crops in United States

In Maine, 375 Tests Conducted

More than 47,000 field tests of genetically engineered (GE) crops were authorized by the U.S. Department of Agriculture between 1987 and 2004, despite serious environmental threats and inadequate regulations to monitor their impacts, according to a report released by Environment Maine Research & Policy Center and the Maine Organic Farmers and Gardeners Association (MOFGA). Of these tests, 375 were conducted in Maine, mostly for GE potatoes.

Both the National Academy of Sciences and the General Accounting Office have criticized the USDA for inadequate oversight and expertise in authorizing the release of GE crops. Nevertheless, this study reveals substantial increases in 2003 and 2004 of tests of crops engineered to produce pharmaceutical and industrial chemicals and of many crops never before released.

The report, “Raising Risk: Field Testing of Genetically Engineered Crops in the U.S.,” highlights potential risks associated with the release of GE plants. Results of large scale field trials conducted in Britain over many years and published in the March 2005 Proceedings of the Royal Society demonstrate adverse effects of GE crop cultivation on wildlife, but experiments in the United States continue to be piecemeal and short term. Scientists have criticized research in this country as deliberately designed to hide any harm.

“Raising Risk” was released just after Kennebunk, Brooklin and Kennebunkport, Maine, considered opposing GE organisms. Kennebunk selectmen rejected a petition from citizens to ban GE organisms; Brooklin citizens voted in favor of a non-enforceable measure to declare their town a GE Free Zone; and Kennebunkport is considering a measure identical to that of Brooklin.

“Our environment is being used as a laboratory for widespread experimentation on genetically engineered organisms with profound risks that, once released, can never be recalled,” says Environment Maine Advocate Matthew Davis. “Bt corn plants have been found to be toxic to

monarch butterflies and other non-target species. Until proper safeguards are in place, this unchecked experiment should stop.”

Findings of the new report include:

- As of January 2005, the 14 states and territories that have hosted the greatest number of field test sites are: Hawaii (5,413), Illinois (5,092), Iowa (4,659), Puerto Rico (3,483), California (1,964), Nebraska (1,960), Pennsylvania (1,707), Minnesota (1,701), Texas (1,494), Indiana (1,489), Idaho (1,272), Wisconsin (1,246), Georgia (1,051) and Mississippi (1,008).
- Since 1991, USDA has received 240 requests for 418 field releases of crops engineered to produce pharmaceuticals, industrial chemicals, or other so-called biopharmaceuticals; the number of requested field releases of “biopharm” crops increased from 22 in 2003 to 55 in 2004.
- Nearly 70% of field tests conducted in the last year contain secret genes classified as “Confidential Business Information,” so the public has no access to information about experiments being conducted in their communities.
- The 10 crops authorized for the greatest number of field releases are corn, soybean, cotton, potato, tomato, wheat, creeping bentgrass, alfalfa, beet and rice. Potatoes have had 143 field releases in Maine.
- The USDA authorized field tests on several crops for the first time in 2003 and 2004, including American chestnut, American elm, avocado, banana, eucalyptus, marigold, safflower, sorghum and sugarbeet.

These experimental GE crops are grown in the open environment to test the outcome and environmental impact of certain gene combinations. The groups charged that such widespread field testing of GE crops poses serious threats to the environment and neighboring farmers.

“For over a decade, MOFGA has called for the preparation of an Environmental Impact Statement under the National Environmental Policy Act prior to any field testing or field release of GE plants or other organisms. We’re still waiting,” says Sharon Tisher, Chair of MOFGA’s Public Policy Committee. “Not only the distinguished National Academy of Sciences, but also the staff of the U.S. Department of the Interior, have raised serious questions about the risk of GE crops and animals becoming harmful invasive species. Also, GE crops that present a risk of genetic contamination of organic crops are a direct economic threat to certified organic farms.”

A major goal of the field tests is to obtain information about potential ecological risks associated with GE organisms. However, independent reviews of data collected by the USDA demonstrate that very little information about risk has been gathered, so despite the large number of field experiments, fundamental questions about the impact of GE crops remain, including long-term impacts on the soil and non-target species.

“The evidence continues to mount that the U.S. regulatory system is based on the principle of ‘don’t look, don’t find,’” says Davis. “Conducting field tests that are poorly designed is taking large risks without any benefits.”

Environment Maine Research & Policy Center and MOFGA called for a federal moratorium on GE foods unless:

- independent testing demonstrates safety;
- labeling for any commercialized products honors consumers' right to know; and
- biotechnology corporations are held accountable for any harm resulting from the products.

Environment Maine Research & Policy Center researches problems, proposes policy solutions and educates the public about clean air, clean water and open spaces.

MOFGA's mission is to help farmers and gardeners grow organic food, to protect the environment, and to recycle natural resources; to increase local food production, to support rural communities, and to encourage sustainable farm economies; and to illuminate for consumers the connections between healthful food, environmentally sound farming practices, and vital local economies.

The full report is posted at www.mofga.org. Environment Maine's Matthew Davis can be contacted at 39 Exchange Street, Suite 301, Portland ME 04101; (207) 253-1965; Fax (207) 253-1966; Info@EnvironmentMaine.org; www.EnvironmentMaine.org. MOFGA can be contacted at (207) 568-4142; mofga@mofga.org; www.mofga.org.

Brooklin, Maine, Votes to be GMO-Free Zone
Kennebunk, Kennebunkport Also Consider Petitions

On April 2, 2005, Brooklin became the first Maine town to address genetic engineering at a town meeting when voters passed the following warrant article: "Shall the town vote to voluntarily protect its agriculture and marine economies, environment and private property from irreversible Genetically Modified Organism (GMO) contamination by declaring Brooklin a GMO-free zone?"

Rob Fish of GE Free Maine says that this is the 98th resolution opposing genetic engineering to be passed in New England; the first to declare a voluntary moratorium on planting GMOs; and the first of any kind on the GMO issue by a municipality in Maine. The article was developed by local residents who later sought assistance from GE Free Maine.

According to Brooklin resident Marilyn Anderson, who, with Olenka Folda, Barbara Graves and Chip Angell, presented the petition with the required number of voter signatures, this is not a town ordinance, but a declaration of a position about preserving the environment, human health and food by resisting irreversible GMO contamination. The article will not restrict businesses from selling, serving or marketing GMO products and will not restrict laboratory research.

GE Free Maine is working with residents in Maine municipalities to bring the question of how to deal with GE crops to town meetings. According to Meg Gilmartin, cofounder of GE Free Maine, "Towns have a responsibility to protect the rights of farmers and landowners who choose not to grow [GE crops] on their land. Town meeting is the purest of our democratic

institutions, a place where the issue can be decided face-to-face by local residents without the interference of paid lobbyists."

GE Free Maine stayed away from the Brooklin town meeting at the request of local residents, who wanted to discuss the issue on their own. The vote did attract outside opponents, however. Doug Johnson, a professional lobbyist for the biotech industry and a partner in biotechnology public relations firm GreenTree Communication, attended the meeting and sought to speak. Residents objected to his outside interference.

Brooklin resident John Bradford, a former Republican legislator from Massachusetts, moved that Johnson be given the floor, but the town voted down the motion. Several voters stated, "We are educated and intelligent people — we don't need slick, highly paid corporate lobbyists coming in here trying to tell us what to do."

Two other GE-related ordinances considered this spring, in Kennebunk and Kennebunkport, were submitted by MOFGA's York County chapter representative Christine Baker. Although the Kennebunk petition contained nearly 600 signatures—about 150 more than needed--selectmen rejected the ordinance after getting a written report from the Maine Department of Agriculture saying that such a moratorium would violate Maine's Right To Farm Law. Kennebunkport selectmen voted to consider the issue again at its April 14 meeting, then, at that meeting, tabled the issue until fall.

The petition in Brooklin differed from those in Kennebunk and Kennebunkport. Brooklin asked for a resolution/declaration of the desire of the community be a GE Free Zone; the others would have made growing GE crops illegal.

The Department of Agriculture claims that using GE crops constitutes Best Management Practices, so towns cannot impose a moratorium on planting them. Ned Porter, Maine's deputy agriculture commissioner, said, "GE varieties have been approved [by the FDA] for general release and, as such, are no different than hybrid varieties." [See the Department of Agriculture's letter, below.]

The Maine Organic Farmers and Gardeners Association believes that towns should be free to enact bans or resolutions if they want, but this is not a focus of MOFGA's efforts and resources. The board of directors of MOFGA, which has been working with GE Free Maine on a case-by-case basis, strongly objected to the letter from the Department of Agriculture suggesting that local bans might be barred by the Right to Farm law. This letter was wrong and misguided, MOFGA believes. Its board has authorized executive director Russell Libby to ask the Governor for a meeting to discuss the agriculture department's position on Kennebunk and the Right to Farm law.

Sources: Press Release, GE Free Maine, 207-244-0908; info@gefreemaine.org; www.gefreemaine.org; personal communication with Sharon Tisher, Chair, MOFGA's public policy committee; "GE Free Maine loses bid," by Sharon Kiley Mack, Saturday, March 26, 2005; Bangor Daily News; "GE-free group supports ban in Brooklin," by Sharon Kiley Mack, Wednesday, March 30, 2005; Bangor Daily News.

Sidebar

The following letter was received by the towns of Kennebunkport and Kennebunk after they received proposals for moratoriums on GE crops.

March 9, 2005

April Dufoe, Town Clerk
Town of Kennebunkport
PO Box 566
Kennebunkport, ME 04046

Dear Ms. Dufoe

Thanks you for submitting the proposed ordinance regarding genetically engineering organisms to the Department as required by 17. M.R.S.A. Section 2805, Subsection 4.

The Department has reviewed the proposed ordinance making it "unlawful to propagate, cultivate, raise or grow genetically engineered organisms" and determined that this ordinance would restrict or prohibit the use of best management practices in farming operations.

The Department reached this conclusion because crops developed by genetic engineering are deemed to be no different than crops developed by traditional breeding methods. Genetically engineered crops have been evaluated by several federate agencies responsible for their safety. One of these agencies, the Biotechnology and Regulatory Services (BRS), a unit of USDA's Animal and Plant Health Inspection Service has determined that once a genetically engineered crop has met all the human and environmental safety requirements imposed by various federal agencies and deregulated by BRS, such crops require no more regulatory oversight than crops developed by traditional breeding methods. The Department concurs with this determination. Therefore the Department concludes that this ordinance would prohibit the use of a Best Management Practice, the planting of a crop with a beneficial trait developed by genetic engineering.

Please note that Title 17 M.R.S.A. section 2805, Subsection 3-A, provides that a method of operation used by a farm located in an area where agricultural activities are permitted may not be found in violation of a municipal ordinance if the method of operation constitutes a Best Management Practice as determined by the Department. Since the Department made that determination in this case, the proposed ordinance may not be enforceable against farms using these practices.

Incidentally, the Department also believes that farmers who plant genetically engineered crops and those who plant traditionally bred crops can and should co-exist successfully, if both are considerate of the production decisions of the other. I have included a brochure published by the Department discussing practices that farming operations with differing marketing objectives can follow to coexist in Maine.

Please don't hesitate to contact me if you have any questions or need anything further from the Department on this matter.

Sincerely,

Peter N. Mosher
Director
Office of Agricultural, Natural and Rural Resources

cc. Robert Spear, Commissioner
Ned Porter, Deputy Commissioner
Terry Bourgoïn, Director, Plant Industry
Mark Randlett, Assistant Attorney General

GE Crops Reap Herbicide Resistance

A paper entitled "Herbicide-resistant crops and weed resistance to herbicides," presented by Micheal Owen of Iowa State University in March 2004, noted that planting of genetically engineered (GE) crops has increased dramatically in the last few years, with over 52 million hectares of GE crops planted worldwide. Some 41 million hectares grew herbicide-resistant soy, maize, canola and cotton and accounted for 77% of GE-planted hectares in 2001. Up to 16 other GE, herbicide-resistant crops may be commercially available soon. In addition to potential problems with contaminating other grains, increased reliance on herbicides, and lack of consumer acceptance, Owen and coworkers note cases of herbicide-resistant weed populations and of herbicide resistant crops themselves becoming weeds.

Source: Pest Management Science abstract, Volume 61(3):301 – 311. Special Issue: Herbicide-resistant Crops from Biotechnology. Issue Edited by Stephen O. Duke, Nancy N. Ragsdale, Jan. 25, 2005; Society of Chemical Industry. Contact: Micheal D.K. Owen, 2104 Agronomy Hall, Iowa State University, Ames, IA 50011-1011, mdowen@iastate.edu

"While the discovery and adoption of GE crop technology has changed American agriculture in many ways, reducing overall pesticide use is not among them. The average acre planted to glyphosate-tolerant crops [Monsanto's Roundup] requires more and more help from other herbicides, a trend with serious environmental and economic implications." Source: Benbrook Consulting 2004 Technical Paper on USDA National Agricultural Statistics Service; Consumer Bytes #53, Organic Consumers Association, March 28, 2005; www.organicconsumers.org

A sixth province in Poland is banning GE crops, so roughly half of the agriculture of the nation is now GE-free. Meanwhile, Eastern Europe governments have announced implementation of the world's largest organic research budget. According to Janez Potocnik, the EU Commissioner for Research, "I believe that the importance of research into organic and low-input food production can be a perfect example of how science can

unlock potentials for human well-being." Source: Organic Consumers Association, March 28, 2005; www.organicconsumers.org

Nearly a quarter of a million petition signatures opposing GE farming in Hokkaido, Japan, have been submitted to the local government. Of the 5,000 farmers in the region, only 10 (with backing from Monsanto) support GE crops. Source: Organic Consumers Association, March 28, 2005; www.organicconsumers.org

In Missouri, the USDA is on the brink of approving field tests of rice engineered with human genes. (Organic Consumers Association, March 28, 2005; www.organicconsumers.org) The Center for Food Safety (www.centerforfoodsafety.org) says that Ventria Biosciences, the pharmaceutical company that wants to plant the GE rice, tried to get permission to plant it in California in 2004, but rice farmers, environmentalists, consumers and legislators forced the Calif. Dept. of Food and Agriculture to delay a decision until a 2004 planting became impossible. Ventria expects less opposition in Missouri. (Regional Farm & Food Project, Spring 2005 Newsletter)

On February 15, the Mexican government voted to legalize GE crops. GE crops had previously been banned there in order to prevent GE contamination of the world's most diverse, important and pure collection of corn varieties. Although surveys reveal the vast majority of Mexican citizens oppose the legalization of GE crops, intense pressure from the United States eventually overturned the ban. Monsanto, which owns the patents and distribution rights to 91% of GE seeds in the world, is now one of the leading advertisers in Mexico, second only to Coca-Cola. Source: Organic Bytes #52, Organic Consumers Assoc., March 11, 2005, www.organicconsumers.org/ge/mexicoapprove022805.cfm

Southern U.S. cotton farmers are speaking out against Bt cotton, a plant genetically engineered to create its own pesticide to ward off bollworms. Although Bt cotton farmers are enjoying a decrease in bollworm damage, they say the plants are attracting other pests at a much higher rate. North Carolina State University released a study in March indicating that the state's Bt cotton fields have an average of three times more damage from stink bugs than do conventional cotton fields. Source: Organic Bytes #52, Organic Consumers Assoc., March 11, 2005; www.organicconsumers.org/clothes/stinkbugs030905.cfm

Swiss biotechnology company Syngenta AG mistakenly sold hundreds of tons of experimental GE corn seeds to U.S. buyers between 2001 and 2004, according to an AP article on Agri News. The unapproved seeds were planted in open fields for four years in four states before Syngenta acknowledged the mistake. Federal investigators claim there was no health or environmental risk, due to the seeds' similarities with another approved Syngenta product; critics say the breach shows the biotech industry cannot be trusted to keep GE organisms from entering the food supply. The USDA is investigating the case. Source: Agriculture Today, Maine Dept. of Ag., March 24, 2005, www.maine.gov/agriculture/newsletter/nb14.htm . See also <http://webstar.agrinews.com/agrinews/282901780440158.bsp>

A fourth study in a four-year, large, farm-scale trial in Britain has shown that cultivating

GE crops harms wildlife, report Steve Connor, Michael McCarthy and Colin Brown in The Independent ("The end for GM crops: Final British trial confirms threat to wildlife, March 22, 2005). The experiment found that GE oilseed rape fields harmed wildflowers, butterflies, bees and probably songbirds. The researchers said that herbicides used to spray GE rape killed such broad-leaved wild flowers as chickweed and fat hen, which feed skylarks, tree sparrows and bullfinches. They found similar numbers of weeds in GE and non-GE crop fields, but broad-leaved weeds such as chickweed, and bees and butterflies, were far fewer in the GE plots. Differences persisted even two years after the crop had been sown. Three previous trials with rape, corn and beets showed that growing GE rape and beets harmed wildlife more than growing conventional varieties. Researchers believe the differences are due to the herbicides and the timing of the farming. Results of this trial were published in Proceedings of the Royal Society B.

Herding Dogs

Border Collie Training Clinic

Denise Leonard of Tanstaafl Farm will conduct a border collie training clinic on Saturday and Sunday, July 23-24, 2005, starting at 8:00 a.m. at Nanney Kennedy's Meadowcroft farm on Hopkins Rd, off Route 17, in Washington, Maine. This will be a training clinic for all levels of dogs. Training areas are available for newly started, intermediate and advanced level dogs. Each person will work his / her dog at least twice each day with the instructor. Comments and feedback will be given to the entire group as each dog works. All participants should benefit both by working their own dog and by watching techniques used on other dogs. Denise Leonard is an excellent handler, trainer and teacher. The number of dogs will be limited to provide more instructor time for each dog.

Fees for participants (dog and handler) are \$85 per day or \$150 for both days. Observers (one person-no dog) pay \$40 per day. Camping is available at the farm; at a campground 3 miles up the road at Damariscotta Lake Park; and several B & Bs are in the area. Coffee, muffins and donuts will be available both mornings. Please bring a lunch or plan to order out. On Saturday evening a potluck will be hosted around 7:00 p.m. Hamburgers, buns and some dessert will be provided. Please bring a dish to share (refrigeration is available on site). The organizers hope to have some appropriate (or inappropriate...) Scottish entertainment!

Denise Leonard has had a small flock of sheep for approximately 40 years, having started with them as a 4-H project. She currently raises Border Leicester crosses and Katahdin crosses for both meat and wool. She had been training border collies for 30 years, using them on the farm and competing in sheep dog trials throughout the Northeast. She is currently successfully running two home bred and trained dogs at the open level and another in the novice classes at the ranch level. She gives herding lessons at her farm in western Massachusetts and has experience in starting and training a number of different styles of working dogs.

For more information, please contact Nanney Kennedy at queen@getwool.com; 207-845-2587.

Insect Control

Agricultural Tool Recruited to Help Fight Malaria, Other Diseases

Engineers with the Agricultural Research Service (ARS), in a quest to quash grain-infesting bugs, have developed an instrument that can determine the age of an insect. Unexpectedly, the technology can also help control disease-carrying insects, such as mosquitoes and tsetse flies.

Developed by agricultural engineer Floyd Dowell and colleagues at the agency's Grain Marketing and Production Research Center (GMPRC) in Manhattan, Kan., the tool uses near-infrared (NIR) light. All organisms, including insects, absorb NIR radiation differently, so the energy that's reflected back from any one of them will have a unique signature.

GMPRC researchers originally built the instrument to assess grain kernels' protein content. But ARS entomologist James Baker thought that the tool should also be able to detect a live, growing insect hidden inside a kernel. Also, entomologists with the Centers for Disease Control and Prevention in Atlanta, Ga., are using the technology to sort species that carry malaria from those that do not, and to rapidly separate male and female tsetse flies. These tiny, biting insects carry the parasite that causes sleeping sickness, a disease ravaging several countries in Africa. Distinguishing sexes early in development gives researchers more time to sterilize male tsetse flies and transport them to strategic release sites in Africa. Releasing large numbers of sterile males over time should cause tsetse fly populations to ultimately crash.

Source: Agricultural Research Service News Service, USDA, Erin Peabody, (301) 504-1624, ekpeabody@ars.usda.gov; March 3, 2005. Read more in the March issue of Agricultural Research: www.ars.usda.gov/is/AR/archive/mar05/health0305.htm

Livestock

Cows Have Feelings, Too

Cows befriend two to four other cows and spend most of their time with them, often grooming and licking each other, but can dislike other cows and can bear grudges for years. They also like intellectual challenges, such as learning how to open a door to get food. They can feel pain, fear, anxiety, worry or happiness. Other farm animals may have similar feelings, reported Jonathan Leake in *The Sunday Times* (Britain) on Feb. 27, 2005 ("The secret life of moody cows") before the Compassion in World Farming conference in London in March.

Leake quotes John Webster, professor of animal husbandry at Bristol and author of *Animal Welfare: Limping Towards Eden*: "People have assumed that intelligence is linked to the ability to suffer and that because animals have smaller brains they suffer less than humans. That is a pathetic piece of logic."

Webster also described the sexuality of cows: When one comes into heat, others in the herd try to mount her. "Cows look calm, but really they are gay nymphomaniacs," he told Leake.

Neurobiologist Keith Kendrick of Cambridge found that sheep can remember 50 ovine faces; can recognize another sheep after a year apart; and can form strong affections for certain humans, become depressed by long separations and greet him or her enthusiastically after three years.

Christine Nicol, professor of animal welfare at Bristol University, said, “Our challenge is to teach others that every animal we intend to eat or use is a complex individual, and to adjust our farming culture accordingly.”

Sheep and Goat FAMACHA Workshop

On Sunday, July 10, sheep and goat farmers can learn about and use one of the most important breakthroughs in livestock management in many years at a FAMACHA workshop. The materials and technique of FAMACHA allow livestock producers to determine the level of clinical infection of the internal parasite, the barber pole worm, the number-one health problem for grazing sheep in the United States and in the world. Materials and a technique developed by workers in South Africa and tested by U.S. scientists are now available for use in the United States. They allow producers to determine the level (or absence) of infection in sheep and goats of the barber pole worm; over time, to identify animals that are most prone or resistant to infection in order to begin breeding a resistant flock; and to identify animals that need to be wormed, saving money and limiting the use of chemicals.

This workshop will take place on July 10 from 2 to 5 p.m. at Crystal Springs Community Farm in Brunswick. Led by Professor Tom Settlemyre from Bowdoinham, it will feature a discussion session and a hands-on learning session. The cost is \$30 per farm for materials, training and refreshments. Registration is required by July 1. Send a check made out to MOFGA to MOFGA, PO Box 170, Unity, ME 04988; contact Diane Schivera at 568-4142 for additional information.

Nutrition

Nutrient Deficiencies Promote Violence and Aggression

The American Journal of Psychiatry has published a study connecting nutrient deficiencies to aggressive behavior in children. Children who suffered deficiencies of zinc, iron, B vitamins and protein demonstrated a 41% increase in aggression at age eight, and by age 17, a 51% increase in violent and antisocial behaviors. The study noted that 80% of the U.S. population is deficient in one or more of these nutrients, due in major part to increasing consumption of junk foods and beverages.

Source: Organic Bytes #55, April 12, 2005, Organic Consumers Association;
www.organicconsumers.org/school/aggression040405.cfm

Restrictions on Supplements Possible

The World Trade Organization (WTO) is an international body to resolve trade disputes between countries, using industry regulations established by other organizations. For food products the

WTO uses standards established or being established by the Codex Alimentarius Commission (CAC). Once a Codex standard is developed and approved by the CAC, WTO member nations must conform. If a trade dispute comes before the WTO, economic trade sanctions can be used to enforce compliance.

The CAC assigns development of new standards to specific Codex committees. For many years one of the assignments of the Codex Committee on Nutrition and Foods for Special Dietary Uses (CCNFSDU) has been to create "Guidelines for Vitamin and Mineral Food Supplements." These Guidelines are to dictate which nutrients are deemed safe, the maximum and minimum amounts allowed in a product, and related packaging and labeling requirements.

The document "Guidelines for Vitamin and Mineral Food Supplements" is proposed to be much more restrictive than corresponding rules and regulations in the United States. If finalized and enforced, these Guidelines could take away the American public's access to vitamin and mineral supplements.

The American Health Association (<http://ahha.org/codexOV.htm>) encourages consumers to research this issue and take action.

Organic News

More Than 26 Million Certified Organic Hectares Worldwide

The International Federation of Organic Agriculture Movements (IFOAM), the Swiss Research Institute of Organic Agriculture (FiBL), and the Foundation Ecology & Farming (SÖL), Germany, released reported on "The World of Organic Agriculture – Statistics and Emerging Trends 2005" in February. According to the study, more than 26 million hectares of farmland are under organic management worldwide. This is more than two million hectares more than in the previous year.

In terms of organic land, Australia leads with 11.3 million hectares, followed by Argentina (2.8 million hectares) and Italy (> 1 million hectares). Regarding the share of organic farmland in comparison with the total agricultural area, Austria, Switzerland and Scandinavian countries lead. More than 10% of Swiss agricultural land is managed organically.

In 2003, the market value of organic products worldwide reached 25 billion US\$, the largest share of organic products being marketed in Europe and North America. As governments and organizations increase support for organic agriculture, the sector should grow.

This study features an updated chapter on the market situation and emerging trends for several continents; and chapters on standards and certification include a wealth of new information. A new chapter on organic farming and sustainability was added.

Contact: Dr. Helga Willer, Research Institute of Organic Agriculture (FiBL) Ackerstr., CH-5070 Frick, Tel. +41 79 2180626, Fax +41 62 8657-273, info.suisse@fibl.org; www.fibl.org; www.fibl.org/english/shop/index.php; Foundation Ecology & Agriculture(SÖL), Weinstr. Süd

51, D-67098 Bad Dürkheim, Tel +49 6322 98970-0, Fax +49 6322 98970-1, info@soel.de; www.soel.de; Bernward Geier, International Federation of Organic Agriculture Movements (IFOAM), Charles-de-Gaulle-Str. 5, D-53113 Bonn, Tel. 49 228 92650-10, headoffice@ifoam.org; www.ifoam.org; NürnbergMesse, BioFach, Messezentrum Nürnberg, D – 90471 Nürnberg, Tel: +49 911 8606-0; info@biofach.de; www.biofach.de

Published in English, the study can be ordered for of 16 Euros (+postage) through IFOAM and FiBL (addresses above). The full study can be downloaded for 8 Euros at www.ifoam.org or <http://shop.fibl.org>, order number 1365. Chapter 2, “Current Status of Organic Farming World-Wide,” summarizing global organic statistics, can be downloaded free www.orgprints.org/4297

Steady Growth in Organic Market

The Organic Trade Association reports that sales of organic products reached \$12.7 billion in 2004, with a steady growth rate of nearly 20% per year over the past 12 years. (OTA press release, April 12, 2005; www.ota.com) Meanwhile, the Natural Marketing Institute says that 23% of U.S. shoppers are now organic consumers.

Source: Organic Bytes #55, April 12, 2005, Organic Consumers Association; www.organicconsumers.org/organic/23percent32905.cfm

Advisory Panel Recommends Pasture for Organic Dairy Animals

A federal advisory panel on the organic industry [National Organic Standards Board] has recommended that USDA tighten existing rules that require organic livestock to be raised and fed on open pasture, reported the Chicago Tribune in an article posted by the Times Argus. The issue was first raised by complaints about large organic dairies keeping their animals in pens, claiming lactation was a "production stage." The panel recommended that this loophole be closed, by specifying that dairy cows must graze on pasture at least 120 days per year. In addition, the advisory committee will post guidelines on the number of acres of pasture required for each cow in different areas of the country.

Source: Weekly Harvest Newsletter, ATTRA, March 9, 2005. See also: www.timesargus.com/apps/pbcs.dll/article?AID=/20050304/NEWS/503040340/1002/NEWS01

Organic Ag May Raise Antioxidant Levels in Produce

The Organic Center's second State of Science Review (SSR) concludes that organic farming methods can elevate average antioxidant levels, especially in fresh produce. The report, “Elevating Antioxidant Levels Through Organic Farming and Food Processing,” reveals that on average, antioxidant levels were about 30 % higher in organic than conventional food grown under the same conditions. The report reviews, among other data, 15 quantitative comparisons of antioxidant levels in organic versus conventional produce. Organically grown produce had higher levels in 13 out of 15 cases. On average, the organic crops contained about one-third higher antioxidant and/or phenolic content than comparable conventional produce. Several studies found levels of specific vitamins, flavonoids or antioxidants in organic foods to be two or three times the level found in

matched samples of conventional foods.

Source: Consumer Bytes #53, Organic Consumers Association, March 28, 2005;
www.organic-center.org/science.htm?articleid=54

Alternatives to USDA Organic

Elizabeth Henderson wrote in *Growing for Market* about her participation in an IFOAM-sponsored, week-long gathering to consider alternatives to organic certification. She and 39 others from 20 countries met in Brazil and found that they shared “core principles based on sustainable, ecological practices with a strong current striving for social justice, equity, and gender balance.” They called their effort Participatory Guarantee Systems—ways to decentralize and simplify certification so that it’s available even to very small farms, poor farmers, and focusing on those who sell directly to customers. Ron Khosla, who started a “Certified Naturally Grown” participatory guarantee system four years ago to counter “agribusiness organic,” also attended the Brazil meeting. His Certified Naturally Grown program now enrolls 300 farmers. He has posted documents related to the IFOAM gathering at www.naturallygrown.org/pgs.

Certified Naturally Grown farmers join with other farmers in their region to develop standards and abide by certain practices. Enrolled farmers or other interested parties do inspections annually (without doing mutual inspections). Information about Certified Naturally Grown is available at www.naturallygrown.org.

Sources: “International group recognized non-certified organic growers,” by Elizabeth Henderson; and “U.S. alternatives to certification gather steam.” *Growing for Market*, April 2005

People

Kersbergen Receives Trustee Professorship

Rick Kersbergen, Extension Professor from Waldo County, Maine, recently received a Trustee Professorship from the University of Maine. This award recognizes outstanding achievement in research and teaching and allows Kersbergen to conduct further research on topics related to the dairy and livestock industry in Maine.

The trustee Professorship comes with release time and a stipend. Kersbergen will spend the next 12 months working on several projects, including a Cooperative State Research, Education & Extension Service (CSREES) grant project with the University of Vermont and the University of Maine on the cost of producing organic milk. Maine and Vermont are seen as leaders in the organic dairy industry. He will work on initiatives with the Maine Organic Milk Producers (MOMP); and will provide technical support to the Natural Resources Conservation Service (NRCS) Grazing Lands Conservation Initiative (GLCI) and the Maine Grass Farmers Network (MGFN).

Kersbergen received his undergraduate degree from Bates College and did his graduate work at the University of Maine in Animal Science. He has been an Extension Educator with Cooperative Extension since 1987, working from the Waldo County office.

For more information, contact Rick Kersbergen via email at richardk@umext.maine.edu

NOFA-NY Hires Seed Project Coordinator

The Northeast Organic Farming Association of New York (NOFA-NY) has hired Elizabeth Dyck, Ph.D., as Project Coordinator of the Organic Seed Partnership (OSP). The OSP, a collaboration between NOFA-NY and Cornell University's Department of Plant Breeding, is building upon the work of the Public Seed Initiative. The OSP will create a strong national network to develop and deliver improved vegetable varieties selected for superior performance in organic systems. This will require both new varieties and improved capacity to produce large quantities of commercial grade seed. This OSP integrates participatory, farm-based crop breeding and selection in organic systems, supported by regional research centers that ensure the early engagement of growers, consumers and seed companies.

Dyck received her Ph.D. in Plant Science from the University of Maine, Orono, then coordinated a project to screen legumes for integration into maize and vegetable cropping systems on small farms in Kenya as part of a Rockefeller Foundation program at the Kenya Agricultural Research Institute in Nairobi. Next Dyck was Assistant Professor at the University of Minnesota's Southwest Research and Outreach Center, where she worked extensively with the organic farm community and ran the Organic Conversion Project. She researched organic farming systems, emphasizing collaborative research with transitioning and organic farmers. Dyck is a widely published author on many facets of organic agriculture, and she is a certified organic vegetable grower in upstate New York.

Pesticides

Refuse to Use Lawn Chemicals

Two national campaigns are highlighting the risks of lawn and garden pesticides. With evidence that exposure to lawn care chemicals presents health risks to children and pets and pollutes water and the environment, both campaigns ask that households switch to nontoxic alternatives. The Toxics Action Center in Boston has targeted TruGreen ChemLawn, the nation's largest provider of lawn care services, and urges consumers to "Refuse to Use ChemLawn." The National Coalition for Pesticide-Free Lawns asks consumers to use nontoxic alternatives, to urge retailers to stock nontoxic lawn care products, and to pressure public officials for protection from the aesthetic use of pesticides.

A report by the Toxics Action Center reveals ChemLawn's aggressive marketing practices and analyzes the 32 pesticide products the company markets to its household customers. More than half of the products include ingredients identified by the U.S. Environmental Protection Agency (EPA) or the World Health Organization as possible carcinogens; one-third contain known or suspected endocrine disruptors; and more than a quarter contain reproductive toxins. Over 40%

of the chemicals on ChemLawn's list contain ingredients banned in other countries, and all products in their arsenal pose threats to water supplies, aquatic organisms and nontarget insects.

Each year, homeowners apply at least 90 million pounds of pesticides to their lawns and gardens. Home use of pesticides rose 42% between 1998 and 2001 and now represents the only growth sector of the U.S. pesticide market. Pesticides are also applied more intensively for lawn care, with applications rates between 3.2 to 9.8 pounds per acre for lawns, as opposed to agricultural averages of 2.7 pounds per acre.

This intensive pesticide use occurs where children, who are more vulnerable than adults to the effects of pesticide exposure, live and play. The Toxics Action Center report notes that "children's internal organs are still developing and maturing and their enzymatic, metabolic, and immune systems provide less natural protection than those of an adult." Researchers are increasingly identifying several especially vulnerable stages of child development, including fetal and adolescent developmental windows, in which chemical exposures can permanently alter future development.

Pesticides applied on residential and commercial lawns can migrate indoors. An EPA study found that residues from outdoor pesticides are tracked in by pets and by people's shoes, and can increase the pesticide loads in carpet dust as much as 400-fold. Pesticides can also persist for years within homes, where they do not degrade from exposure to sunlight or rain.

TruGreen ChemLawn sells its services through aggressive telemarketing campaigns, one of which was an arrangement with the US Youth Soccer program to market services to parents of soccer-playing kids. Under pressure from public health and environmental groups, US Youth Soccer ended its relationship with TruGreen ChemLawn in January of this year. A number of states have penalized the company for its aggressive and misleading marketing.

Both consumer campaigns emphasize nontoxic lawn care alternatives. Groups such as the Northeast Organic Farming Association (NOFA) regularly train and certify professionals in pesticide-free landscaping services. The Coalition for Pesticide-Free Lawns, representing groups across the nation, notes the number of communities that have adopted a precautionary approach, including a Natural Yard Care Program by local government in the Seattle area, and the 70 Canadian cities that have restricted or banned the aesthetic use of pesticides.

For more information, visit www.RefuseToUseChemLawn.org/ or www.beyondpesticides.org/pesticidefreelawns/.

Sources: "Refuse to Use Lawn Chemicals," Pesticide Action Network Updates Service, April 15, 2005; "Refuse to Use ChemLawn, Be Truly Green, Why Lawn Care Pesticides are Dangerous to Your Children, Pets and the Environment," Matthew Wilson and Jay Rasku, Toxics Action Center, March 2005, 44 Winter Street, Boston, MA 02108; Backgrounder, National Coalition for Pesticide Free Lawns, Beyond Pesticides, www.beyondpesticides.org/pesticidefreelawns.

Contact: Toxics Action Center, info@toxicsaction.org, 617-292-4821; Beyond Pesticides, 202-543-5450; Defenders of Wildlife, 202-772-0237

Conventional Blueberries to be Ground Sprayed

Maine's two largest blueberry growers, Cherryfield Foods Inc. and Jasper Wyman & Sons, will no longer apply pesticides aerially, but will switch to ground-based spraying. Environmental groups (Toxics Action Center, Environment Maine, the Sierra Club and Beyond Pesticides) had threatened to sue the companies under the Clean Water Act, saying that aerial sprays drift into sensitive waters and threaten natural resources.

Source: "Blueberry grower agrees to halt aerial pesticide spraying," by John Richardson, Portland Press Herald, April 7, 2005

EPA Won't Test Pesticides on Children

Acting EPA director Steve Johnson has terminated a Florida program called CHEERS, cosponsored by the Environmental Protection Agency and the American Chemistry Council, that planned to pay low income families that continued to expose their children to pesticides. The Children's Health Environmental Exposure Research Study (CHEERS), would have paid \$970 over two years if parents in Duval County, Florida, who regularly used pesticides in their homes would continue such use around their young children.

Source: "EPA cancels program testing pesticides on young children," by John Byrne, at http://rawstory.com/exclusives/byrne/epa_cheers_cancelled_boxer_408.htm

OMB Undermines Guidelines on Cancer Risk

This spring, the U.S. Environmental Protection Agency (EPA) revised 20-year-old standards for assessing the risks of cancer from exposures to environmental pollutants. The new guidelines acknowledge the mounting evidence that children under two years of age are 10 times more likely than adults to get cancer from certain chemicals, but the new guidelines may never take effect, because the White House Office of Management and Budget (OMB) has added language to the regulations that will allow industry to block their implementation.

Cancer risk assessment guidelines provide a blueprint for agency regulators to determine the risks of cancer in humans from exposure to a certain chemical and to set allowable residues of pesticides or other chemicals in food, air, water, waste and contaminated sites. When the first risk assessments were adopted in 1986, little was understood about the vulnerability of different subpopulations to adverse health effects from chemical exposure. The new guidelines seek to correct this. "EPA notes that childhood may be a lifestyle of greater susceptibility for a number of reasons, such as rapid growth and development that occurs prenatally and after birth, differences related to an immature metabolic system, and differences in diet and behavior patterns that may increase

exposure." The EPA also designed the guidance to reflect new evidence as it becomes known.

The regulations, including the children's supplemental guidelines, were issued by EPA in March 2003. In its review, the agency's Scientific Advisory Board agreed with EPA's conclusion that early-life exposures to chemical pollutants increase cancer risk and recommended the guidelines be finalized as written.

Instead, the guidelines went to OMB for review and sat there for two years. Finally, OMB added language allowing the chemical industry or an outside party to challenge the way the guidelines are applied for chemical assessment in a process termed "expert elicitation." The OMB also inserted the requirement that EPA assessments meet OMB standards for implementation of the Data Quality Act, an obscure piece of legislation written by an industry lobbyist and slipped into an appropriations bill in 2000 with little debate. The two-sentence Act requires OMB to ensure that all information disseminated by the federal government is reliable. The Data Quality Act has been used primarily by industry to forestall regulation.

The Washington Post found that 32 of 39 petitions filed during the first 20 months of the Data Quality Act were filed by regulated industries, business or trade organizations or their lobbyists. Among those was an American Chemistry Council petition that challenged data used by the Consumer Product Safety Commission for a ban on the use of wood treated with heavy metals and arsenic in playground equipment. Another petition, filed for Syngenta, argued that atrazine should not be restricted as an endocrine disruptor, despite hundreds of pages of scientific evidence, because EPA had not yet established a "regulatory endpoint" or official measurement for endocrine disruption.

Consumers, environmental groups and worker advocates argue that the Data Quality Act is biased in favor of industry, since it asks the government to use only data that have achieved a level of certainty rare in statistical or epidemiological research. Thus scientific information that should trigger regulation is discounted.

Sources: Pesticide Action Network Updates Service, April 8, 2005, www.panna.org; US EPA, "Guidelines for Carcinogen Risk Assessment" and Supplemental Guidance on Risks From Early-Life Exposure; OMBWatch, April 4, 2005, www.ombwatch.org; The New York Times, April 4, 2005; Washington Post, August 14, 2004; Davis, Devra, When Smoke Ran Like Water, Tales of Environmental Deception and the Battle Against Pollution, 2002, Basic Books, New York, N.Y.

Monsanto Warns Two Billion Farmers: Stop Saving Seeds

Since the advent of farming, farmers have collected seeds at harvest to have enough seed for the next year's planting. Concerned that seed saving by farmers reduces their profits, seed and biotech giants like Monsanto have rammed through controversial "intellectual property laws" in numerous countries that make traditional seed saving a crime. Last year, Monsanto harassed and/or sued more than 500 U.S. farmers who saved their seeds,

forcing them to pay the company over \$15 million in fines and/or serve up to eight-month long prison sentences.

Source: Consumer Bytes #53, Organic Consumers Association, March 28, 2005; www.organicconsumers.org/monsanto/seedsaving031405.cfm [Note: The Center for Food Safety has a toll-free hotline for farmers who are being sued or threatened by Monsanto: 1-888-FARMHLP. See also www.centerforfoodsafety.org.]

Judge Rules Against One Million Vietnamese in Favor of Monsanto

On March 10, conservative Judge Jack B. Weinstein ruled against compensating Vietnamese children and adults who have suffered serious health damage due to the intensive spraying of the herbicide Agent Orange during the Vietnam War. Agent Orange was widely applied to remove forest cover, despite being categorized as a highly toxic dioxin to humans. Monsanto Corporation (the original producer of Agent Orange), Dow and others claimed the chemical is not toxic, even though it is banned globally now for that very reason. Over a million Vietnamese suffer serious health problems, ranging from cancer to birth defects, due to exposure to Agent Orange, which persists in the nation's environment. Birth defect rates are among the highest in the world where Agent Orange was applied. Children are frequently born without eyes, limbs, or are even missing internal organs. Weinstein claimed that pesticides and birth defects are not related, saying, "There is no basis for any of the claims of plaintiffs. The case is dismissed."

Source: Consumer Bytes #53, Organic Consumers Association, March 28, 2005; www.organicconsumers.org/Politics/agentorange031405.cfm

Birth Defect Rates Skyrocket on Florida Farms

The state of Florida launched an investigation in March 2005 into illegally exposing migrant workers to pesticides. At least 4,609 pesticide regulations were violated in the last 10 years, but only 7.6% of those resulted in penalties. Thus, migrant farm workers unknowingly face highly dangerous working conditions in order to supply the nation with cheap produce. For example, in Immokalee, Florida, migrant workers in pesticide-intensive tomato fields have witnessed three children born with severe birth defects in the last three months. "People have mentioned to me that maybe this has to do with chemicals," says Francisca Herrera, who was told it was "safe" to work in the tomato fields for most of her pregnancy. Recently Francisca's baby was born without arms or legs.

Source: Consumer Bytes #53, Organic Consumers Association, March 28, 2005; www.organicconsumers.org/OFGU/birthdefects031405.cfm

Activists Urge Lindane Ban

Indigenous and environmental health advocates from the United States, Mexico and Canada testified in San Diego in March, in front of the Commission for Environmental Cooperation (CEC), in support of eliminating lindane, a pesticide that persists in air and water and has been

found at high levels in the Arctic. The Commission designated a task force in 2002 to reduce exposure to lindane, but so far the U.S. government has blocked a continent-wide ban.

Advocates hosted a "Lindane Lunch" for government officials attending the meeting, serving traditional and common foods known to be contaminated by lindane. On the menu were salmon, halibut and muktuk (whale meat) from Alaska--all important in the traditional diet of Arctic peoples--as well as common foods that the U.S. Food and Drug Administration has found to be contaminated by lindane, such as pickles, mixed nuts, chocolate chip cookies and wheat bread. Human breast milk, found to contain lindane in studies around the world, was also on display.

"We wanted to offer the government officials a taste of our concern," explained Shawna Larson from the Indigenous Environmental Network in Alaska. "The task force's decisions have a real impact on our food and way of life in the Arctic, where lindane is the most abundant pesticide found in our air and water."

In 1997, the Northern Contaminants Program estimated 15 to 20% of Inuit women on southern Baffin Island are exposed to dangerous levels of lindane in their daily diet. They are not alone. An average local diet in any region of the world was found in 2003 to include 3.8 to 12 times the "Allowable Daily Intake" of lindane set under Codex Alimentarius, the United Nations system of food standards.

Lindane can cause seizures, damage to the nervous system and weaken the immune system. Research shows a significant association between brain tumors in children and the use of lindane-containing shampoos for lice control. The insecticide is also a suspected carcinogen and hormone disruptor.

Mexico has committed to phase out all uses of lindane, and Canada is phasing out all agricultural uses. However, the U.S. continues to treat corn, wheat and a handful of other grains with an annual average of 142,000 pounds of lindane. Lindane is also used to control head lice and scabies in the United States and Canada, even though 52 other countries have banned the pesticide.

Lindane contaminates urban sewer systems and sources of drinking water. The Los Angeles County Sanitation District estimates that one dose of lindane shampoo used as a treatment for head lice contaminates six million gallons of water. Thus, in 2002, California banned lindane shampoos and lotions.

Sources: Press Release, Pesticide Action Network, March 16, 2005; "Ban Lindane Now," Lindane, Fact Sheet, PANNA, March 2005, www.panna.org; Too Toxic for Pets, But not for Children, PANUPS; Lindane, Going, Going, Gone, Lindane Moves closer to Elimination, Global Pesticide Campaigner, Dec, 2003; PANNA, www.panna.org; Lindane RED Facts, US EPA, September 2002, www.epa.gov/REDS/factsheets/lindane_fs.htm

Pesticides in Household Dust

A study of common household dust found pesticides and other chemicals in samples from 70

homes across the United States. Released by Clean Production Action on March 22, 2005, "Sick of Dust: Chemicals in Common Products -- A Needless Health Risk in Our Homes" documents a wide range of chemicals used in common products such as computers, cosmetics and upholstery as well as household and agricultural pesticides in the dust samples.

Every dust sample contained measurable concentrations of five pesticides: cis-permethrin, trans-permethrin, piperonyl butoxide, pentachlorophenol (PCP) and 4,4'-DDT. Six more pesticides were found in some samples, including alpha- and gamma-chlordane, chlorpyrifos, deildrin, methoxychlor and propoxur. Researchers tested for 14 pesticides in the study.

Permethrin products are widely used in U.S. homes, yards and gardens and in agriculture (especially in corn, wheat and alfalfa), forestry and public health programs, including use for head lice control. Because of widespread use of these products, the Food and Drug Administration (FDA) routinely finds permethrin residues on food. In 2001, it was among the top 10 most commonly detected pesticides in FDA food samples. Like all synthetic pyrethroids, permethrin products kill insects by strongly exciting their nervous systems. Permethrin is a possible carcinogen and affects male and female reproductive systems and the immune system. Piperonyl butoxide, used in formulations of permethrin, increases the potency of permethrin and related pyrethroids and is a possible carcinogen.

Most exposure to pentachlorophenol (PCP) in the United States comes from its past use on treated wood and soil. Its use has been restricted since 1984, but it is still used as a wood preservative on utility poles and railroad ties. It is a neurotoxin, suspected endocrine disruptor, and possible human carcinogen.

Although DDT was banned from use in the United States in 1972, a recent body burden study by the Centers for Disease Control and Prevention found DDT residues in the blood of 99% of those sampled. It is a probable human carcinogen and has been linked to developmental and reproductive disorders, premature births and reduced lactation in nursing mothers.

Five additional classes of chemicals were found in the dust:

Alkylphenols, from laundry detergents, textiles, hair-coloring, paints and all-purpose cleaners, mimic natural estrogen hormones leading to altered sexual development in some organisms.

Organotin compounds are found in PVC (polyvinyl chloride) water pipes, PVC food packing materials, glass coatings, polyurethane foams and many other consumer products. They are very poisonous even in small amounts. They can disrupt the hormone, reproductive and immune systems. Animal studies show that exposure early in life can have long-term effects on brain development.

Perfluorinated organics are used to make Teflon, Goretex and other oil-, water- and stain-resistant materials for nonstick frying pans, utensils, stove hoods, stain-proof carpets, furniture and clothes. These chemicals can damage organ function and sexual development in lab animals, and are potentially carcinogenic.

Phthalates are used primarily in vinyl (PVC) products, such as shower curtains, raincoats, toys, furniture and flooring, and in paint, pesticides and personal care products (perfume, nail polish, hairspray). They disrupt reproductive systems in animal studies, particularly in male offspring, and can contribute to male infertility. They have been linked to asthma and respiratory problems in children.

Polybrominated diphenyl ethers (Brominated Flame Retardants) are applied to textiles or incorporated into plastics, foams and electrical goods to prevent or slow the spread of fire. They build up in the body and persist in the environment. They damage the development of the nervous and behavioral systems in young animals. American women have the highest levels of these chemicals tested for in breast milk.

“Sick of Dust” authors call for regulatory reform, corporate responsibility and consumer action. They stress the need for national level policy reforms and highlight state governments (including Maine’s) that are taking action in the absence of federal leadership.

Sources: Pesticide Action Network Press Release, “Hazardous Chemicals found in Household Dust Across U.S., New Report Says,” March 22, 2005, www.panna.org; “Safer Products Project, Sick of Dust: Chemicals in Common Products -- A Needless Health Risk In Our Homes,” March 2005, Pat Costner, Beverly Thorpe and Alexandra McPherson. Contact: Clean Production Action, 716-805-1056, info@saferproducts.org; www.safer-products.org

Farm Worker Tests Reveal Routine Pesticide Exposure

On February 8, 2005, national and state farm worker organizations highlighted disturbing medical monitoring results in Washington state. Their report, "Messages from Monitoring," looks at first-year data from a Washington state program that tests farm workers who regularly handle the neurotoxic pesticide groups, organophosphates (OPs) and carbamates (CBs). The report shows that one in five workers tested experiences significant inhibition of cholinesterase--an enzyme essential to proper nervous system function--and faults state and federal agencies for failing to protect farm workers.

Declines in cholinesterase levels can cause nausea, headaches, fatigue and seizures. Further declines can cause more severe effects, including long-term memory loss, paralysis and death.

Of 580 pesticide handlers who received baseline and follow-up tests, 123 (21%) had depressions of more than 20% in cholinesterase concentrations. Of these, 26 (over 4% of the 580 workers) had depressions low enough to trigger removal from pesticide handling jobs under state rules.

Four pesticides were repeatedly involved in serious depressions: chlorpyrifos (Lorsban), azinphos methyl (Guthion), carbaryl (Sevin) and formetanate (Carzol). Most handlers removed for cholinesterase depressions used a mixture of carbaryl and an OP insecticide (chlorpyrifos or azinphos methyl). One common contributing factor at workplaces with depressions was the use of air-blast sprayers towed by tractors to apply the pesticides.

A large percentage of the serious depression cases had no evidence of noncompliance with

federal Worker Protection Standards or pesticide labels. Many case summaries, in fact, noted that growers and their employees exceeded regulatory requirements by wearing a respirator for chlorpyrifos, though this is not required. The report notes that EPA's own analysis predicted that occupational exposures would pose unacceptable risks, "In fact, citing cost-benefit provisions in federal pesticide registration law, EPA has approved continued use of some highly toxic OPs while openly acknowledging that even with full Personal Protective Equipment (PPE) and engineering controls, workers will experience exposures which EPA considers unacceptable, i.e. having Margins of Exposure (MOE) less than 100. Almost all handling scenarios for azinphos methyl pose exposure risks for workers which EPA considers unacceptable, and numerous scenarios for chlorpyrifos do the same."

Problems in the Washington testing may mask evidence of even greater harm. For example, statistical analyses done by the program's Scientific Advisory Committee reveal the risks of false negatives may be as high as 50%; and many depressions may have been missed because too much time elapsed between sample collection and analysis. In other cases, workers reportedly declined monitoring due to actual or perceived employer interference.

The report also notes that Washington state Department of Labor and Industry "chose not to use its enforcement authorities to investigate workplaces where depressions occurred. Even in cases where multiple workers had depressions, the agency adopted a 'consultation' approach." The average interval between receiving test results and performing workplace audits or removals was more than seven days, while workers may have been receiving additional exposures.

"Messages from Monitoring" points out that the Washington monitoring program tests pesticide handlers and not field workers, despite literature demonstrating routine pesticide exposure among field workers and their families. Finally, the report faults the government for failing to promote alternatives to these dangerous pesticides, and calls on state agencies and the federal government to end the use of the most risky pesticides, including azinphos methyl, chlorpyrifos and other highly toxic OPs and CBs, and to require cholinesterase monitoring nationally.

Source: Pesticide Action Network Updates Service, Feb.18, 2005, www.panna.org; "Messages from Monitoring," Farm Worker Pesticide Project, Farmworker Justice Fund, United Farm Workers, www.fwjjustice.org; Farm Worker Pesticide Project, 206-729-0498, PANNA

Plant Genetics

Plants Can Repair Errors in Genes

Plants inherit genetic information from their ancestors and can use it to correct errors in their own genes--a startling capacity for DNA editing and self-repair wholly unanticipated by modern genetics. The newly discovered phenomenon, which resembles the caching of early versions of a computer document for viewing later, allows plants to archive copies of genes from generations ago, long assumed to be lost forever. Then, plants apparently can retrieve bits of code from that archive to overwrite genes they have inherited directly. The process could offer survival advantages to plants suddenly burdened with new mutations or facing environmental threats for which older genes were better adapted.

Scientists predicted that by harnessing the still-mysterious mechanism, they would be able to control plant diseases and create novel varieties of crops. If the mechanism can be invoked in animals--as some tantalized scientists venture may be possible--it may offer a revolutionary way to correct genetic flaws that lead to cancer and other diseases.

"We think this demonstrates that there is a parallel path of inheritance that we've overlooked for 100 years, and that's pretty cool," said Robert E. Pruitt, professor of botany and plant pathology at Purdue University in West Lafayette, Indiana, who oversaw the studies with co-worker Susan Lolle.

The finding represents a "spectacular discovery," wrote German molecular biologists Detlef Weigel and Gerd Jurgens in a commentary accompanying the research in *Nature*. The existence of an unorthodox inheritance system does not overturn the basic rules of genetics worked out by Gregor Mendel in the 1800s, they noted, but it opens a mind-boggling world of possibilities and proves that genetics is still a young science.

"It adds a level of biological complexity and flexibility we hadn't appreciated," said Lolle, who is on leave from Purdue to serve at the National Science Foundation, which funded the work.

The Purdue team began to suspect something unusual while studying a mutation in the mustard family weed *Arabidopsis thaliana*, a popular plant for genetic study. The mutation was in a gene known as *hothead*--one of many related genes, including *fiddlehead*, *airhead*, *pothead* and *deadhead*, that, when mutated, cause abnormalities in stems and flowers.

Arabidopsis plants typically self-fertilize, so when both copies of a gene mutate in a plant, its offspring is bound to be similarly flawed--in *hothead*'s case, exhibiting the parent's mutant flowers. Yet in the Pruitt-Lolle lab, a small but steady percentage of *hothead* offspring had normal flowers, like those of their grandparents. Somehow the mutation--a single misspelled "letter" of genetic code in a gene made of 1,782 molecular letters--was being repaired. Molecular studies indicated that the plants harbored molecular "memories" of versions of their genetic code going back at least four generations -- versions that could serve as templates to correct mutated stretches of DNA.

The team has not found the templates, but evidence suggests they are pieces of RNA (ribonucleic acid) that can be inherited separately from the chromosomes that carry the primary genetic code in cells.

Source: *Agriculture Today*, April 17, 2005; Maine Dept. of Agriculture;
http://www.maine.gov/agriculture/newsletter/feature_15.htm

School Food

National Farm to Cafeteria Conference

On June 16-18, 2005, Farm Aid and the Community Food Security Coalition, Kenyon College in Ohio, Food Routes, the Center for Food and Justice and the Ohio Ecological Food and Farm Association will present the second national Farm to Cafeteria conference at Kenyon College in Gambier, Ohio.

The conference, entitled "Putting Local Food on the Table: Farms and Food Service in Partnership," is designed to bring family farmers together with institutional food distributors, buyers and preparers. The gathering will offer workshops, presentations, field trips and a film festival.

Keynote speakers are Marion Nestle, author of Food Politics, and David Kline, author of Great Possessions: An Amish Farmer's Journal.

For more information, visit www.foodsecurity.org.

UK Schools Going Organic

Prime Minister Tony Blair has announced a new government-based "School Food Trust," wherein junk foods will be removed from schools, while organic "made-from-scratch" meals will be instituted. According to Blair, "If changes are made it will only be a matter of months before British health, education and farming could be affected for the better. It could be one of the biggest food revolutions that England has ever seen."

Source: Organic Consumers Association, March 28, 2005;
www.organicconsumers.org/organic/blair032105.cfm

Seeds

Monsanto Buys Seminis

Monsanto Co. has bought Seminis Inc. of Oxnard, California. Siminis supplies seed of more than 3,500 varieties to commercial growers, seed distributors and dealers. Other Monsanto labels include DeKalb and Asgrow. The billion dollar acquisition makes Monsanto the largest seed dealer in the world.

In response to the purchase, CR Lawn of Fedco Seeds sent letters to all customers who had ordered after mid-January, asking whether Fedco should drop the Seminis/Monsanto varieties, keep them and give them a supplier code of 6 (their own code) or keep them and retain Seminis' current supplier code of 5. A revision made to the letter on Feb. 18 offered an additional choice: to phase out Seminis varieties over two to three years. Of about 950 responses, 53% voted to drop and 17% to phase out Seminis seeds, and the Fedco staff overwhelmingly favored dropping or phasing out the Monsanto varieties.

Fedco had decided to purchase a one-year supply of most of the Seminis varieties before the merger was completed (the estimated date for the transfer is late summer, 2005). That purchase is now complete and the seeds are in house. Fedco will not replace seed stocks of these varieties

when they run out and will not do business with Monsanto. The varieties will be listed in the Fedco catalog with a warning to gardeners and farmers that they are due to be discontinued from Fedco's selection. Fedco will look for suitable replacements for hybrid varieties in its trials and will try to find alternative sources of open-pollinated varieties. In some cases, Fedco's network of farmer seed-growers may be able to produce these. Additional rationales for Fedco's decision will be prominently featured in its 2006 catalog.

Rob Johnston Jr. of Johnny's Selected Seeds says that Johnny's relationship with Seminis is unlikely to change as a result of the Monsanto acquisition, since its use of Seminis as a product source has been purposely declining over the years.

"Seminis was founded on the consolidation by the new owners of several independent seed companies," says Johnston. "The focus of the consolidated company has been on big acreage world market opportunities, which tend to have different product needs than our core customer, which is the specialty and small commercial grower and critical home gardener."

For several years Johnny's has been finding improvements from other sources to replace Seminis products. Presently the company carries some 30 Seminis products. "They're good varieties, but our customers won't miss them as we replace them with better ones," says Johnston.

Source: "Monsanto Buys Seminis," by Matthew Dillon, *The New Farm*, Feb. 22, 2005; www.newfarm.org/features/2005/0205/seminisbuy/index.shtml. Fedco Seeds letter to customers, Jan. 25, 2005. Personal communication with CR Lawn and Rob Johnston.

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Animal Rights

Lawmakers Promoting Stiffer Penalties for 'Ecoterrorism'

Lawmakers in Ohio, New York, Missouri and Pennsylvania are promoting bills that make attacks by radical animal-rights activists and environmentalists subject to stiffer penalties. California passed such an "ecoterrorism" law in 2003.

A 1992 federal law prohibits interfering with "an animal enterprise," but its enforcement can be challenging, and some say the new state ecoterrorism bills could allow more federal terrorism prosecutions under the Patriot Act. For example, Ohio's proposed legislation would add attacks on lawful animal activities such as food processing, farming and hunting to the list of offenses that could be prosecuted under state racketeering law, allowing the state to seize assets after a conviction or sue if the suspect is acquitted.

The Humane Society of the United States opposes using violence in the name of protecting animals but considers the bills too broad, according to Humane Society lobbyist Julie Janovsky. The New York and Missouri bills, for instance, would outlaw videotaping without permission in private labs and farms. "At the root they are trying to prohibit investigations into animal cruelty," Janovsky said.

Source: Agriculture Today, June 10, 2005; Maine Department of Agriculture;
www.maine.gov/agriculture/newsletter/nb8.htm

Antibiotics

FDA Bans Cipro-like Drugs in Poultry

The Keep Antibiotics Working (KAW) coalition commended newly confirmed U.S. Food and Drug Administration (FDA) Commissioner Lester Crawford for issuing, on July 28, 2005, a precedent-setting, final decision to withdraw approval for use of Cipro-like antibiotics in poultry (www.fda.gov/oc/antimicrobial/baytril.pdf). This is the first time FDA has withdrawn an agricultural antibiotic from the market because of concerns about antibiotic resistance affecting human health. The ban, proposed in October 2000, took nearly five years to finalize because of procedural delays created by Bayer Corp., the only manufacturer of the drug, whose trade name is Baytril. Both Baytril and Cipro are members of the fluoroquinolone class of antibiotics.

FDA has shown that use of Baytril in poultry reduces the effectiveness of Cipro in treating *Campylobacter*, one of the most common causes of severe bacterial food poisoning. The most recent data from the Centers for Disease Control and Prevention show that resistance to Cipro in *Campylobacter* in humans had risen to 21% as of 2002; when Cipro-like drugs were first approved for use in poultry in 1995, such resistance was negligible. Bayer claims that Baytril is critical for poultry production, but most top poultry producers say they no longer use these drugs in chickens produced for human consumption.

The decision takes effect September 12, 2005, but implementation could be delayed if Bayer requests a stay from FDA or from the courts.

Source: Press release, July 28, 2005, Terri Stiffler, Staff Scientist, Environmental Defense, 1875 Connecticut Ave., NW, Suite 600, Washington, D.C. 20009; ph.: (202) 387-3500 x3396; Fax: (202) 234-6049; tstiffler@environmentaldefense.org
www.keepantibioticsworking.com

Ethanol

Better Barley for Ethanol Production

Barley could be an alternative grain for ethanol producers who can't afford to ship corn from the Midwest to processing plants in eastern and western states, where barley grows well. But low starch content in most barley varieties (50 to 55% compared with 72% in corn) gives lower ethanol yield, say researchers at the Agricultural Research Service Eastern Regional Research Center (ERRC) in Wyndmoor, Pennsylvania, who are helping to create new barley varieties with more starch.

Barley hulls are very abrasive and cause expensive wear on grain handling and milling equipment. Removing the hull and other nonstarch components of the kernel before fermentation

for ethanol would greatly improve the process. Also, because barley contains a polysaccharide called beta-glucan that makes its mash too sticky to mix, ferment and distill economically, researchers are developing processes to remove beta-glucans before fermentation. They're also studying ways to separate low-starch barley kernels into a starch-enriched stream for efficient ethanol production. Several Virginia hullless lines look promising: They lose their hulls during harvesting, have more starch and protein and less fiber than hulled varieties.

Source: Agricultural Research Service News Service, USDA; Jim Core, (301) 504-1619, jcore@ars.usda.gov, July 12, 2005. For more information, see the July 2005 issue of Agricultural Research at www.ars.usda.gov/is/AR/archive/jul05/barley0705.htm.

Debate Over Corn-Based Ethanol Fuel

Scientists have found that the amount of energy that corn-based ethanol provides is less than the amount of energy it takes to grow the corn and manufacture the ethanol in the first place. In contrast, sugar beets produce twice as much energy, and sugar cane yields eight times as much energy as is needed to produce the ethanol. Yet legislation passed in the United States subsidizes corn-based ethanol production. For a discussion of this issue, see www.organicconsumers.org/chat/index.php.

Source: Organic Bytes #61, 7/12/2005, www.organicconsumers.org.

Genetic Engineering

Efforts Seek to Protect Farmers, Consumers from GMOs

Three bills were considered in the New York State Assembly this spring: one would legally define GMOs (genetically modified organisms) and require that GM seeds be labeled; another would place the liability on the manufacturer of GE (genetically engineered) seeds or plants for contamination of non-GE crops that have markets that demand that they be GE-free. A third would provide a cause of action for growers against the manufacturer if contamination by GMOs occurs, and would prohibit a manufacturer of GE seeds from suing a farmer for patent infringement if GE plants were found in fields and were not sown by the farmer. (Source: Press Release, June 15, 2005, Northeast Organic Farming Association of New York (NOFA-NY), Sarah Johnston, Executive Director, (518) 922-7937, sarahjohnston@nofany.org.)

Likewise, the organic sector, prompted by African and other Third World countries, called for strict liability when the Conference of the Parties serving to the Cartagena Protocol on Biosafety met in Montreal this spring. There, the International Federation of Organic Agriculture Movements (IFOAM) cited the danger that GE agriculture represents for the biosphere and the economic and environmental risks it poses for organic producers.

Organic agriculture is sustainable, ensures food safety and security, has a growing market, and enhances biodiversity and livelihoods. According to IFOAM's study *The World of Organic Agriculture: Statistics and Emerging Trends 2005*, 36 countries were organic mega-countries in 2004, i.e., over 50,000 hectares of certified organic land were cultivated in each. Over 26

million hectares are certified worldwide, generating over \$25 billion in revenue in 2003. Organic food production, processing and handling cannot use GMOs.

The International Service for the Acquisition of Agri-Biotech Applications (ISAAA) reported 14 biotech mega-countries in 2004 – countries where more than 50,000 hectares of biotech crops were grown—but its figures are dubious. For instance, the report claims that 500,000 biotech hectares were grown in South Africa, but Agricultural Biotechnology in Europe, an industry coalition, and a team from the University of Reading in the United Kingdom say that the ISAAA's figures are exaggerated by factors of 20 and 30, respectively. A report from GRAIN (www.grain.org) demonstrates that only 700 of 3,000 farmers who originally grew Bt cotton in South Africa continue to do so, and many of these farmers are now perilously in debt. Also, 98% of the world's GE crops are grown in only four nations – the United States, Canada, Argentina and China.

Biotech crops, planted indiscriminately without substantive regulations, often increase reliance upon dangerous pesticides, create super-weeds and destroy biodiversity. They contaminate major food crops with undesirable characteristics, and the biotech industry should be held liable for such contamination under the Cartagena Protocol on Biosafety, IFOAM says. Biotech crops containing industrial enzymes, pharmaceuticals, viruses, antibiotic resistance markers and other traits have been planted in large-scale field tests in the United States, but crops are not tested for contamination with these products.

Alternatively, organic agriculture ensures food security and safety for future generations, distributes income more equitably, and documents its claims. Organic agriculture also increases or stabilizes yields in developing countries, particularly in marginal and semi-arid areas, increasing productivity without depending on unaffordable chemicals. The IFOAM Basic Standards include social standards that protect workers' rights. (See www.ioas.org and www.isealalliance.org/)

Source: IFOAM Press Release, Gerald A. Herrmann, Executive Director, IFOAM Head Office: Charles-de-Gaulle-Str. 5, 53113 Bonn, Germany. www.ifoam.org, headoffice@ifoam.org. IFOAM's Position on Genetic Engineering is posted at www.ifoam.org/press/positions/ge-position.html. To order *The World of Organic Agriculture: Statistics and Emerging Trends 2005*, see www.ifoam.org.

Problem-Plagued GE Industry Fights Local Regulation

Fifteen states have introduced (and 11 of these have passed) legislation to remove local control of plants and seeds. These bills were reactions to local efforts to restrict cultivation of genetically engineered (GE) crops, livestock and other organisms. “These laws are industry’s stealth response to a growing effort by people to protect their communities at the local level,” write Britt Bailey and Brian Tokar, who compare the GE industry’s maneuvering with that of the tobacco industry in the past and quote Tina Walls of Phillip Morris & Co.: “By introducing preemptive statewide legislation, we can shift the battle away from the community level back to the state legislatures where we are on stronger ground.”

That ground is strengthened when industrial agriculture (including some Farm Bureau chapters) and associated businesses fund selected legislators. The American Legislative Exchange Council (ALEC), consisting of over 2000 state legislators and over 300 corporate sponsors, supports removing local control over laws limiting GE agriculture and regulating pesticides. Bailey and Tokar counter that local actions, especially regarding GMOs, “address important gaps in federal and state policy, and mitigate potentially serious threats to public health, the environment, and survival of local farm economies.” (See “Industry Aims to Strip Local Control of Food Supply-- New Laws Being Pushed by Industry Prevent Local Decisions About Plants and Seeds,” by Britt Bailey and Brian Tokar; May 26, 2005, www.zmag.org/content/print_article.cfm?itemID=7942§ionID=13. To track seed pre-emption legislation, see www.environmentalcommons.org/gmo-tracker.html.)

In North Carolina, for example, House Bill 671 and Senate Bill 631 aim to prevent municipalities from passing any ordinance, regulation or resolution to control any plant or plant pest (including invasive plant species). Only the state Department of Agriculture could regulate plants. Interestingly, Ventria Bioscience has a permit for an open-air, experimental plot of “pharma” rice, engineered with synthetic human genes to produce artificial human milk proteins, in North Carolina—a permit that was opposed in California and Missouri, where farmers and others feared that the pharma rice would contaminate conventional rice. (“A growing stake in the biotech crops debate,” by Hope Shand Carrboro; The News & Observer (Raleigh, North Carolina); May 19, 2005; www.newsobserver.com/opinion/columns/story/2420322p-8797890c.html.)

Meanwhile, the biotech giant Syngenta has provided a notorious example of the need for control over GE crops: It inadvertently sold an unlicensed strain of GE corn to U.S. farmers for four years. Approximately 146,000 tons of the corn, containing an antibiotic resistant gene, was marketed in the U.S., Europe and Asia as animal feed and corn flour.

Syngenta’s corn was engineered with *Bacillus thuringiensis* (Bt) genes to control European corn borers. Its Bt11 corn was approved for food, animal feed and cultivation; but from 2001 through 2004, Syngenta unintentionally sold unapproved Bt10 corn, later claiming that Bt10 and Bt11 differed only in placement of the Bt gene in the plant's genetic structure, like “two compact discs that have identical songs but with one song appearing in a different order.” But Bt10 also contains a gene for resistance to the common antibiotic ampicillin, so the crop could spread antibiotic resistance.

The USDA fined Syngenta \$375,000 and required that it sponsor a conference on compliance training. The EU now requires testing imports of corn gluten feed and brewers grain for Bt10, and the EU's Joint Research Centre is building a database of detection methods for all GMOs.

Sources: “Public In the Dark as Illegal GE Corn Enters Food Supply,” Pesticide Action Network Updates Service, April 19, 2005; Nature, 434, 423 News, March 22, 2005, Nature 434, 548 March 29, 2005, www.nature.com; International Herald Tribune, April 5, 2005; Interpress News Service, April 14, <http://ipsnews.net>; European Food Safety Authority Statement, April 12, 2005, www.efsa.eu.int/press_room/press_statements/884_en.html; Des Moines Register, March 23, 2005; Associated Press, April 25, 2005; Europe Information Service, April 27, 2005;

www.nytimes.com/2005/04/06/business/worldbusiness/06corn.html?ex=1114401600&en=2f37e3781d271b80&ei=5070.

Also highlighting the need for more control of GE crops is news that internal Monsanto documents show damage to lab rats fed Monsanto's new MON 863—a GE, rootworm-resistant corn. Rats who consumed the corn had smaller kidneys and blood abnormalities. Monsanto claims that the results are inconsequential, but scientists and British ministers want further studies. MON 863 has been grown commercially in the United States since 2003. (“Revealed: health fears over secret study into GM food,” by Geoffrey Lean, *The Independent*, May 22, 2005; http://news.independent.co.uk/world/science_technology/story.jsp?story=640430; ATTRA Weekly Harvest Newsletter, May 25, 2005; *Organic Bytes* #58, May 24, 2005, www.organicconsumers.org/monlink.htm.)

Biotech crops should face tighter control for environmental reasons, as well. In *Genetically Engineered Crops and Pesticide Use in the United States: The First Nine Years, 2004*, Charles Benbrook reveals that farmers now use more pesticides on the top three GE crops—corn, soybeans and cotton—than on conventional varieties. He predicts that the intensity of herbicide use on GE crops will not subside soon because of the popularity of varieties that tolerate glyphosate, the limited supply of seeds for non-GE varieties, and increasingly aggressive pesticide industry campaigns. (Free download at www.ucusa.org/food_and_environment/biotechnology/page.cfm?pageID=1542. Contact Union of Concerned Scientists, 2 Brattle Square, Cambridge, MA 02238-9105; (617) 547-5552; www.ucusa.org/.)

There is good news: Alaska has passed a bill requiring that GE fish be labeled (www.organicconsumers.org/ge/alaskabill051105.cfm); and Dr. Ignacio Chapela, who was denied tenure at U.Cal. Berkeley after speaking out about GE crop contamination, has announced that the University will reverse that decision—thanks, in part, to a massive letter writing campaign organized by the Organic Consumers Association. (Source: www.organicconsumers.org/ge/ignacio052305.cfm).

In helpful news, GeneWatch UK and Greenpeace International launched a searchable, online register of GE contamination incidents at www.gmcontaminationregister.org. (ATTRA Weekly Harvest Newsletter, June 9, 2005)

Herbs

Herb Fest A Perfect Warm-up for MOFGA Fairgrounds
By Mila Paul

Herbalists gathered their resources on June 4, on a small part of the MOFGA's Common Ground Education Center, for Herb Fest 2005. This late spring festivity, the 10th Annual Herb Fest of Maine, organized by the nonprofit Herb Fest of Maine, featured enthusiastic merchants and wonderful food choices in the Exhibition Hall and on the grounds. Something of a precursor to the Common Ground Fair, Herb Fest managed to cover the grounds with people interested in herbal healing and growing plants.

The grounds were lush green in their early June glory, with herbs and other plantings just beginning to show their strength. Herb walks focused on plants growing on the grounds.

Mark Fulford's talk, "Growing Herbs," concerned the proper soil fertility for herbs and other plants. Fulford urged caution in adding wood ash to soil because it is harsh and can burn plants. [It can quickly make the pH of soil unacceptably high.]

At a "Traditional Northern Maine Herbal Apothecary," Natalia Bragg emphasized the use of fresh, raw onion and garlic juices for health and healing. The antibiotics in onions and garlic strengthen the immune system to fight flu and colds. These Alliums also help banish high blood pressure, poor blood circulation and hypertension headaches, she said.

While volunteers cleaned up after Herb Fest, many of us spoke with anticipation of the Common Ground Country Fair in September, where many members of the wonderful HerbFest community will meet again.

For information about next year's Herb Fest, contact Janet Edwards at mtnmama@kynd.net.

Livestock

Cost-Share Program for Scrapie Genotype Testing

The American Sheep Industry Association (ASI) is cooperating with the USDA's Animal and Plant Health Inspection Service (APHIS) to help sheep producers have rams genotyped for scrapie susceptibility/resistance. Producers in states lacking state-APHIS cooperative ram genotyping programs have until Sept. 15, 2005, or when funds are exhausted (whichever comes first), to test up to 10 rams and be eligible for a cost-share reimbursement. Maine producers can participate in the program by having an accredited veterinarian collect blood samples from rams and send them to any APHIS-approved laboratory along with a properly completed "APHIS VS Form 5-29." (See www.sheepusa.org.) An original form (not a photocopy) must be completed accurately to receive reimbursement. Original forms are issued to accredited veterinarians by APHIS and have several colored carbon pages and a unique serial number. This form must be signed by your veterinarian. Send one carbon copy of "APHIS VS Form 5-29" to ASI (9785 Maroon Circle, Suite 360; Englewood, Colo. 80112) with a note requesting a cost-share return. ASI will send a check for \$12 per ram tested to the producer. For more information contact Paul Rodgers (303) 771-3500, prodgers2@earthlink.net, or Judy Malone (303) 771-3500, ext. 35, judym@sheepusa.org.

BSE Update

The diagnosis in June 2005 of bovine spongiform encephalopathy (BSE) in a 12-year-old Texas cow is the second in the United States. The first case of BSE in the Washington state, in December 2003, was in a cow imported from Canada. Thus, the 12-year-old Texas cow is the first "home-grown" case of the fatal brain disease.

The Texas animal arrived dead at a pet food plant in Texas in November 2004 and was tested for BSE at that time. Initial screening was inconclusive, so the sample was sent to the National Veterinary Services (NVSL) lab in Ames, Iowa, for confirmatory testing by immunohistochemistry (IHC). The result of this test was negative, but when the sample was tested again, this time by a test commonly used in Europe called the Western blot, results were weakly positive. Finally, the USDA sent the sample to the BSE World Reference Laboratory in Weybridge, England, where it tested positive. This animal was incinerated and never entered the human or animal food supply.

On June 1, 2004, the USDA, in cooperation with states and industry, implemented an enhanced surveillance program for BSE in the United States. The USDA's BSE testing protocol requires testing of emaciated or injured cattle, cattle that exhibit central nervous system disorders, cattle unable to rise or to walk normally, and cattle that die of unknown causes. Since June 1, 2004, brain tissue samples from more than 394,000 cattle have been tested in the United States and were negative for BSE. Of those, 831 cattle have tested negative in Maine (3,096 in New England, all negative).

The U.S. has taken preventive measures against the introduction of BSE since 1989, when prohibitions were placed on cattle and other ruminants from BSE-affected countries. In 1997, the importation ban was extended to all of Europe. The U.S. FDA in 1997 banned use of ruminant-derived protein (from animals such as cattle and sheep) in feed for cattle and other ruminants. There is no evidence that BSE spreads from live animals to animals in the herd, but cattle can be exposed by eating feed that contains rendered protein from infected animals.

Source: Donald E. Hoenig, VMD, State Veterinarian, Maine, in Agriculture Today, Maine Dept. of Ag., July 15, 2005; www.maine.gov/agriculture/newsletter/features.htm

Live-Animal BSE Test to be Available to Canadian Producers by Fall

The new test identifies the presence of Protein 14-3-3, the marker for brain infections, including BSE in cattle and variant Creutzfeldt-Jakob Disease in humans.

All current test protocols for bovine spongiform encephalopathy (BSE) are post-mortem tests requiring several days of laboratory procedures. A new live-animal test--expected to be available to Canadian livestock producers this fall--could change that, at a cost of about \$20 per animal. Vacci-Test Corporation, based in Calgary, Alberta, has created a simple and reliable diagnostic tool for detecting infectious brain diseases, including BSE, in living cattle.

Designed to measure immunity and the presence of infectious diseases in humans and animals, the patented Vacci-Test precisely and quickly evaluates the immune status through a simple blood test. The test can determine the presence of a protein marker, which identifies brain infections such as BSE in cattle. Results are readable in under 30 minutes. The test can also detect the variant Creutzfeldt-Jakob Disease in humans.

Before being marketed, the test must undergo a validation process from the European Food Commission (EFSA) in Brussels, and the Canadian Food Inspection Agency (CFIA). The test, is expected to be available this fall and to cost about \$20 per animal.

Source: Agriculture Today, Maine Dept. of Ag., July 15, 2005;
www.maine.gov/agriculture/newsletter/features.htm.

Mediation

Free Mediation to Resolve Conflicts Between Producers and USDA Programs

A service has been established in Maine to allow a forum for producers and representatives of the USDA to resolve conflicts that may arise with USDA programs. Community Mediation Services in Hallowell now offers the Maine Agricultural Mediation Program, which deals with conflicts between producers and creditors, USDA program staff and others. Conflicts addressed include FSA loan credit decisions, wetland use, rural housing loans, rural development, natural resource issues and others.

Though the mediation service is funded by the USDA and sponsored by the Maine Department of Agriculture, the mediators are neutral parties who do not represent either the USDA or the producers. The mediator provides an opportunity for conflicting parties to sit down and discuss issues that have led to the disagreement.

Here is how it works: When a producer receives an adverse decision letter from the Farm Service Agency, for example, he or she may accept the decision, request a meeting with FSA staff, request a mediation with FSA representatives, or file an appeal. If the producer chooses mediation, the FSA staff will contact Community Mediation Services (CMS) to refer the case for mediation. A CMS staff person will contact the producer to determine the issue, explain the process and find out when and where the producer wishes to attend the mediation. CMS will also ask producers who they would like to have at the mediation, such as a family member, a banker, and/or a specialist such as an accountant or attorney. In this example, FSA will send to the mediation a staff person(s) who is in a position to make decisions for the agency.

Mediation is voluntary, free, quick and confidential to the fullest extent of the law. CMS can usually set up a mediation within two to three weeks, and the mediation itself usually takes around two hours. Ideally, the conflicting parties will be able to come up with an agreement that is acceptable to all parties involved, and the issue will be resolved.

For more information or to request a mediation, call CMS at 621-6848; mediatemaine@aol.com; Community Mediation Services, PO Box 177, Augusta, ME 04332.

Nutrition

Study Finds Correlation Between Disease and Fast Food Restaurants

A controversial study conducted in Ontario found that people living in postal codes with high numbers of fast-food restaurants are more likely to die of heart disease than those living in areas without fast-food outlets. The study found 62 extra deaths per 100,000 residents and 47 more heart disease hospitalizations in areas with the highest concentration of quick-service restaurants (QSR) compared with those with the lowest.

Restaurant associations called the study unscientific and meaningless, adding that it included casual-dining chains along with QSRs. The study's authors cautioned that it was not meant to measure the health effects of eating fast food, but merely noted the correlation, which was consistent across income classes. The study was published in the Canadian Journal of Public Health.

Source: Agriculture Today, June 10, 2005; Maine Department of Agriculture;
www.maine.gov/agriculture/newsletter/nb8.htm

Organic News

Environmental Certification Standard for Flowers

Sustainably grown flowers are influencing the \$16 billion U.S. floral industry. The U.S. organic floral market reached \$8 million in 2003, growing 52% over the previous year. Sales are expected to grow 13% annually through 2008, according to the Organic Trade Association.

Organic Bouquet, the first online organic florist (www.OrganicBouquet.com), and Scientific Certification Systems (SCS) have announced the Veriflora™ certification standard (www.scs-certified.com/csrpurchasing/veriflora/) for the American flower market. The standard is based on advanced agricultural practices, social responsibility, conservation of ecological resources, water conservation, waste management and product quality.

Source: ATTRA Weekly Harvest Newsletter, June 9, 2005

Oakhurst Dairy Distributes Fresh, Organic Milk

In April, Oakhurst Dairy began distributing fresh, pasteurized Organic Valley Milk to retail stores throughout Northern New England. Stanley T. Bennett, President of Oakhurst Dairy, says that the milk is not ultra pasteurized: “Ultra pasteurizing milk imparts a cooked flavor which detracts from its nice, fresh taste.” Also, “the milk comes from cows living and grazing in New England pastures”—including from 35 Maine farmers. “The company that packages the milk, Guida Dairy (New Britain, Conn.), like Oakhurst, is a family owned and operated business,” Bennett continued, and “the milk is produced by family farms, provided by a family-owned dairy and distributed by our Oakhurst family – a natural fit.”

Source: Press release, Oakhurst Dairy

Sidebar

Expanded Horizons

Through growth and acquisitions, U.S.-based Horizon Organics now controls 70% of the U.S. organic retail dairy market and is fully owned by Dean Foods, one of the top 25 food giants globally.

Source: Rachel's Environment & Health News, #817, 5/12/05; www.rachel.org

People

Walkin' Jim Stoltz Multimedia Show to Benefit Chimney Farm

America's unique folksingers and backcountry traveler Walkin' Jim Stoltz, on tour from the mountains of Montana, will bring his powerful multi-media show, Forever Wild, to the Lincoln Theater in Damariscotta, Maine, on Saturday, Oct. 22 at 7:30. The Damariscotta Lake Watershed Association (DLWA) and the First National Bank are sponsoring the concert to benefit conservation of Chimney Farm. The photography, stories and music create an inspiring journey into our nation's last wilderness areas.

Chimney Farm was the home of nature writer Henry Beston (best known for The Outermost House) and children's book author Elizabeth Coatsworth in the mid-20th Century. Their daughter, Kate Barnes, was the first Poet Laureate of Maine, and the current farm caretaker, Gary Lawless, is also a poet. This rural land on Damariscotta Lake in Nobleboro, Maine, inspired all these writers, and their combined works preserve and enhance the tranquil beauty of the historic farm. The DLWA is working to preserve the land and its value to wildlife the watershed, scenic beauty and history, as well as the words.

Walkin' Jim has walked nearly 26,000 miles through North America's wild country, carrying a guitar and writing songs of love and respect for the earth. His show combines live music and poetry with stunning, slides from the Arctic National Wildlife Refuge, Yellowstone, the Yukon walk, the Utah canyon country, the Northern Rockies, and other wild places. Late author Edward Abbey described Stoltz as "a music man of exuberance and passion, with more to say in one song than Frank Sinatra ever managed in a whole bloody concert."

For information and tickets, call DLWA at 207-549-3836.

Permaculture

Barking Frogs Permaculture Courses

Barking Frogs' 10th annual Permaculture Design Course Online cycle begins Sept. 18, 2005. The protocol for the Annual Permaculture Design Course Online is at <http://barkingfrogspc.tripod.com/frames.html>. A list by topic of all Yankee Permaculture titles also may be found at http://csf.colorado.edu/perma/ypc_catalog.html.

Pesticides

BPC News
By Melissa White

Lawn Care Companies to Verify Location of Pesticide Applications

Two neighbors in Bowdoinham who had fertilizer and herbicides applied to their lawns accidentally by TruGreen ChemLawn appeared at the Board of Pesticides Control (BPC) meeting on June 17 to request protection for homeowners from this kind of mistake, arguing that such a mistake could be very costly for the wrong person. For example, organic growers could have their certification jeopardized; and, given that these applications occur unexpectedly, precautions recommended by ChemLawn, such as keeping pets, pet toys and children's toys inside, cannot be followed. A ChemLawn representative assured that the mistake was an honest one: A new driver took a wrong turn and ended up at a place that matched the house descriptions he had been given.

The Board said that this recurring problem needs a solution, that exposing citizens to such a risk is unacceptable. Board member Daniel Simmons said that an unmistakable, positive description of every lawn care client is needed.

A general consensus was that using a CMP meter number is the best positive identification method available and is already being used by other industries. Representatives from TurfCare and ChemLawn indicated a willingness to use this method. The BPC staff will draft a policy requiring positive, unique identification of properties before pesticide applications.

Chapter 27 and 31 Amendments

Amendments that passed to clarify Chapter 27, Standards for Pesticide Applications and Public Notification in Schools, define school grounds as any area regularly utilized for school activities; specify that the integrated pest management coordinator must be a school employee; remove reference to non-volatile liquids and better define pesticide uses that are exempt from notification; require that notice be given to all school staff, parents and guardians within two weeks of the start of every school year; allow applicators to set out bait block, pastes or gels when people are in the same room; eliminate the requirement that heating systems be shut down when space, spot, surface or fumigation applications are conducted; and clarify that outdoor applications must not occur when unprotected persons are in the target area, and must be scheduled to allow maximum time for sprays to dry and vapors to dissipate.

Amendments approved to Chapter 31, Certification & Licensing Provisions/ Commercial Applicator, incorporate previously adopted policies excluding pet groomers and swimming pool operators from Board licensing; specify that applicator licenses are affiliated with a company and terminate when the employee leaves that company (i.e., the applicator retains certification but must acquire a new license when hired by another company); specify that Section 2.A.VII.d includes applicators applying general use pesticides for remedial treatments to utility poles; specify that applicants who fail to appear for exams twice in a row forfeit their exam fees; state that adding a category or upgrading to a Master does not extend the applicator's certification period; increase the five-year certification period to six years to be consistent with a previous

change to biennial licenses; and specify verification procedures that meeting organizers must follow to have their programs eligible for recertification credits and that licensees must follow to earn those credits.

Environmental Risk Advisory Committee

The Board is selecting its new ad-hoc members to the Environmental Risk Advisory Committee (ERAC) in order to meet the legislative directive from the Joint Standing Committee on Agriculture, Conservation and Forestry concerning L.D. 1657, An Act to Minimize the Risk to Maine's Marine Waters and Organisms Posed by the Application of Pesticides. The ERAC will evaluate studies of the potential for pesticides to adversely affect lobsters. The Board will collect resumes and information on potential candidates for presentation at its next meeting.

Consent Agreements

The Board approved three consent agreements. NewLand Nursery & Landscaping, Inc., of Ellsworth delivered the wrong services to a homeowner. The property owner had signed up for a comprehensive landscaping service including "Turf Care," covering insect and weed control. The homeowner, upon learning that pesticide application was included in this package, requested that it not be applied. NewLand notified Scotts, which does the actual application, but Scotts claims that it never received notification, and the applications continued. Since the contract was with NewLand, the consent agreement is with NewLand. The Board expressed a desire for clearer disclosure of products included in NewLand's "TurfCare" in its contract and recommended making changes in writing when an agreement changes.

A consent agreement with Maple Lane Golf Club in Livermore was approved. When the person who had been licensed to apply pesticides to turf left the position, the owner took over pesticide applications without a license.

The third consent agreement was with Ballard's Custom Spraying of St. Albans. A commercial applicator who treats agricultural crops with products that must conform with the federal Worker Protection Standard failed to provide handler safety training to his employee. The applicator was notified of the violation in 2003, but was noncompliant at an inspection the following year.

A Variance Permit was granted to Maine Department of Transportation (MDOT) for 2005 woody brush and roadside grass control programs, provided MDOT continues to adhere to precautionary measures as it has in the past.

[End of BPC News item)

Pimentel Asks: Are Pesticides Worth the Cost?

Environmentalists have long been grateful to Cornell University entomologist David Pimentel for providing some of the first quantification of the effects of pesticides on our lives and economies. Now Pimentel has published a new, comprehensive review called "Environmental

and Economic Costs of the Application of Pesticides Primarily in the United States” (Environment, Development and Sustainability (2005)7:229-252; see www.mp.wa.gov.au/jscott/ACE/ENVIRONMENTALANDECONOMICCOSTS.htm).

Pimentel estimates that dependence on pesticides in the United States costs \$10 billion annually in damages to our environment and society. These damages include the effects of pesticides on public health and on livestock and livestock products; destruction of natural enemies and development of pesticide resistance in pests; crop pollination problems and honeybee losses; crop and crop product losses; wildlife losses; and, circuitously, costs incurred by the government to reduce these costs.

Pimentel calculates the following major, annual costs due to pesticide applications in the United States:

- public health--\$1.1 billion
- pesticide resistance in pests--\$1.5 billion
- crop losses caused by pesticides--\$1.4 billion
- bird losses due to pesticides--\$2.2 billion
- groundwater contamination--\$2.0 billion.

He concludes that the U.S. investment of about \$10 billion in pesticide control each year saves about \$40 billion worth of crops, but, at the same time, the environmental and public health costs of recommended pesticide use are more than \$9 billion. Of this cost, pesticide users pay about \$3 billion directly (including costs of pesticide resistance and destruction of natural enemies), and society eventually pays this \$3 billion plus \$9 billion more in environmental and public health costs, for a total of \$12 billion.

This issue is complex and data are scarce. What, for example, is the monetary value of a human or animal life, the cost of a cancer illness due to pesticides, the price of contaminated food and groundwater? Still, Pimentel says that the \$12 billion figure might be nearly doubled if all environmental, public health and social costs could be measured as a whole.

Comparing almost \$24 billion in costs with \$40 billion in crops reduces the perceived profitability of pesticides—especially when ways to reduce pesticide use are known. Pimentel notes Sweden’s 68% reduction in pesticide use without reducing crop yields and/or cosmetic standards. That reduction was accompanied by a 77% decrease in public pesticide poisonings.

He would like to see the United States adopt a pesticide reduction goal like Sweden’s, but instead sees some groups in the United States using Integrated Pest Management to justify pesticide use.

These are some of the issues that Pimentel will address when he talks about energy and pesticide issues in U.S. agriculture during his keynote speech at MOFGA and Cooperative Extension’s Farmer to Farmer Conference in Bar Harbor, Maine, in November. For more information about the conference, see the MOFGA page in this newspaper.

Sidebars w/ Pimentel article

Not All Biofuels Are Worthwhile

Turning plants into fuel uses much more energy than the resulting ethanol or biodiesel generates, according to David Pimentel of Cornell University and Tad W. Patzek, of the University of California-Berkeley. Their report, in *Natural Resources Research* (Vol. 14:1, 65-76), shows that corn requires 29% more fossil energy than the fuel produced; switch grass—45%; and wood biomass—57 percent. For biodiesel production, soybean plants require 27% more fossil energy than the fuel produced, and sunflower plants require 118% more. Inputs included energy used to produce crops (including production of pesticides and fertilizer, running farm machinery and irrigating, grinding and transporting the crop) and in fermenting/distilling ethanol from the water mix. Additional costs, such as government subsidies that are passed on to consumers and costs associated with environmental pollution or degradation, were not included.

Pimentel advocates burning biomass to produce thermal energy (to heat homes, for example) but not for liquid fuel. "The government spends more than \$3 billion a year to subsidize ethanol production when it does not provide a net energy balance or gain, is not a renewable energy source or an economical fuel. Further, its production and use contribute to air, water and soil pollution and global warming," Pimentel says. Most subsidies go to large ethanol-producing corporations rather than farmers.

He says the country should focus on producing electrical energy from photovoltaic cells, wind power and burning biomass and producing fuel from hydrogen conversion.

Source: Cornell News Service, Susan S. Lang, Senior Science Writer; (607) 255-3613; SSL4@cornell.edu. July 5, 2005

Sidebar w/ Pimentel article

Organic and Conventional Yields Equal, but Organic is More Environmental

Cornell University professor David Pimentel, reviewing a 22-year Farming Systems Trial by Rodale Institute, says that growing corn and soybeans organically gives yields equal to those of conventional farming, but uses 30% less energy, less water and no pesticides. His review was published in the July issue of *Bioscience* (Vol. 55:7). Organic methods also create less erosion, maintain soil quality and conserve more biological resources than conventional, he added.

The study compared a conventional farm using synthetic fertilizers and pesticides with an organic, animal-based farm using manure and an organic, legume-based farm using a three-year rotation of hairy vetch/corn and rye/soybeans and wheat. While organic corn yielded about one-third lower during the first four years of the study, over time organic systems produced higher yields, especially during droughts, because wind and water eroded soil on the conventional farm but organic methods steadily increased soil organic matter, moisture, microbial activity and other soil quality indicators.

Pimentel noted that soil carbon in the organic systems increased by 15 to 28%, the equivalent of taking about 3,500 pounds of CO₂ per hectare out of the air—a significant finding in relation to global climate change.

The study also found that during the drought years, 1988 to 1998, corn yielded 22% more in the legume-based system than in the conventional system; soil nitrogen levels in the organic systems increased 8 to 15%; nitrate leaching was about the same in the organic and conventional systems; and groundwater was not polluted by agricultural chemicals in organic systems.

While labor and other costs can be higher in organic systems, organic foods command higher prices in the marketplace, so the net economic return per acre is equal to or greater than that from convention crops. Pimentel believes that raising corn, soy, wheat, barley and other grains organically can be competitive with conventional farming, but the economics might not be so favorable for some horticultural crops that have greater pest problems.

Source: Cornell University press release, July 13, 2005; at www.newswise.com/articles/view/513110/.

Clean Water Still Lacking in Bhopal; Dow Denies Responsibility

In May, Bhopal residents were beaten and jailed in the Indian state of Madhya Pradesh as they protested the government's failure to provide adequate clean drinking water. Twenty years after the disastrous leak of toxic gas in Bhopal, many residents still drink water contaminated by the now defunct Union Carbide pesticide plant.

On May 17, 2005, 300 Bhopal survivors protesting at the Bhopal Gas Tragedy Relief and Rehabilitation offices were pushed, kicked, beaten and removed forcibly by police, says Amnesty International. Several were injured and/or hospitalized.

In 2004, the Indian Supreme Court ordered the Madhya Pradesh government to provide residents in 14 Bhopal communities with adequate, clean drinking water, but activists say the government has provided only 14% of the amount needed; some communities have received none. Toxic chemicals left after the 1984 disaster still leach into groundwater, adding victims to the disaster that has killed 20,000 and sickened 150,000. Wells contain mercury, chlorobenzene and naphthalene; more than 100 tons of pesticides remain at the site.

In a 1989 settlement, Union Carbide paid the Indian government US \$470 million for compensation and medical care, reduced from the Indian government's initial request of US \$3 billion. Dow Chemical purchased Union Carbide in 2001 for US \$11.6 billion and states that it has no responsibility for cleanup--contrary to the "polluter pays" principle under both Indian and U.S. law.

In the U.S., shareholders continue to criticize Dow. At the May 12, 2005, annual meeting, a letter from shareholders argued that recent U.S. investor protection legislation required Dow to "fairly present" the company's financial condition, which "requires better discussion of the issues surrounding Bhopal."

For more information see the International Campaign for Justice in Bhopal at www.bhopal.net/.

Sources: Pesticide Action Network North America Press Release, May 25, 2005; Chemical & Engineering News, Jan 24, 2005, Vol 83, No 4; "Cost of Clean up Rs 250,000,000," March 32, 2005, Hindi Newspaper on Bhopal.net; "Chemical Stockpiles at Union Carbide India Limited in Bhopal; an investigation," Greenpeace International, November 2002, www.greenpeace.org/international; "Clouds of Injustice, Bhopal Disaster 20 Years On," Amnesty International, <http://web.amnesty.org/library/Index/ENGASA200152004?open&of=ENG-IND>.

Work Continues to Eliminate POPs

Government officials from Mexico, Norway and the European Union have proposed adding four chemicals to the list for global elimination under the Stockholm Convention on Persistent Organic Pollutants (POPs Treaty). The proposals came as delegates from the 98 countries that have ratified the international agreement met in Uruguay in May. The four chemicals are lindane (hexachlorocyclohexane), chlordecone and two brominated flame retardants, pentabromodiphenyl ether and hexabromobiphenyl.

Lindane, used agriculturally and pharmaceutically, is under review in the North America region under the Commission on Environmental Cooperation. Under a draft North American Regional Action Plan for the chemical, Mexico has agreed to phase out all uses; Canada continues to allow pharmaceutical uses for lice and scabies control; and the U.S. allows agricultural and pharmaceutical uses. Some 52 countries have banned all uses of lindane. (See www.panna.org/campaigns/lindane.html.)

Chlordecone, an organochlorine insecticide, has been banned in at least 11 countries and is no longer registered for use in dozens more. It is considered a probable carcinogen, reproductive toxin and endocrine disruptor.

The Uruguay meeting also established the POPs Review Committee to evaluate and nominate chemicals that meet the treaty's criteria of toxicity, bioaccumulation, persistence and transport and to make recommendations to government delegates.

Current country-specific exemptions for DDT use in malaria control were reviewed by delegates, who agreed that limited DDT public health use continues to be justified. The treaty requires periodic reviews of DDT exemptions, and requires that countries using DDT research and promote alternatives. The Global Environment Facility (GEF) received guidance from the Uruguay meeting to focus DDT alternative spending on integrated vector management and nonchemical controls, rather than just insecticidal replacements. The GEF funds treaty implementation in developing countries.

The strong NGO contingent organized an egg tasting to highlight results of an egg sampling study. Chicken eggs were sampled in 17 countries for such POPs as dioxins, furans, PCBs, HCH/lindane and PBDEs. The NGOs served egg snacks on napkins printed with the message "Keep the Promise -- Eliminate POPs!" and distributed findings of the egg study. Effective NGO

involvement in many aspects of the Stockholm Convention process is contributing to the effectiveness of the treaty and its rapid adoption by governments worldwide.

Sources: Pesticide Action Network press release, May 20, 2005; PANNA's Ban Lindane Now! Campaign page: www.panna.org/campaigns/lindane.html; PANNA's International Treaties page, including link to DDT & malaria resource center: www.panna.org/campaigns/treaties.html; International POPs Elimination Network -- www.ipen.org. IPEN's International POPs Elimination Project, including egg sampling study information -- www.oztoxics.org/ipepweb/; US ratification efforts - www.uspopswatch.org; Stockholm convention -- www.pops.int/; International Institute for Sustainable Development daily meeting coverage -- www.iisd.ca/chemical/pops/cop1/.

Supreme Court Saves Right to Sue Pesticide Manufacturers

The Supreme Court, in a 7-2 decision, has affirmed the rights of consumers, workers and farmers to sue pesticide manufacturers when their products cause harm. On April 27, 2005, the court ruled against claims by Dow AgroSciences and the Bush administration that federal pesticide law shields chemical manufacturers from lawsuits claiming damage from negligent design, testing or manufacturing of their products. The ruling rejects industry and legal trends claiming that registering a pesticide under federal pesticide law automatically shields manufacturers from litigation, and that the Federal Fungicide Insecticide and Rodenticide Act (FIFRA) pre-empts local and state liability statutes.

The case, Bates vs. Dow AgroSciences, was brought by 29 Texas peanut farmers who used Dow's weedkiller Strongarm (diclosulam) in 2000 (see www.pesticideinfo.org/Detail_Chemical.jsp?Rec_Id=PC37572 - ChemID). The crops died soon after. Dow reneged on a promise to compensate them, said farmers, so they informed Dow they would sue for damages. Dow, however, filed in federal court, arguing that FIFRA shielded them from liability. The federal district court and an appeals court ruled for Dow, following the lead of the California Supreme Court, which decided in favor of the pesticide manufacturer in a similar case in 2000.

Dow never acknowledged liability for the damage but changed Strongarm's product label, advising against its use in high-alkaline soils. The company also stopped selling the product in Texas, New Mexico and Oklahoma, which have extensive areas of alkaline soils.

The Supreme Court's ruling, the first on 1972 revisions to FIFRA, reveals the Court's approach to issues of pre-emption. The Court rejected recent legal interpretations expanding federal preemption, arguing, "The long history of tort litigation against manufacturers of poisonous substances adds force to the basic presumption against pre-emption. If Congress had intended to deprive injured parties of a long available form of compensation, it surely would have expressed that intent more clearly. Moreover, this history emphasizes the importance of providing an incentive to manufacturers to use the utmost care in the business of distributing inherently dangerous items." The decision suggested that liability lawsuits would strengthen federal law: "Private remedies that enforce federal misbranding requirements would seem to aid, rather than hinder, the function of FIFRA."

Several environmental groups joined EarthJustice in an amicus brief in the case, including Beyond Pesticides, Defenders of Wildlife, Farmworker Justice Fund, Natural Resources Defense Council, Physicians for Social Responsibility, Public Citizen, Sierra Club, and Trial Lawyers for Public Justice.

Sources: Pesticide Action Network Update Service, May 4, 2005; Los Angeles Times, April 28, 2005, www.latimes.com; The New York Times, April 27, 2005, www.nytimes.com; Beyond Pesticides Press Release, April 27, 2005, www.beyondpesticides.org; Supreme Court decision: <http://a257.g.akamaitech.net/7/257/2422/27apr20050800/www.supremecourtus.gov/opinions/04pdf/03-388.pdf>.

Environmental Toxins Can Cause Heritable Damage, Without Mutating Genes

Exposure to a toxic product during pregnancy can damage offspring—and future descendants—without changing their genetic code, according to Dr. Michael Skinner of the Center for Reproductive Biology at Washington State University in Pullman. Skinner and colleagues' work, reported in Science magazine in an article entitled "Epigenetic Transgenerational Actions of Endocrine Disruptors and Male Fertility," challenges the basic understanding of genetics and evolutionary biology.

Previously, heritable diseases were believed to be caused by mutated genes that were passed to offspring. But when Skinner and his colleagues exposed a pregnant rat to high doses of pesticides known as endocrine disruptors, a reproductive disorder was inherited by male rats without any genetic mutation. This is called an “epigenetic” change—one in which DNA is modified but the sequence of bases in DNA isn't changed.

Scientists have known that cells switch genes on and off by attaching methyl (CH₃) groups to parts of DNA, but they did not believe that these changes could be passed on. Now they do.

Skinner's lab was studying the effects of the fungicide vinclozolin and the pesticide methoxychlor on testes development in fetal rats when someone mistakenly let two exposed rats breed and found that low sperm count and other disorders were present in subsequent generations. Methyl groups attached to DNA in the mother rat as a result of pesticide exposure were passed on to offspring. Skinner suggests that other diseases, such as cancer, may be passed on in this way.

Source: “WSU findings show that disorders can be passed on without genetic mutations,” by Tom Paulson, Seattle Post-Intelligencer Reporter, http://seattlepi.nwsource.com/national/227013_toxics03.html. The entire study is posted at <http://ehp.niehs.nih.gov/members/2005/7728/7728.html>.

New Research Highlights Harmful Effects of Roundup

The herbicide Roundup (glyphosate plus adjuvants) is used worldwide--increasingly on plants that are genetically engineered to tolerate it. Residues may enter the food chain and have been found in rivers. Some agricultural workers using glyphosate have had pregnancy problems.

French researchers have shown that glyphosate is toxic to human placental cells at concentrations 100 times lower than those found with agricultural use, and that the effect increases with concentration and time or in the presence of Roundup adjuvants, which facilitate cell penetration. Effects were seen on human placental cells as early as 18 hours after exposure.

The researchers also found that glyphosate and Roundup disrupted aromatase activity and mRNA (messenger RNA) levels and interacted with the active site of purified aromatase. Aromatase is the enzyme responsible for estrogen synthesis in mammals.

The dilution of glyphosate in Roundup may multiply its endocrine effect, so "Roundup may be thus considered as a potential endocrine disruptor," the researchers conclude. "Moreover, at higher doses still below the classical agricultural dilutions, its toxicity on placental cells could induce some reproduction problems."

Source: Organic Consumers Association, June 3, 2005; www.organicconsumers.org/monsanto/pregnancy060305.cfm; original study: "Differential Effects of Glyphosate and Roundup on Human Placental Cells and Aromatase," by Sophie Richard, Safa Moslemi, Herbert Sipahutar, Nora Benachour and Gilles-Eric Seralini, Laboratoire de Biochimie et Biologie Moléculaire, USC-INCR, Université de Caen, Caen, France. *Environmental Health Perspectives*, 113:6, p. 716-720, June 2005. doi:10.1289/ehp.7728 available via <http://dx.doi.org/> [Online 25 February 2005]

EPA Sued for Farm Children's Pesticide Risks

On June 7, Pesticide Action Network North America (PANNA) and other groups sued the EPA for failing to address the increased risks that farm children face from exposure to pesticides. The Food Quality Protection Act of 1996 tasked EPA with ensuring that "no harm will result to any children" -- including farm children and children of farm workers -- from multiple pesticide exposures. Increasingly, scientific evidence confirms that children living on or near farms are exposed to pesticides from food, air, soil and water, but EPA has never acknowledged these higher risks.

More than a million children of farm workers live near U.S. farms, and more than 300,000 children under age six live on farms. Children are particularly susceptible to pesticide exposure because their bodies and brains are still developing, and they eat more produce, drink more water (for their size), and have more hand-to-mouth contact with dust, dirt and floors.

Pesticide exposure is increasingly linked to neurological disorders, such as Parkinson's disease, reduced cognitive functioning and reduced coordination; developmental delays in infants and children; reproductive harms, such as infertility, stillbirths, birth defects and musculoskeletal defects; and cancer, including brain tumors, leukemia, non-Hodgkin's lymphoma, sarcoma and Wilm's tumor. Elevated levels of pesticides in homes and cars of farming families are absorbed by workers and their children. Shelley Davis of the Farmworker Justice Fund, co-counsel for the plaintiffs, says, "Put together with evidence of increased rates of cancer and birth defects among farm workers and their children, this research raises a red flag."

The plaintiffs charge that EPA has failed to consider farm children's heightened exposure risks when setting allowable pesticide standards for food. Under the 1996 law, the Food Quality Protection Act (FQPA), EPA is required to account for specific factors when setting tolerance levels for chemical pesticide residues that consumers and "major identifiable subgroups" of consumers may be exposed to.

Two years after the FQPA passed, the plaintiffs petitioned EPA to identify farm children as meriting special consideration. The groups are now suing EPA for failing to respond to that petition in a reasonable amount of time. The plaintiffs are Pesticide Action Network North America, United Farm Workers of America, AFL-CIO, NRDC, Clean Water Action and Northwest Coalition for Alternatives to Pesticides. Farmworker Justice Fund and NRDC are co-counsel for the plaintiffs. The suit asks the court to rule that EPA's failure to respond to their petition was unlawful and to compel the agency to respond within 90 days.

Sources: Pesticide Action Network News Update, June 10, 2005; Complaint, PANNA, UFW, NRDC, Clean Water Action and NCAMP vs. US EPA, www.panna.org.

Maine Legislature Acts on Toxics
By Sharon Tisher

Members of the Alliance for a Clean and Healthy Maine, including MOFGA, the Environmental Health Strategy Center and the Natural Resources Council of Maine, supported legislation this session designed to prevent lead poisoning of Maine children and workers, and to clean out toxics from Maine schools. Both met with significant success.

On June 17, Governor Baldacci signed L.D. 1034, a precedent-setting bill requiring national paint manufacturers to fund education about the dangers of lead paint. Only California has a similar manufacturer accountability system to help fund lead poisoning prevention. The legislation, sponsored by Rep. Robert Duplessie, will raise \$500,000 per year for five years by assessing paint makers based on their market share in Maine. Although lead paint was banned in Europe in the 1920s, manufacturers increased marketing in the United States until 1978, when it was banned here.

Over 350,000 Maine homes still contain lead paint. The danger comes when people scrape old paint, sending lead dust and paint chips into the air. In children, lead poisoning can lead to lower IQ, hearing disability and attention deficit hyperactivity disorder.

Farmers and gardeners should be concerned about the propensity of green leafy vegetables to take up lead from contaminated soil, especially in "kitchen gardens" around older homes. As Sharon Tisher pointed out in testimony supporting a lead clean-up bond proposal (which is still in limbo), a study by Dr. Samantha Langley-Turnbaugh, Chair of the University of Southern Maine Department of Environmental Science, revealed that soil and greens in gardens around older housing in three neighborhoods on the Portland peninsula were heavily contaminated with lead. Spinach is so effective in taking up lead, in fact, that Langley-Turnbaugh has proposed future experiments that involve examining the potential to remediate the lead contaminated soil

by planting successive crops of spinach and sending the greens to a hazardous waste disposal facility.

The Maine Bureau of Health will use the money from L.D. 1034 for a comprehensive campaign to warn parents, contractors and those who work with marine paint (which still contains lead) to protect themselves. New Jersey sends free lead test kits to families of all newborns, and Maine hopes to do something similar. The program will also support grants to community- and worker-based organizations for peer-to-peer education, and will fund a study of safer alternatives to products that still contain lead. The paint industry knew the dangers of lead-based paint decades ago, but continued to sell it, said Sen. John Martin during debate on the Senate floor. "We have been misled," he said. "Get the message? Mis-lead. I hope we don't get misled today. How much longer do we want children to be impacted?"

Establishing a fee on pesticides to fund removal of pesticides and other toxics from schools was more controversial. As originally proposed, L.D. 1157, sponsored by Rep. Theodore Koffman, would have put a fee on sales of pesticides to fund completion of cleanup of hazardous materials, including mercury and pesticides, that have been stored over the years in many Maine schools. During a recent pilot program run by the state in 80 schools, 6,500 pounds and more than 1,000 gallons of hazardous waste (including 700 pounds of mercury) were removed from the schools.

The Committee on Natural Resources rejected the fee aspect, in the face of highly organized opposition from the trade organization for pesticide manufacturers, CropLife America. The legislature instead enacted a resolve directing the Departments of Education and of Environmental Protection to implement a plan for enforcing existing DOE regulations requiring schools to clean out toxic hazards and create and implement chemical hygiene and purchasing policies. The Resolve requires that DEP and DOE monitor the success of school clean-outs and report to the committee next January.

The Alliance for a Clean and Healthy Maine is concerned that without a clear funding mechanism, some schools may empty chemical stockpiles into the Dumpster or down the drain, rather than pay for proper disposal. In one incident, a custodian was told to toss hazardous science lab chemicals into a Dumpster after a superintendent deemed an estimate from a waste-disposal contractor to be too high. The chemicals reacted and started a chemical fire.

The Natural Resources Council of Maine led Alliance efforts on school toxics. As Matt Prindiville, NRCM Outreach Coordinator, commented, "We of course expect that schools will work with the agencies to comply with the regulations, but if any of you hear otherwise, please alert us, so that we can push hard for funding and a comprehensive program." Prindiville can be reached at 207-622-3101, or mprindiville@nrcm.org.

Body Burden — The Pollution in Newborns

In the month leading up to a baby's birth, the equivalent of at least 300 quarts of blood each day flows through the umbilical cord--a lifeline between mother and baby, bearing nutrients that sustain life and propel growth. This blood also carries a steady stream of industrial chemicals, pollutants and pesticides.

A study spearheaded by the Environmental Working Group (EWG) in collaboration with Commonweal found an average of 200 and a total of 287 industrial chemicals and pollutants in umbilical cord blood from 10 babies born in August and September 2004 in U.S. hospitals. The chemicals included pesticides, consumer product ingredients, and wastes from burning coal, gasoline and garbage. They included perfluorochemicals used as stain and oil repellants in fast food packaging, clothes and textiles—including the Teflon chemical PFOA, a likely human carcinogen; and dozens of brominated flame retardants. Of the 287 chemicals detected, 180 are known to cause cancer in humans or animals, 217 are toxic to the brain and nervous system, and 208 cause birth defects or abnormal development in animal tests. The dangers of pre- or post-natal exposure to this complex mix of carcinogens, developmental toxins and neurotoxins have never been studied.

Source: Environmental Working Group, July 14, 2005;
www.ewg.org/reports/bodyburden2/execsumm.php.

Plant Nutrition

Knowledge of Nitrogen Transfer between Plants and Beneficial Fungi Expands

A beneficial soil fungus plays a large role in nitrogen uptake and utilization in most plants. In the June issue of *Nature*, Agricultural Research Service (ARS) chemist Philip E. Pfeffer and cooperators report that beneficial arbuscular mycorrhizal (AM) fungi transfer substantial amounts of nitrogen to their plant hosts. A lack of soil nitrogen often limits plant growth.

AM is the most common type of symbiotic fungus that colonizes roots of most crop plants. The fungi receive glucose and possibly other organic materials from the plant, while enhancing the plant's ability to take up mineral nutrients, primarily phosphorus. Pfeffer and colleagues previously identified enzymes and genes involved in nitrogen absorption and breakdown in AM fungi, but very little was known about how or in which form nitrogen moves from fungus to plant. The researchers discovered a novel metabolic pathway in which inorganic nitrogen is taken up by the fungi and incorporated into an amino acid called arginine. This amino acid remains in the fungus until it is broken down and transferred to the plant.

The results show that the symbiotic relationship between mycorrhizal fungi and plants may be much more significant in the worldwide nitrogen cycle than previously believed. Farmers may benefit from promoting the proliferation of mycorrhizal fungi through diminished fertilizer input, thereby making more efficient use of nitrogen stores in agricultural soils.

Source: Agricultural Research Service News Service, USDA, Jim Core, (301) 504-1619,
core@ars.usda.gov. June 9, 2005.

Policy

First Steps: Maine Governor Meets with MOFGA Representatives
By Russell Libby

On June 8, Governor Baldacci hosted a small meeting of MOFGA representatives (John Bunker, Spencer Aitel, Sharon Tisher and Russell Libby) and Department of Agriculture officials (Commissioner Robert Spear, Deputy Commissioner Ned Porter) to discuss possibilities for organic agriculture in Maine. While organic isn't a new idea for Governor Baldacci, who has attended the Common Ground Country Fair on a number of occasions, this was the first time MOFGA has met formally with a Maine Governor to discuss agricultural policy issues.

We seemed to agree considerably on two major subjects. The Governor and the Commissioner both agreed that organic is becoming a substantial force within Maine agriculture, and that it makes sense for the Department to be helping us to work with farmers who otherwise might be reluctant to talk directly with MOFGA about organic options. This might include farmers in Aroostook who could potentially grow organic grains. Another target audience would be conventional dairy farmers who are uncertain whether the organic market is right for them. Several times the Governor mentioned organic as "part of the solution."

Spencer Aitel, an organic dairy farmer, shared copies of his and his neighbor's milk checks; the organic pay price was almost double that of the conventional market, after deductions. That made those of us from MOFGA wonder how big a part of the solution organic agriculture could possibly be!

Everyone also agreed on the importance of continuing to promote local agriculture. The Governor mentioned Mrs. Baldacci's Local Ag Task Force report as an important step, and her interest in having farmers' markets at rest areas along the Maine Turnpike. We countered with the idea of having a farmers' market at the State House complex. That discussion will continue another day.

The Governor and the Department were more cautious on the subject of genetically modified organisms (GMOs). Everyone recognizes the potential for conflict from cross-contamination. The Department is pushing a policy of "coexistence," which essentially says that if your neighbor wants to plant GMOs, you and your neighbor must find a solution. If your goal as an organic farmer is to have uncontaminated seed to plant next year, coexistence might mean non-existence. Sharon Tisher, chair of MOFGA's public policy committee, presented MOFGA's position—that no level of contamination is appropriate for organic farmers or organic consumers. We didn't reach a solution, but the Governor did ask the Commissioner to organize a meeting late this fall to see how to move forward on this issue.

MOFGA also very strongly opposed the Department's letter to communities saying that local ordinances on GMOs potentially conflict with Maine's Right to Farm law. That discussion, too, will continue.

John Bunker, MOFGA's president, concluded the gathering on a note that everyone agreed upon: Both conventional and organic farmers have the same fundamental values in common, and MOFGA is committed to continuing positive relationships with conventional farmers, from whom we expect many future conversions to organic.

Seeds

New Maine Tax Hits Gardeners

Home gardeners must now pay a state sales tax on vegetable seeds, as well as other agricultural and aquacultural products that had been exempted previously (feeds, hormones, fertilizers, pesticides, insecticides, fungicides, antibiotics, weed killers, defoliant, litter and medicines). The new tax, which took seed companies and others by surprise, became effective on July 1, 2005.

The tax came about after Maine's Agriculture, Conservation and Forestry Committee was told that it couldn't spend more than originally budgeted. The committee wanted to restore some proposed cuts and plug other gaps in the Department of Agriculture budget, so it repealed the sales tax exemption to do that. The committee expects that the repeal will enable the Department of Agriculture to keep a nutrient management coordinator, maintain sales tax exemptions for products used on livestock farms, and offset a proposed cut in funds to the harness racing industry. The committee estimates that the new tax will raise \$400,000 per year--an amount far exceeding the value of the sales tax on seeds to home gardeners. Russell Libby, MOFGA's executive director, estimates that the tax on seeds alone will raise about \$150,000 per year.

The items below were previously exempted from sales tax when used in agricultural or aquacultural production, whether for home or commercial use. Now the first two categories below apply only to commercial growers.

The sales tax exemption now covers:

- feed, hormones, pesticides, antibiotics and medicine for use in aquacultural production and sales of bait to commercial fishermen;
- seed, fertilizers, defoliant and pesticides, including, but not limited to, rodenticides, insecticides, fungicides and weed killers, for use in commercial production of an agricultural crop;
- breeding stock, semen, embryos, feed, hormones, antibiotics, medicine, pesticides and litter for use in animal agricultural production, including raising and keeping equines. (The addition of breeding stock, semen and embryos is new. The exemption on sales of products related to animal agriculture continues to apply both to non-commercial and commercial agricultural use. Sales of products for use in animal agriculture as listed above are considered exempt if they are ordinarily used in, on or for agricultural animals. If an item is not ordinarily used for agricultural animals, the retailer must obtain proper documentation from the purchaser certifying that the product(s) will be used in animal agriculture.)

Regarding the new tax on seeds and other products, retailers must obtain proper documentation from purchasers engaged in commercial crop production. This adds to the record-keeping requirements of Maine seed companies and farmers.

Growers need a current, valid Commercial Farmer's Number to qualify for the exemption. The number is obtained by completing a form at www.maine.gov/revenue (click on "Sales Use Tax" on the left). The Maine Revenue Service told The MOF&G that obtaining this number is independent of farm income. Further information and forms are in Sales Tax Instructional Bulletin #14 at: www.maine.gov/revenue/salesuse/Bull14.pdf, or at (207) 624-9693; TDD: (207)287-4477; Fax: (207)287-6628; www.maine.gov/revenue.

Maine's gardeners and seed companies were surprised by the new tax and would like to see it repealed. CR Lawn of Fedco Seeds urges gardeners to "write their legislators and the governor to urge repeal of this hasty and unwise legislation." Bill Gallagher, director of operations and CFO of Johnny's Selected Seeds, says that Johnny's has contacted state legislators and Gov. Baldacci and would support a repeal of the tax. Dick Meiners of Pinetree Garden Seeds says that he always thought that the tax exemption on vegetable seeds was analogous to that on groceries. Now, he adds, Maine seed companies have to figure out how to flag commercial customers in their databases, change the way sales tax is calculated on two distinct groups of Maine customers, and file the associated paperwork.

This new tax sends a negative message to people who want to grow some of their own food, says Russell Libby, so MOFGA will be talking with legislators and others about the issue.

Sources: <http://mainegov-images.informe.org/revenue/salesuse/Agriculture705.pdf>; Maine Revenue Service telephone conversation, July 25, 2005; Bill Gallagher and CR Lawn, personal communications; email and Fax correspondence with Maine's Office of Policy and Legal Analysis, and worksheets from Maine Revenue Services.

'Seed, Squash and Song'

A New England Harvest Celebration and Seed Conference
Oct 29, Bramble Hill Farm, RT 116 S, Amherst, Mass.

Ever wonder how generations of farmers without any degrees grew their own seed and developed the foods of today? 'Restoring Our Seed,' funded by Northeast Sustainable Agriculture Research and Education (NESARE), is a network of organic farmers and gardeners, Cooperative Extension personnel and plant breeders working together to renew seed-saving and ecological plant breeding in New England.

We invite you to join us for our annual seed exchange, learn how to integrate seed-saving into your farm or garden, bring your seed crops to clean, and share practical tips with a circle of experienced seed-savers and plant breeders. Teachers and kids are invited to bring displays of school seed-saving projects. Savor a potluck lunch with a 'Squash Tasting' of heirloom varieties with succulent recipes by regional chefs.

To register, visit www.growseed.org. For details contact CR Lawn and Eli Rogosa at 207-872-9093 or growseed@yahoo.com.

Teflon

Teflon Ingredient is Likely Carcinogen

The "nonstick" chemical perfluorooctanoic acid (PFOA or C-8), used to make Teflon, has been categorized as a "likely carcinogen" by the U.S. Environmental Protection Agency (EPA), whose scientists found four types of tumors in lab animals exposed to the chemical. The EPA has not learned yet whether PFOA in Teflon-coated pans, Gore-Tex fabric, some pizza boxes and other products causes cancer in humans. It plans to collect millions of dollars in fines from DuPont, the maker of Teflon, for concealing studies indicating related health and environmental risks for over two decades.

Source: Organic Bytes, 7/1/05; www.organicconsumers.org/foodsafety/dupont070105.cfm

Weed Control

Dayton Students Develop Weed Control Device

Three University of Dayton engineering students have been working on a gentler weed whacker as an alternative to herbicides and to organic versions that take longer to work and are less effective. Bridget Hamblin, Fred Schulkers and Joe Swinko worked with Oregon-based thermal weed control specialist Sunburst Inc. on a hairdryer of sorts to whack weeds.

The device produces concentrated doses of propane-generated heat. Exposing vegetation to temperatures of at least 140 degrees for about two seconds disables normal plant functions and prevents or stunts future growth. "Weed burners on the market now introduce smoke into the air and are not really environmentally safe," says Hamblin. The students' tests showed weeds wilted after two sprays in about four days, and their product used less water and propane than other products on the market..

The hand-held device, once refined by Sunburst, will be suitable for household use or in tight spots. It is as light as a gas-powered weed trimmer and cheaper than accumulated costs of annual herbicide purchases. After the initial cost of equipment, the only recurring cost is a propane canister, which lasts a little over 90 minutes on full use.

The students' work was part of UD's Design and Manufacturing Clinic, which provides learning opportunities and, according to Engineering Times, "hones engineering creativity." For more information on UD's Design and Manufacturing Clinic, contact Phil Doepker at (937) 229-2971.

Source: Shawn Robinson, Department of Public Relations, University of Dayton, 300 College Park, Dayton, OH 45469-1679; www.udayton.edu; (937) 229-3391

Winter 2005-2006

Beekeeping

Organic Beekeeping Workshop in New York

The Pfeiffer Center will hold a workshop in Chestnut Ridge, N.Y., on April 28 and 29 for beekeepers. Participants will look at the bee colony as an organism and what it needs in order to further its health and vitality. Advice and demonstrations will give novices enough information to start their own hive, and will encourage experienced beekeepers to adopt organic procedures.

Presenter Gunther Hauk cofounded and directs the Pfeiffer Center and has kept bees for over 25 years. The author of *Toward Saving the Honeybee*, he gives lectures and workshops throughout North America

For more information, call 845.352.5020, ext 20; email: info@pfeiffercenter.org; or visit: www.pfeiffercenter.org

Business Insurance

New Publications about Insurance for Mainers

Maine Insurance Superintendent Alessandro A. Iuppa announced in October the availability of two new consumer brochures for business owners. These publications, titled “Insuring Your Business” and “Insuring Your Farm -- The Basics of Property & Liability Coverage,” provide general information about property and liability insurance. Topics include information about policy coinsurance clauses that can affect how a loss is paid and factors to consider when obtaining coverage for commercial businesses.

Consumers may request the brochures from the Bureau of Insurance at 800-300-5000 (in state) or 207-624-8475. The brochures and other consumer information are also available at www.MaineInsuranceReg.org under Consumer info and then under Publications.

Children’s Health

Kids Need Nature

Between 1981 and 1997, the amount of time U.S. children aged 6 to 8 played outdoors decreased by four hours per week, while the amount of time they spent indoors in school increased by almost five hours per week. Since 1997, Dimensions Educational Research Foundation of Lincoln, Nebraska, has substantiated research showing that positive, appropriate experiences with nature bring significant benefits to children. They enhance observation skills, concentration and fine motor skills.

Source: National Arbor Day Foundation, at www.arborday.org/explore/parents/

Fast Food Restaurants Are Near Schools

Fast food chains are building restaurants near schools, according to the September 2005 *American Journal of Health*. A study found 80% of schools have a fast food restaurant within a half mile. Previous studies have shown that on a typical day, almost one-third of U.S. youngsters eat fast food.

Source: Organic Bytes #64, The Organic Consumers Association, Aug. 29, 2005;
www.organicconsumers.org/school/fast-food.cfm.

Climate

Earlier Spring

Based on bloom dates for lilacs, apples and grapes, spring is arriving up to a week earlier in the Northeast than it did 40 years ago, say researchers at Cornell University and the University of Wisconsin. Lilacs are blooming about four days earlier and apples and grapes six to eight days earlier than in 1965--findings similar to those in other parts of the United States and in Europe.

Source: Gleanings, Winter 2005; Connecticut NOFA; and
www.news.cornell.edu/releases/Dec04/climate.plants.ssl.html

Conservation

Eight Maine Farmers Receive Conservation Contracts

The voluntary Conservation Security Program (CSP) supports stewardship of agricultural lands and natural resources. This year, eight Maine farmers were approved for contracts in the CSP. Unlike most federal farm conservation programs that are designed to address resource problems, CSP recognizes farmers who have already applied a full conservation system that addresses soil and water quality to meet program criteria. The bulk of the CSP contract payment, however, is based on agreements to further enhance these and other resources, including wildlife habitat, energy conservation and air quality.

In Maine, CSP contracts run between \$1,000 and \$12,000 per year for five to 10 years. Conservation enhancements included in Maine CSP contracts address air quality, grazing lands health, ground and surface water quality, wildlife habitat quality, plant population health, soil quality and wetlands health. For more information, see www.me.nrcs.usda.gov.

Country of Origin

Why Your Food Isn't COOL

A Public Citizen investigation illustrates how big agribusiness used millions of dollars in lobbying expenditures and campaign contributions, and a network of Washington insiders with close connections to the Bush administration and Congress, to thwart mandating country-of-origin labeling (COOL). This labeling would require beef, pork, lamb, fresh and frozen fruits and vegetables, fish and peanuts to be labeled to show where they were raised, grown or produced. The 2002 Farm Bill stipulated that the new program be implemented by September 2004, but mandatory COOL has been postponed by Congress --where lawmakers are under intense pressure from the meat and grocery industries--for two years. In June, the U.S. House of

Representatives voted again to delay COOL's implementation for meat until 2007. Industry is lobbying the Senate strongly to either delay funding for the USDA to work on COOL or turn it into a "voluntary" program.

The report, "Tabled Labels: Consumers Eat Blind While Congress Feasts on Campaign Cash," is posted at www.citizen.org and at www.sustainableagriculture.net/COOL_PubCitPressRel.php.

Factory Farms

Gaseous Cows on Factory Farms

Burps and flatulence from dense populations of bovines in California's heavily factory farmed San Joaquin Valley are creating more smog and greenhouse gases in the local area than cars. Each of the valley's 2.5 million cows excretes nearly 20 pounds of gas per day, causing new policy debates between air quality regulators and the dairy industry. "This is not some arcane dispute about cow gases," said Brent Newell, an attorney for the Center on Race, Poverty & the Environment. "We are talking about a public health crisis. It's not funny to joke about cow burps and farts when one in six children in Fresno schools is carrying an inhaler."

Source: Organic Bytes #63, Aug. 11, 2005,
www.organicconsumers.org/OFGU/gases080305.cfm

Farmers' Markets

Downtowns Get a Boost from Farmers' Markets

The Michigan Land Use Institute has shown that farmers' markets across the nation not only offer a source of fresh produce in town but also draw customers to other downtown businesses. One national study showed that 60% of farmers' market customers shopped at another downtown business. A Michigan survey revealed that 77% of market customers said they would not be downtown at all if not for the market. Despite burgeoning nationwide enthusiasm for farmers' markets, the story warns that markets can be short-lived without planning and support from the larger community. Many markets are run by volunteers who can burn out, and if the community wants to maintain the benefits the market brings to downtown, government and commercial interests need to look at long-term strategies for keeping markets healthy.

Source: ATTRA Weekly Harvest Newsletter, Aug. 3, 2005; article at www.mlui.org/growthmanagement/fullarticle.asp?fileid=16901

Food Quality

Free-range Eggs Are More Nutritious

Research by Mother Earth News magazine, released in July 2005, compared eggs from four free-range flocks with U.S. Department of Agriculture (USDA) nutrient data for eggs from confinement production systems. Those from free-range chickens had up to twice as much vitamin E, up to six times more beta carotene (a form of vitamin A) and four times more

essential omega-3 fatty acids. The free-range eggs averaged half as much cholesterol as the USDA data indicate for confinement-system eggs.

The testing, initiated by Mother Earth News, was conducted by Skaggs Nutrition Laboratory at Utah State University and Food Products Laboratory in Portland, Oregon; data and graphs were in the August/September 2005 issue of the magazine and are at www.MotherEarthNews.com/eggs. "Other studies also have shown similar results for some of these nutrients, but the industry actively denies that free-range systems produce better eggs," says Mother Earth News editor-in-chief Cheryl Long.

"Inferior eggs are not the only problem that has developed because the push for cheap food has gone too far," Long says. "A recent study published in the Journal of the American College of Nutrition has revealed that the nutrient content of conventionally grown vegetables and fruits has declined over the past 50 years. The study compared USDA data from 1950 and 1999 for 13 nutrients in 43 crops. After rigorous statistical analysis, the researchers found that, on average, all three minerals evaluated have declined; two of five vitamins have declined; and protein content has dropped by 6 percent." Also, evidence is accumulating that produce grown with synthetic fertilizers is less nutritious, mainly because it tends to contain more water than produce grown with natural, organic fertilizers. For more information see the June/July 2004 article at www.motherearthnews.com/release/6974/.

Meat and dairy products show nutrient differences similar to those reported above for eggs. Products from animals raised on natural pasture diets tend to be lower in saturated fat and higher in vitamins and other essential nutrients than products from animals raised in confinement on high-grain diets. (See the April/May 2002 article at www.motherearthnews.com/release/6934/) Both mad cow disease and E. coli food poisoning problems are consequences of intensive confinement beef production systems. Mad cow disease is the result of mixing infected animal "by-products" into feed given to feedlot cattle, and the emergence of highly toxic forms of E. coli bacteria has been linked to the practice of feeding cattle unnatural, high-grain diets.

Evidence that intensive industrial agriculture is delivering inferior food is pushing many consumers to seek local, organic, grass-fed and free-range products. The USDA reports that since 1994, farmers' markets have increased more than 80 percent. "There's a Real Food Revival underway in the U.S., and it's providing safer, more nutritious and better tasting food to consumers and new opportunities for small farmers," Long says. The August/September issue of Mother Earth News featured the story, "Join the Real Food Revival." The article appears at www.motherearthnews.com/release/7020/.

Source: Press Release, Mother Earth News, July 2005.

New Report Sheds Light on Nutrient Intakes Nationwide

Nearly 95% of people in the United States are not getting desirable intakes of vitamin E from foods and beverages. More than half aren't getting enough magnesium, about 40% aren't getting enough vitamin A, and nearly one-third aren't getting desirable intakes of vitamin C from the foods and beverages in their diets. This information comes from the Agricultural Research

Service's Food Surveys Research Group in Beltsville, Maryland.

The ARS report summarizes the most current federal nationwide food consumption data available from "What We Eat in America, NHANES 2001-2002." To access the report, see www.ars.usda.gov/foodsurvey.

Source: ARS News Service, Agricultural Research Service, USDA, Rosalie Marion Bliss, (301) 504-4318, rbliss@ars.usda.gov, September 29, 2005.

Genetic Engineering

Vermont's Farmer Protection Act Update

by Andrew Barker

A bill that would shift all liability for genetically engineered (GE) crops off farmers and onto biotech seed manufacturers was progressing steadily through the Vermont legislature as we went to press. The Farmer Protection Act is the only bill of its kind still alive in the nation after similar initiatives in Montana and North Dakota were defeated earlier this winter.

Currently, when farmers sign technology use agreements drafted by biotech companies – or even open a bag of GE seed – they must accept all liability for potential injuries—an unreasonable burden on farmers, argue many of the bill's proponents. "If the product is indeed safe, then the companies should be proud to stand behind it," asserts Amy Shollenberger, policy director of Rural Vermont, a farm advocacy group that has been instrumental in drafting and promoting the bill. "If it is not [safe], then farmers should not have to... pay the price for the damages."

The "strict liability" provisions of the Farmer Protection Act would hold biotech seed companies fully liable for a range of injuries, including the loss of a price premium a farmer or processor might suffer due to GE contamination, the additional handling, transportation or storage costs that contaminated crops might require, or the loss of a farmer's livelihood, reputation or organic certification.

The bill would also protect farmers who "unknowingly come into possession" of patented GE crops. To date, St. Louis, Missouri-based Monsanto Corp. has filed more than 90 lawsuits against U.S. farmers for patent infringement, winning judgments totaling over \$15 million, according to the Washington D.C.-based Center for Food Safety. But many of the defendants claim that crops with patented genes appeared on their fields through no fault of their own, due to cross-pollination from neighboring farms, says the Center.

The biotech industry has vehemently opposed Vermont's Farmer Protection Act. Margaret Laggis, a lobbyist for the biotech industry association CropLife America, said the bill is misguided because it "contemplates a zero tolerance level for pollen drift," an impossible standard. She also noted that pollen contamination from GE crops does not threaten a grower's organic certification or prevent a crop from being labeled and sold as organic, according to USDA organic standards.

With regard to the strict liability standard, Laggis adds, “That kind of standard is usually used for things like explosives, which are inherently dangerous. It’s hard to believe we’re going to have that kind of standard for corn seed, which is not an inherently dangerous product.”

The Vermont Senate passed the bill by 26-1 on April 5, and the House Agriculture Committee is expected to recommend the legislation’s passage. Fifty-four representatives in the 150-seat House are co-sponsors, but the possibility of a veto by Governor Jim Douglas looms. Agriculture Secretary Steve Kerr has testified against the bill, saying he fears it would amount to a “backdoor moratorium” on GE crops in the state.

For more information on the Farmer Protection Act, see “Vermont plows ahead on GE seed liability law” at www.vermontguardian.com/local/0105/GMOSeedBill.shtml.

Cows Genetically Engineered to Resist Mastitis

Researchers at the U.S. Department of Agriculture have used gene-transfer technologies to produce Jersey dairy cows that resist a bacterial infection called mastitis. The USDA claims that currently, vaccines, antibiotics and a cow's own immune system cannot effectively fight the bacterium *Staphylococcus aureus*, a major cause of mastitis.

A scientific team led by Robert J. Wall, an animal physiologist with the ARS Biotechnology and Germplasm Laboratory in Beltsville, Md., built a transgene—genetic material produced using recombinant DNA technology—that includes the genetic code for producing a naturally occurring, antimicrobial protein called lysostaphin. While all milk contains several naturally occurring antimicrobial proteins, such as lysozyme and lactoferrin, none of the milk produced by the three GE cows in this research will be consumed. Use of milk containing lysostaphin would require federal regulatory approval after rigorous food safety testing.

The research shows that the gene for secreting lysostaphin comes from a non-pathogenic species of *Staphylococcus* that uses the protein to repel *S. aureus*. The lysostaphin is secreted into milk, where it kills *S. aureus*, thus protecting cows from becoming infected. All three transgenic cows showed little or no sign of infection after repeated exposures to *S. aureus*, and one never became infected. The researchers found that 71% of the mammary glands that were exposed to *S. aureus* from nontransgenic animals became infected, compared with only 14% for the transgenic animals. When contacted, the ARS told The MOF&G that these “control” cows were raised conventionally; the experiment had no organic control.

The scientists plan to study similar defenses against other pathogens that affect dairy cattle and to test the ability to make common dairy products, such as cheese and yogurt, from milk from the GE cows.

Source: Agricultural Research Service News Service, USDA, Rosalie Marion Bliss, (301) 504-4318, rbliss@ars.usda.gov; April 4, 2005; personal correspondence, April 7, 2005

Syngenta Claims Ownership of World’s Rice

Swiss biotech corporation Syngenta has filed patent applications on much of the genetic material found in thousands of varieties of rice, the staple crop of more than half of the world's population. Syngenta is also attempting to patent the use of rice in plant and animal feed. "With these patents Syngenta is claiming the work of breeders and farmers from the past centuries as the company's own invention. The attempt to monopolize thousands of gene sequences from most important crop plants in one rush is nothing less than a theft of common goods," says Tina Goethe from Swissaid.

Source: Organic Bytes #64, 8/29/2005; www.organicconsumers.org/ge/syngenta081605.cfm.

Study of GM Corn Reveals Health Damage and Cover-up

When a German court ordered Monsanto to make public a 90-day rat study on June 20, 2005, the data upheld claims by prominent scientists who said that animals fed the genetically modified (GM) corn developed extensive health effects in the blood, kidneys and liver and that humans eating the corn might be at risk. The 1,139-page research paper on Monsanto's "Mon 863" variety also revealed that European regulators accepted the company's assurances that its corn is safe, despite the unscientific and contradictory rationale used to dismiss significant problems. Also, the study is so flawed that critics say it wouldn't qualify for publication in most journals--yet it is the primary document used to evaluate the health impacts.

Mon 863 is genetically engineered to produce its own pesticide, a toxin from *Bacillus thuringiensis*, or Bt, designed to attack the corn rootworm. Rats fed Mon 863 developed numerous health problems. Research biologist Arpad Pusztai, commissioned by the German government to evaluate the study in 2004, says that based on the evidence, no one can say that Mon 863 will cause cancer, allergies or anything specific, since the results are preliminary. He warns, however, "It is almost impossible to imagine that major lesions in important organs... or changes in blood parameters... that occurred in GM maize-fed rats, is incidental and due to simple biological variability."

French Professor Gilles-Eric Seralini, a molecular endocrinologist at the University of Caen, agrees that the results indicate a toxic reaction. Seralini is a member of two French government commissions that evaluate GM food, one of which originally rejected a request for approval of the corn variety in October 2003 due to the adverse findings of the study. Seralini won a French lawsuit allowing him to express his concerns in public, and now Greenpeace has won a German court battle that makes public the data that concerned him.

Pusztai and Seralini spoke about the Mon 863 study at a June 22 press conference in Berlin organized by Greenpeace. Both expressed alarm about unsupported arguments that Monsanto and some European regulators use to force product approvals. They are especially concerned about the ways Monsanto explains away statistically significant effects in the Mon 863 study, and about design problems with the study. For example, researchers used one control group that was fed a corn variety with the same parent line as the GM one, but six additional "control groups" were fed commercial corn varieties with entirely different genetics. Monsanto claimed that when changes in test rats were compared to this much larger, irrelevant control group, many changes were no longer significant.

Despite the strained logic, many results were still statistically significant when compared to these six other controls and were reported as such by the laboratory that Monsanto used to conduct the study. Monsanto ignored the study's figures and claimed that since the changes in the rats were still within a wide range of reactions that are normal for the animals, they should be considered biologically irrelevant. For example, they declared that a 52% decrease in reticulocytes (immature blood cells) was "attributable to normal biological variability." According to Pusztai, an allowance of 5% variability is the norm in food experiments. He adds that the 10% increase in blood sugar levels "cannot be written off as biologically insignificant, given the epidemic of diabetes."

When results were well beyond the range Monsanto defined as normal, the company claimed that the potentially dangerous health effects were not significant because the reaction among the rats was not consistent between males and females. "This is really ridiculous," says Seralini, because cancer and endocrinology researchers know that gender differences exist.

Monsanto also dismissed reactions that were not always dose specific. Rats fed a diet that was 11% Mon 863, for example, sometimes had more pronounced health effects than those in rats fed a 33% diet. Seralini notes that in endocrinology and toxicology research, differences in dosage are not always proportional to effects noted. A small dose of a hormone, for example, can cause a woman to ovulate, while a larger dose can make her infertile.

Finally Monsanto claimed that such a large study would be expected to produce lots of results in the statistically significant category purely by chance, thus, no follow-up is required. Seralini says, "It is dishonest not to do the tests again if you have statistical significance." Pusztai asks, "What is the point of doing a study if you dismiss the results you find?" He insists that studies are designed so that statistical significance indicates biological significance.

Although Monsanto's explanations were unscientific, the European Food Standards Agency (EFSA) recommended that Mon 863 be approved. The agency mimics Monsanto's justification, point for point. Still, most countries in the EU Council of Ministers voted not to approve the corn on July 24, 2005. But EU law requires a "qualified majority" on such a vote, so the pro-GM European Commission is now authorized to make the decision and is expected to approve Mon 863.

Other approved GM foods have had significant health effects in rats. According to Seralini, an oilseed rape (GT 73), Roundup Ready corn (NK 603), and two Bt corn varieties (Bt11 and Mon 810) all produced statistically significant problems that regulators did not pursue. Seralini said that effects of the GM crops were similar to those of pesticides, including inflammation disorders and problems in livers and kidneys, the two major organs involved with detoxification. Seralini is part of a research group raising money to study independently a GM variety he says showed more than 50 significant rat anomalies.

An in-depth and fascinating article about this issue (from which the above is taken) is “Genetically Modified Corn Study Reveals Health Damage and Cover-up,” by Jeffrey M. Smith [author of Seeds of Deception (www.seedsofdeception.com)]; Aug 27, 2005; at www.foodconsumer.org/777/8/Genetically_Modified_Corn_Study_Reveals_Health_Damage_and_Cover-up.shtml

Other resources:

Dr. Arpad Pusztai's comments commissioned by the German authorities on the 90-day study and a Monsanto summary: www.gmwatch.org/pltemp.asp?pid=66.

Dr. Pusztai's review, in easy-to-read table form, of some significant differences found in the rat-feeding study:
www.seedsofdeception.com/utility/showArticle?objectID=220.

Dr. Pusztai's reasons why the Mon 863 study should have been rejected:
www.seedsofdeception.com/utility/showArticle?objectID=219.

Information on the study provided by Professor Seralini to Greenpeace:
www.greenpeace.ca/f/documents/campagnes/ogm/MON_863_Seralini_june05.pdf.

The 1139-page study: www.monsanto.com/monsanto/content/sci_tech/prod_safety/fullratstudy.pdf>

Monsanto's 11-page summary of safety information:
www.monsanto.com/monsanto/content/sci_tech/prod_safety/ratstudy.pdf.

Friends of the Earth report on conflicts of interest in the European Food Standards Agency:
www.foeeurope.org/GMOs/publications/EFSAreport.pdf.

Testing Finds No GM Corn in Mexico

Extensive testing in Oaxaca, Mexico, during 2003 and 2004 failed to turn up evidence of genetically modified corn (GM), says a Reuters news story on Planet Ark. Genetically modified corn had been found in a remote mountainous region in 2001, raising fears that the native gene pool in this area where corn originated had been contaminated. According to the story, an education campaign in the area has urged farmers not to plant corn of unknown origin, because it could be imported GM corn. This education is credited with helping to stop the spread of GM corn in the region.

Sources: ATTRA Weekly Harvest Newsletter, Aug. 24, 2005;
www.planetark.com/dailynewsstory.cfm?newsid=31978&newsdate=09-Aug-2005

Monsanto Hogs Pig Patents

Monsanto has filed patents in 160 nations for... pigs. Filed at the World Intellectual Property Organisation in Geneva, the patent application stakes a claim on pig rights in more than 160

countries, including the United Kingdom, Germany, the United States, Russia, Brazil, Australia, China and India. If granted, Monsanto will be in a position to prevent breeders and farmers from breeding pigs with certain characteristics or methods of breeding, or force them to pay royalties. The patents cover methods of conventional breeding and screening for naturally occurring genetic conditions that can make pigs grow faster. Although controversial, the profit incentive of this legal maneuver for Monsanto is enormous: Annual pork sales in the United States alone are \$38 billion.

Says Eric Gall of Greenpeace, "If this patent gets granted, Monsanto could control the normal breeding of pigs to a large extent, without any real invention behind it. The experience farmers have with this company so far let them expect a further shocking exercise of squeezing royalties and suing farmers on global scale. This patent application is so absurd we wonder what Monsanto will come up with next?"

Sources: Organic Bytes #63, Aug. 11, 2005; Organic Consumers Association, www.organicconsumers.org/monsanto/pigs.cfm.; "Crop King Monsanto Seeks Pig-Breeding Patent Clout," by Carey Gillam, Reuters, August 10, 2005; <http://today.reuters.com/business/newsarticle.aspx?type=tnBusinessNews&storyID=nN10436446>; Greenpeace International, Aug 2, 2005, www.greenpeace.org/no-pig-patent.

Land Contaminated for More than 15 Years by GE Crops

A biotech industry- and British government-funded study has found that growing genetically engineered (GE) crops contaminates land for at least 15 years. Scientists examined test plots of GE oilseed rape and found that even if a farmer were to grow the GE plant for only one season, the plants would continue to grow year after year, contaminating future harvests. Nine years after growing the GE rape plants, two plants were growing on every square meter. After 15 years, one GE plant still grew per square meter. The British government is using the data to fortify its decision to uphold a ban on growing GE crops.

Source: Organic Bytes # 67, Oct. 14, 2005; www.organicconsumers.org/ge/ruin101105.cfm.

First U.S. Labeling Law for Genetically Engineered Food Passes in Alaska

The nation's first labeling legislation for a genetically engineered (GE) food passed unanimously in the Alaska Senate and House in May. In a move widely seen as a bellwether for similar legislation across the country, the Alaska House approved Senate Bill No. 25 requiring that genetically engineered fish be "conspicuously labeled to identify the fish or fish product as a genetically modified fish or fish product," whether packaged or unpackaged.

Tracie Letterman, staff attorney for Center for Food Safety, says, "When 90 percent of Americans want biotech foods labeled, it's only a matter of time before states fill in the regulatory gap left by the Federal government's failure to require mandatory labeling. Alaska is merely the first."

The Food and Drug Administration is reviewing an application for approval to commercialize GE salmon developed to grow much more rapidly than wild salmon.

The legislation identifies genetically modified fish as "a finfish or shellfish whose genetic structure has been (A) altered at the molecular level by means that are not possible under natural conditions or processes, including recombinant DNA and RNA techniques, cell fusion, gene deletion or doubling, introduction of exogenous genetic material, alteration of the position of a gene, or similar procedure; (B) the progeny of a finfish or shellfish described in (A) of this paragraph." The term "genetically modified fish product" is defined as any "...product prepared from a genetically modified fish."

"It will only take a few more states to enact similar legislation before the U.S. biotech food industry is forced to label all genetically engineered foods," said Joseph Mendelson, legal director of the Center for Food Safety. "Currently, the food industry has to label for European and other markets and soon will have to label for individual states. It's time for the government to do what nearly all Americans want and label all engineered foods."

Source: The Center for Food Safety press release, May 12, 2005; CFS, 660 Pennsylvania Ave, SE, #302, Washington DC 20003; P: (202)547-9359, F: (202)547-9429; office@centerforfoodsafety.org

Hawaiians Challenge Algae "Biopharming"

Citizen groups `Ohana Pale Ke Ao, Kohanaiki `Ohana, GMO Free Hawai`i, and Sierra Club, Hawai`i Chapter, represented by Earthjustice, have filed a lawsuit in the Circuit Court of the State of Hawai`i, against the Board of Agriculture (BOA), State of Hawai`i, challenging approval of a permit to allow production of potentially dangerous genetically modified (GM) microorganisms on the Big Island.

The permit allows Mera Pharmaceutical to import and produce in a state facility in Kailua-Kona, Hawai`i Island seven novel strains of "biopharmaceutical" algae genetically modified to produce unapproved experimental drugs. The suit seeks to compel the BOA to comply with the Hawai`i Environmental Policy Act by reviewing potential environmental impacts of the project. The suit also seeks to invalidate the BOA's approval and stop the project until the mandated review process is complete.

The alga used in the experiments, *Chlamydomonas*, is a common microorganism that exists in water, soil, even snowfields, can be transported in the air, and can survive a variety of harsh conditions in a dormant stage. Native, unique strains of *Chlamydomonas* exist in Hawai`i, raising concerns that the GM algae may cross with the native strains, as well as spread on its own.

This case marks the first time the state has had to make the sole decision whether to allow the import of a GE organism into Hawai`i. Federal agencies usually responsible for regulating GE organisms -- the U.S. Department of Agriculture, Environmental Protection Agency, and the FDA -- have all disclaimed jurisdiction over the biopharm algae. *Chlamydomonas*, however, is on the state Department of Agriculture's "list of restricted organisms" under its quarantine laws.

Because the biopharm algae project will use state lands, it also triggered Hawaii's EPA requirement of environmental review. This requires that the BOA, with full participation of the public, evaluate impacts of a project and its alternatives in an "environmental assessment;" if the project may have a significant effect on the environment, a more extensive environmental impact statement is required. However, at a June 26, 2005, meeting, the BOA approved the application without mentioning HEPA.

Source: "Hawaiians Challenge Algae 'Biopharming,' Earthjustice, www.yubanet.com/artman/publish/article_23442.shtml. Article posted at www.gefreemaine.org/article.php?story=20050816032809812.

Study Finds No Advantage in Growing Bt Corn

A three-year-long field experiment comparing commercial hybrid corn varieties with their transgenic Bt near-isolines in Ottawa, Canada, showed that some Bt hybrids took two to three additional days to reach silking and maturity, and produced similar or up to 12% less grain with 3 to 5% higher grain moisture at maturity. The study suggests that within the same maturity group, the superior hybrids (non-Bt trait) led to the greatest N accumulation and the highest grain yield. Under the conditions of the test, Bt hybrids offered no yield advantage relative to conventional counterparts when stalk lodging and breakage of the non-Bt counterpart by European corn borers was low to moderate.

Source: www.gefreemaine.org/article.php?story=20050818150125790

Migrant Health

Migrant Health Program Reaches Out

Since 1991, the Maine Migrant Health Program (MMHP) has worked to further our mission of improving the health status of migrant and seasonal farm workers (MSFWs) and their families by providing culturally appropriate care and services. A private, non-profit organization, MMHP is funded through governmental and private grants, and donations.

Through mobile clinics and our voucher referral program, the MMHP provided care to over 1000 of Maine's MSFWs in 2004. Our mobile units and outreach workers travel throughout the blueberry, apple, egg, Christmas wreath, tree-planting and broccoli camps offering medical and nursing care, access to dental services, health education, case management, transportation and interpretation to MSFWs and their families.

One of our country's least visible populations, the health status of MSFWs is compromised due to the physically demanding nature of their work, substandard housing, little to no access to care, and living in isolation. Most MSFWs live below the poverty line, lack health insurance, experience interruptions in their medical care, and may struggle with issues of immigration status. They also face a lack of culturally and linguistically appropriate services and may be unfamiliar with the U.S. health system or local resources. Also, they often need transportation

and an ability to take time off from work. While MSFWs make an overwhelming contribution to our lives and health by harvesting our fruits and vegetables (80% of which is done by hand in this country), they remain a critically vulnerable community. Unfortunately, many in our country have come to take for granted the quality, low-cost produce that is available in local grocery stores and do not think about the individuals or families who plant, nurture and harvest these crops.

The MMHP collaborates year-round with farm workers, growers, local organizations and primary care providers to offer Maine's MSFWs the best possible access to care. MMHP wants to increase its partnerships with Maine's community of growers to make sure that our services reach all MSFWs in Maine. If you are aware of a community or crew of workers who might benefit from our services, we encourage you to contact us. Growers provide a valuable perspective to the work that we do, so the MMHP is currently seeking members for our board of directors. For more information please contact our director, Barbara Ginley, at bginley@mainemigrant.org or call (207) 622- 9252.

Organic News

Why Organic Costs More

A feature in Grist magazine explores reasons for the sometimes higher cost of organic foods. Though demand for organic food is growing rapidly, that hasn't driven costs down the way some expected it would. For some products, demand is outstripping supply, driving prices up. In addition, organic products aren't reaching an economy of scale, because many organic producers are small operations committed to staying small. However, prices on processed organic food, which are markedly higher than those for conventional foods, could come down if economies of scale are reached. In Europe, governments have offered incentives to organic producers to help build a market that would reach an economy of scale. The article also notes that conventional food prices are artificially cheap due to government subsidies and externalities.

See: www.grist.org/news/maindish/2005/08/25/harrison-organics/

International Federation of Organic Agriculture Movements Approves Principles of Organic Agriculture

The General Assembly of the International Federation of Organic Agriculture Movements (IFOAM) approved the revised Principles of Organic Agriculture after a two-year participatory process. They will inspire the organic movement in its full diversity and articulate the meaning of Organic Agriculture to the world at large.

With growth of the organic sector and the challenges and opportunities that come with growth, the IFOAM General Assembly had concluded that the basic values underpinning Organic Agriculture needed further reflection and discussion.

The approved Principles of Organic Agriculture consist of four principles upon which organic agriculture is based:

The Principle of Health—Organic Agriculture should sustain and enhance the health of soil, plant, animal and human as one and indivisible.

The Principle of Ecology—Organic Agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them.

The Principle of Fairness—Organic Agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities.

The Principle of Care—Organic Agriculture should be managed in a precautionary and responsible manner to protect the health and well being of current and future generations and the environment.

Each principle is followed by an action-oriented explanation.

IFOAM's newly elected president Gerald A. Herrmann from Germany stated, "The public demands a value oriented and credible system based on a clearly identifiable framework, and IFOAM is just the organization to provide this. The Principles of Organic Agriculture should also be recognized as a foundation for public regulations. IFOAM will make significant efforts to ensure that the Principles of Organic Agriculture are recognized by the Codex Alimentarius, other United Nations agencies and governments worldwide."

Angela B. Caudle, IFOAM's newly appointed Executive Director, noted, "From acknowledging the importance of precautionary management and traditional knowledge, to recognition of social and ecological justice, the Principles of Organic Agriculture provide a precise and systematic framework for the further development of the organic sector that ensures the integrity of the organic agricultural system."

Details are at www.ifoam.org.

Hospitals Offer Organic Options

Hospitals in the United States are starting to offer organic options, according to the Institute for Agriculture and Trade Policy's report, *Healthy Food, Healthy Hospitals, Healthy Communities: Stories of Health Care Leaders Bringing Fresher, Healthier Food Choices to their Patients, Staff and Communities*.

Examples include the Cancer Treatment Centers of America, which operates two inpatient facilities, one in Tulsa, Oklahoma, and one in Zion, Illinois. Also, Kaiser Permanente, a large, nonprofit health plan headquartered in Oakland, California, has started 14 farmers' markets and farm stands at its medical facilities in California, Oregon and Hawaii and aims to have 29 markets by the end of 2005. Some of the markets feature local, organic producers.

Source: *What's News in Organic*, Issue 32, Summer 2005; Organic Trade Assoc., www.ota.com

NOFA Guide to Organic Land Care Available

The Northeast Organic Farming Association's Organic Land Care Program (NOFA OLC) has published the first edition of the NOFA Guide to Organic Land Care. The guide is designed to help home and business owners care for their landscapes organically, whether they hire a professional or do it themselves.

The guide lists over 120 organic land care professionals who have been accredited by NOFA. A chart locates professionals based on the types of services offered and territory served in eight states (New England minus Maine; New Jersey, New York, South Carolina).

Resources for people who want to do the majority of the work themselves include the golden rules of organic lawn care, a list of places to get soil tested, advice on what organic amendments to use and names of accredited professional consultants. Essays tell how to control common pests such as fleas, ticks, mosquitoes, poison ivy and weeds as well as how to conserve water.

As more people realize that the toxic materials in chemical 4-step programs are moving into water supplies and our bodies, they are choosing nontoxic, organic methods of lawn care. Most notably, this awareness has resulted in the recent passage of Connecticut PA 916 – an act that prohibits the use of pesticides on the grounds of elementary schools and day care facilities.

Chemicals in pesticides and fertilizers contaminate surface and groundwater, threaten the health of children, pets and wildlife, decrease the activity of beneficial soil organisms and degrade the overall, long-term health of lawns and gardens. These chemicals are unnecessary and a waste of money. This Guide helps citizens consider these important issues when they decide how to care for their landscapes.

The guide is available free at CT NOFA events and at www.ctnofa.org. For a hard copy, please send \$2 for shipping and handling to Land Care Guide, CT NOFA, Box 164, Stevenson, CT 06491

Organic Farmers Make a Difference for English Wildlife

In the largest and most comprehensive study of organic farming to date, published in the Royal Society journal *Biology Letters*, scientists from leading UK institutions show conclusively that organic farms benefit a range of wildlife, including wild flowers, beetles, spiders, birds and bats, more than their conventional counterparts.

Scientists from the British Trust for Ornithology (Thetford), the Centre for Ecology & Hydrology and the Wildlife Conservation Research Unit (University of Oxford) spent five years studying matched pairs of organic and non-organic cereal-producing farms in lowland England. They found that organic farming systems provide greater potential for biodiversity than conventional counterparts, as a result of greater variability in habitats and more wildlife-friendly management practices, which resulted in real biodiversity benefits, particularly for plants.

Some of the significant results are:

- * Organic crops contain almost twice as many types of plant species (85% more).

* There were more spiders (17% more), birds (5%) and bats (33%), too, but the effects were not as significant as for plants.

* Organic farms have more grassland and higher densities of hedges.

* Fields are smaller and hedges thicker on organic farms.

* Organic farmers sow crops later and cut hedges less frequently.

Dr. Rob Fuller, Director of Habitat Research for the British Trust for Ornithology (BTO) and lead author of the paper said: “Organic farms clearly have positive biodiversity effects for wild flowers. However, if they are to provide benefits on the same scale for species that need more space, like birds, we either need the farms to be larger or for neighbouring farms to be organic too. Currently, less than 3% of English farmland is organic so there is plenty of scope for an increase in area. Such an increase would help to restore biodiversity within agricultural landscapes.”

This integrated study covered 160 farms from Cornwall to Cumbria. Dr Lisa Norton of the Centre for Ecology & Hydrology, who did the work on plants and interviewed many of the farmers, said; “Organic farmers try to work with natural processes to increase productivity, using sustainable farming practices. Increased biodiversity is a happy by-product of this approach. For example, hedges on organic farms are kept in good stock-proof condition, as livestock are often an important part of the organic farming system. Typically, these stock-proof hedges are full of native, berry-producing shrubs, which are great for insects and the birds and bats that feed on them.”

The paper, “Benefits of organic farming to biodiversity vary among taxa,” by R.J. Fuller, L.R. Norton, R.E. Feber, P.J. Johnson, D.E. Chamberlain, A.C. Joys, F. Mathews, R.C. Stuart, M.C. Townsend, W.J. Manley, M.S. Wolfe, D.W. Macdonald and L.G. Firbank, was published in *Biology Letters* on Aug. 3, 2005.

Source: News Release, British Trust for Ornithology, Aug. 21, 2005; BTO, The Nunnery, Thetford, Norfolk IP24 2PU; Tel: +44 (0)1842 750050 Fax: +44 (0)1842 750030; info@bto.org

Debate over Organic Standards

This fall, the 600,000-member Organic Consumers Association (OCA) deluged Congress with over 350,000 letters and phone calls asking policymakers to reject an industry sponsored rider to the 2006 Agriculture Appropriations Bill. The rider would weaken organic standards and could allow hundreds of synthetic substances to be used in organic production, processing and packaging without prior review or public participation. It would also allow continued use of such synthetics as xanthan gum, ammonium bicarbonate and ethylene. The OCA also worried that the amendment would weaken the role of the National Organic Standards Board (NOSB), an independent advisory group that provides guidance to federal rulemakers. Such weakening may open the door for non-organic animal feed for organic livestock.

The Organic Trade Association (OTA) lobbied for the draft amendment to the Organic Foods Production Act of 1990 (OFPA), arguing that banning synthetic substances would harm organic producers. The OTA represents hundreds of small producers (some of whom oppose the draft

amendment), as well as corporations such as Kraft, Dole, General Mills and the Grocery Manufacturers of America (which includes Wal-Mart and the supermarket chains).

The amendment conflicts with a recent court decision (Harvey v. Veneman) concluding that synthetic substances should not be allowed in products bearing the USDA organic seal. Current USDA rules allow the organic label on products containing at least 95% organic ingredients; the remaining 5% can contain certain synthetics. The ruling in favor of Arthur Harvey's lawsuit said that including synthetics contradicted the intent of the 1990 law that led to national organic standards. Under the Harvey decision, products with synthetic substances that have been allowed for the past three years could no longer use the "USDA Organic" label but could be labeled "Made With Organic Ingredients," if they had at least 70% organic ingredients. (Harvey is a Maine organic blueberry grower.)

Urvashi Rangan of Consumers Union (CU) says that many of the synthetics could have natural counterparts, although they may be more expensive. Research by CU shows that 46% of consumers buy foods labeled as organic, and 85% of survey respondents do not expect artificial ingredients in these foods.

Despite such consumer preference, Congress passed the amendment in October, but the OCA is trying to reverse this rider with an "Organic Restoration Act" in Congress in 2006. When the USDA proposed, in 1997 and 1998, to allow genetic engineering, food irradiation and toxic sludge on organic farms, the organic community rebelled successfully, says OCA's Ronnie Cummins. Last year, the USDA moved to allow previously prohibited pesticides, tainted feeds and antibiotics in the production of organic foods—and the organic community again rebelled and won. The current debate pits industrial organic with smaller, more local organic producers.

Sources: ATTRA Weekly Harvest Newsletter, Oct. 5, 2005; Organic Bytes #67, Oct. 14, 2005. Organic Consumers Assoc., www.organicconsumers.org/ ; Organic Bytes #68, Oct. 28, 2005. <http://www.organicconsumers.org/sos.cfm> ; "O Brother, Where Artificial Thou? Fight over synthetic ingredients splits organics community," by Amanda Griscom Little, Grist, Sept. 29, 2005, www.grist.org/news/muck/2005/09/29/organics/index.html

Organic Consumers Fight to Stop Factory Farm "Organic" Dairy

Under pressure from agribusiness, the USDA is refusing to act against factory farm dairy feedlots that sell their products as "organic." Also, a loophole in federal organic regulations allows organic dairy farms to import young calves from non-organic, conventional farms (where animals have been weaned on cow blood, injected or medicated with antibiotics, and fed genetically engineered corn, soybeans and cotton seeds, slaughterhouse waste and tainted animal fats). These confinement and feeding practices are inhumane, unhealthy, environmentally unsustainable, and unfair to the majority of organic dairy farmers, who follow strict organic principles regarding pasture access and animal feed, and who do not import animals into their herds from conventional farms. On November 16, organic consumer and farm representatives attended the National Organic Standards Board meeting in Washington, D.C., to urge the USDA to stop allowing giant, intensive, confinement dairy feedlots to market their milk as "organic."

For an update, see organicconsumers.org.

Source: Organic Consumers Assoc. Alert, Oct. 25, 2005, www.organicconsumers.org

Organic Trade Association Addresses Issues Concerning Organic Standards

The Organic Trade Association (OTA) says it will continue to work with the U.S. Department of Agriculture (USDA) to help address issues concerning the National Organic Program (NOP) raised by the Jan. 26, 2005, rulings in the lawsuit brought by Arthur Harvey of Maine against the Secretary of Agriculture (Harvey v. Veneman). The U.S. Court of Appeals for the First Circuit based in Boston, Mass., ruled in favor of three of seven issues Harvey raised concerning technical inconsistencies between the national organic standards implemented in 2002 and the Organic Foods Production Act (OFPA) of 1990. In its ruling, the court called for the following changes to NOP regulations:

- 1) For multi-ingredient products labeled as "Organic" (at least 95% organic ingredients), OFPA bars synthetic substances. NOP regulations have allowed 38 synthetics, such as baking powder, to be used in these organic processed foods on a limited basis after strict review. Most of the synthetics that have been approved up to now would no longer be allowed.
- 2) NOP regulations have allowed whole dairy herds transitioning to organic production to use 80% organic feed for the first nine months. However, because OFPA requires all organic dairy animals to receive organic feed for 12 months prior to the sale of milk or milk products, this provision no longer can be followed.
- 3) For multi-ingredient products labeled as "Organic" (at least 95% organic ingredients), agricultural products not available commercially as organic must have individual reviews in order to be used in the 5% not required to be organic.

If USDA chooses not to appeal the decision, the process for changing the regulations will take time, during which those within the industry expect to be able to comment.

Source: Organic Trade Association Press Release, Jan. 27, 2005; P.O. Box 547 Greenfield, MA 01302; Holly Givens, 413-774-7511, Ext. 18

Body Care Products, Pet Foods, Supplements to be Certified Organic

The USDA will allow certification of qualifying organic body care products, pet foods and nutritional supplements. Since 2004, the USDA National Organic Program had been telling certified organic companies to remove the "USDA Organic" seal from non-food products. Taking advantage of the lack of regulatory oversight, some body care and supplement companies had been misleading consumers with fraudulent "organic" claims on products with synthetic ingredients. Thanks to thousands of consumers signing an Organic Consumers Association petition, and over 400 businesses signing on to support the OCA campaign, the USDA said on August 23, 2005, that it will accept certification and allow use of the "USDA Organic" seal on all organic non-food products that meet the national standards.

Source: Organic Bytes #64, The Organic Consumers Association, Aug. 29, 2005;
www.organicconsumers.org/bodycare/

Pest Control

Fly Hunts Down Greenhouse Pests

Agricultural Research Service (ARS) scientists have helped Cornell University colleagues identify the Old World hunter fly, *Coenosia attenuata*, on this continent for the first time. Originally from Europe, this predator is also known as the "killer fly." A member of the same insect family as the common housefly (Muscidae), the Old World hunter fly preys upon some of the insects that bother greenhouse keepers most, including fungus gnats, shore flies, leafminers, fruit flies, moth flies and some leafhoppers.

The fly's presence here was confirmed by Cornell graduate student Emily Sensenbach, under the direction of ecologist Steve Wraight of ARS' Plant Protection Research Unit (PPRU) and associate professor John Sanderson. According to Wraight, this fly lives up to its name, apparently enjoying a challenge. It sits, waits and pursues only prey that is in flight. When it catches its target, the fly punctures it with a daggerlike mouthpart and consumes the liquid inside. Its soil-dwelling larvae are also predatory, feeding mainly on larvae of other insects. Wraight says that hunter flies have considerable potential in biological control of insect pests. For more information, see the October issue of Agricultural Research at www.ars.usda.gov/is/AR/archive/oct05/pests1005.htm.

Source: ARS News Service, Agricultural Research Service, USDA, Luis Pons, (301) 504-1628, lpons@ars.usda.gov; October 6, 2005

Pesticides

“Inert” Ingredient in Roundup not so Benign

French biochemists have found that Roundup herbicide damaged placenta cells at least twice as much as glyphosate (the active ingredient in Roundup) alone. Likewise, Roundup inhibited the activity of the sex hormone enzyme aromatase at a concentration four times less than that of glyphosate. These studies suggest that “inert” ingredients in Roundup make the herbicide more available to cells and help it penetrate cells more easily.

Sources: Richard, S. et al, 2005. Differential effects of glyphosate and Roundup on human placental cells and aromatase. *Environ. Health Persp.* Doi:10.1289/ehp.7728 (at <http://dx.doi.org>); Cox, Caroline, “Another ‘Inert’ Surprise in a Commonly Used Herbicide,” *J. of Pesticide Reform*, Spring 2005.

Roundup® Kills Amphibians

Roundup®, the second most commonly applied herbicide in the United States, is "extremely lethal" to amphibians, says Rick Relyea, assistant professor of biology at the University of Pittsburgh. His field experiment is one of the most extensive studies on the effects of pesticides on nontarget organisms in a natural setting, and the results may provide a key link to global amphibian declines.

In a paper titled "The Impact of Insecticides and Herbicides on the Biodiversity and Productivity of Aquatic Communities," published in *Ecological Applications*, Relyea examined how a pond's entire community--25 species, including crustaceans, insects, snails and tadpoles--responded to the addition of the manufacturers' recommended doses of two insecticides--Sevin® (carbaryl) and malathion--and two herbicides--Roundup® (glyphosate) and 2,4-D.

Relyea found that Roundup® caused a 70% decline in amphibian biodiversity and an 86% decline in the total mass of tadpoles. Leopard frog tadpoles and gray tree frog tadpoles were completely eliminated, and wood frog tadpoles and toad tadpoles were nearly eliminated. One species of frog, spring peepers, was unaffected.

"The most shocking insight coming out of this was that Roundup®, something designed to kill plants, was extremely lethal to amphibians," said Relyea, who conducted the research at Pitt's Pymatuning Laboratory of Ecology. "We added Roundup®, and the next day we looked in the tanks and there were dead tadpoles all over the bottom."

Relyea initially conducted the experiment to see whether Roundup® would indirectly affect frogs by killing their food source, the algae. However, the herbicide actually increased the amount of algae in the pond because it killed most of the frogs.

Previous research had found that the lethal ingredient in Roundup® was not the herbicide itself, glyphosate, but the surfactant, or detergent, that allows the herbicide to penetrate the waxy surfaces of plants. In Roundup®, that surfactant is polyethoxylated tallowamine. Other herbicides have less dangerous surfactants: For example, Relyea's study found that 2,4-D had no effect on tadpoles.

"We've repeated the experiment, so we're confident that this is, in fact, a repeatable result," said Relyea.

Source: University of Pittsburgh Press Release, April 1, 2005; Karen Hoffman
klh52@pitt.edu; 412-624-4356

EPA Sweet on Atrazine

As the spring herbicide application season gets underway, more calls are heard to limit atrazine, the most widely used agricultural chemical in the United States and a nearly ubiquitous contaminant of surface and ground water. Legislation to ban the herbicide was introduced in Minnesota for the second year in a row, and regulators in Australia are reconsidering approval of the herbicide. Meanwhile, on February 17, 2005, the Natural Resources Defense Council

(NRDC) filed a lawsuit against the U.S. Environmental Protection Agency (EPA) for holding upwards of 40 private meetings with atrazine's manufacturer, Syngenta, while the agency was conducting a special review of the herbicide to consider its impacts on amphibians and links to cancer in humans. That review resulted in EPA approving, in 2003, continued use of the herbicide.

The European Union has banned atrazine due to groundwater contamination, and Syngenta has made alternative products available in some nations. In 2002 the herbicide was listed by the UN Environmental Programme as a globally important persistent toxic substance with the potential for regional transport. Measurable levels of the herbicide have been found in rain and fog in Europe and in the United States, where atrazine has been detected at levels higher than EPA's safety standard in the drinking water serving more than a million U.S. residents.

In Minnesota, where the herbicide is applied to 45% of the state's corn acreage, surface water monitoring by the Minnesota Department of Agriculture (MDA) reports atrazine in all regularly sampled rivers, with contamination in some rivers at levels presenting clear health risks to pregnant women and children. Sampling by MDA during rainy seasons, for example, revealed atrazine in the Whitewater River ranging from 1.8 to 15.1 parts per billion between 2001 and 2003, and measured levels in one season as high as 32 parts per billion. The EPA drinking water standard is 3 ppb, and the California standard for drinking water is 1 part per billion.

Two weeks ago the Minnesota House Agriculture and Rural Development committee rejected two bills banning atrazine, but supporters plan to re-introduce language phasing out the herbicide. A "Citizens Right to Know" bill that would allow citizen access to pesticide application data was also before the committee. Jannette Brimmer of the Minnesota Center for Environmental Advocacy highlighted the importance of the right to know legislation: "At a time when we are learning of chemically-castrated and hermaphroditic frogs, fish and birds, it is unacceptable that we currently have no way of accurately determining where, how much and what kinds of pesticides are being applied in Minnesota."

In a recent article in *BioScience*, Dr. Tyrone Hayes, author of studies indicating that low levels of atrazine affect sexual development in frogs, analyzed several Syngenta-funded studies widely reported to dispute the results of his extensive laboratory and field research. In the article Hayes dryly notes that "data presented in these studies are not in disagreement with my laboratory's peer-reviewed, published data" and points to careless animal husbandry practices and contaminated reference sites that produced data inappropriate for comparison with his published data.

In 2002, Dr. Hayes reported chemical castration (demasculization) and feminization of frogs at low but ecologically relevant concentrations of atrazine. Earlier work by Hayes and his laboratory with funding from Syngenta was disputed by the agro-chemical giant and not published. Hayes duplicated his work independently, examining leopard frogs (*Rana pipiens*) across a transect from Utah to the Iowa/Illinois border, and detecting frog abnormalities similar to those found in his laboratory in every site where atrazine levels were over 0.1 ppb. When

Hayes' work was published, EPA was midway through a special review of atrazine. Syngenta continued to dispute Hayes' findings while also offering him \$2 million to continue his research in "a private setting."

In October of 2003 EPA ended its special review and allowed continued use of atrazine. Instead of addressing water contamination issues, EPA developed an agreement with Syngenta to conduct a monitoring program in 40 watersheds, fewer than 4% of the 1,000 streams identified by the EPA as being at highest risk for atrazine contamination. Under this deal, Syngenta would then determine the effects and mitigation needed for the herbicide's continued use.

EPA also reversed an earlier finding and concluded that atrazine was not likely to cause cancer in humans, despite the fact that atrazine has been strongly implicated as a human carcinogen. A number of studies have connected farmworker exposures with increased risk of prostate cancer, and atrazine water contamination with increased risk of breast cancer.

The NRDC's legal challenge to EPA is similar to a suit it filed more than 20 years ago, also charging EPA with making deals with industry. As that case progressed, EPA Administrator Ann Gorsuch resigned amid allegations of improper industry influence, and the agency agreed to strict criteria of open and transparent decision making around the re-registration or "special review" of pesticides. Those restrictions forbade EPA to make a final decision based on negotiations with industry and required a balance of perspectives in committees of outside advisors. The NRDC lawsuit charges that EPA has ignored these regulations in its regulation of atrazine.

Sources: Pesticide Action Network Press Release, March 31, 2005; Tyrone B. Hayes, "There is No Denying This: Defusing the Confusion about Atrazine," *Bioscience*, December 2004, Vol. 54, No. 12, p. 1138-1149; Pesticide Monitoring in Water Resources: Annual Data Report, February 24, 2005, www.mda.state.mn.us/appd/ace/reports/2005annual.pdf; Press Release, Minnesota Center for Environmental Advocacy, www.mncenter.org; Press Release, Feb 17, 2005, NRDC, www.nrdc.org

CDC Body Burden Study Finds Widespread Pesticide Exposure

The Centers for Disease Control and Prevention (CDC) released the Third National Report on Human Exposure to Environmental Chemicals in July, finding that more than 90% of U.S. residents carry a mixture of pesticides in their bodies. Many of these chemicals are linked to health effects such as cancer, birth defects and neurological problems. Children, who are particularly vulnerable to the effects of pesticide exposure, had higher levels of some pesticides in their bodies than adults did.

The CDC sampled blood and urine from thousands of subjects across the country for 148 chemicals, 43 of them pesticides--just over 3% of the 1,284 pesticide active ingredients currently registered in the United States.

Pyrethroids were included for the first time in this study, and CDC found one pyrethroid metabolite in more than 75% of test subjects. Pyrethroids insecticides are widely used in agriculture, in home and garden pest products, and for lice control. They are a synthetic version of pyrethrins, a naturally occurring insecticide extracted from chrysanthemums. Unlike pyrethrins, which break down in the environment within hours, synthetic pyrethroids can last from days to months.

Exposure to pyrethroids can produce neurotoxic effects, vomiting, diarrhea and a tingling sensation on the skin. Pyrethroids are also suspected endocrine disruptors and possible carcinogens, and as a group are the second most common cause of pesticide poisoning reported to U.S. poison control centers.

Some pesticides were found in the CDC study at higher levels in children than in adults. For example, the organophosphate pesticide chlorpyrifos was found at higher concentrations in children, indicating exposures more than four times the level EPA considers "safe." Home use of chlorpyrifos was banned in 2001 due to concern over health effects in children, but an estimated 10 million pounds are used in agricultural fields every year. In the 2001/2002 period covered by this report, chlorpyrifos was found in more than 75% of the population.

The organochlorine pesticides aldrin, dieldrin and endrin, banned in the United States for decades, were included in the CDC study for the first time and were detected in very low or unmeasurable amounts. CDC also found breakdown products of the organochlorine pesticide lindane in nearly half the subjects. The CDC did not test for other organochlorines now used in the United States, such as endosulfan and dicofol. Organochlorines persist in the environment, build up in people's bodies, and are passed from mother to child in the womb and through breastfeeding.

A body burden study released in July by the Environmental Working Group (EWG) reported similar findings, focusing specifically on chemical exposures infants received before they were born. The EWG tested fetal cord blood of 10 healthy infants born at various locations around the U.S. in 2004, and found exposures to a total of 287 chemicals. Among the most pervasive pesticides found in newborns were hexachlorobenzene, dieldrin and DDT (and its contaminants and byproducts).

The Pesticide Action Network issued recommendations based on the CDC findings, including:

- Corporations such as Bayer CropScience that distribute organochlorine pesticide products should withdraw them immediately from the U.S. market.
- Policymakers should use CDC's biomonitoring data to help develop policies that better protect public health, particularly of children.
- CDC should make more detailed data (such as location and timing of sampling and occupational information) publicly available to help policymakers set priorities and evaluate impacts of state-level policies, such as California's ban of lindane for pharmaceutical use.
- Consumers should choose organic food and pesticide-free household and hygiene products to protect their families and support markets for healthy alternatives.

Sources: "CDC National Report on Human Exposure to Environmental Chemicals," www.cdc.gov/exposurereport/; "Body Burden, The Pollution in Newborns," Environmental Working Group, www.ewg.org/reports/bodyburden2/release_20050721.php; Reigart, R.J., and Roberts, R.J. 1999. Recognition of Management of Pesticide Poisonings 5th Edition. Washington DC: U.S. Environmental Protection Agency; PANNA, www.panna.org.

Methyl Bromide Loophole Prolongs Ozone Hole

On July 1, 2005, a dozen nations agreed under the Montreal Protocol on Substances that Deplete the Ozone Layer to reduce exemptions for "critical use" of methyl bromide by 20% in 2006. Methyl bromide is 50 times more destructive to the ozone layer than chlorine from CFCs (chlorofluorocarbons), the other major class of chemicals targeted by the treaty. In 1987, sixteen industrial nations, including the United States, agreed under the Protocol to end all use of methyl bromide by 2005, and developing countries agreed to end use in 2015. Instead, use of methyl bromide as a soil fumigant pesticide has increased in the United States.

The 20% reduction appears to be an environmental victory, but in fact, U.S. consumption of methyl bromide rose so steeply in 2005 that the 20% "reduction" represents an increase over 2002-2004 levels. The United States entered negotiations for 2006 "critical use" exemptions requesting to use 37% of its 1991 baseline number, despite the fact that U.S. users in 2002 got by with less than 30% of the baseline. The Parties awarded the U.S. 32% of the 1991 base and indicated they will hold nations to 29% of baseline numbers in 2007. This significant "loophole" will prolong the hole in the ozone layer. In 2004 the Bush administration began to pressure for "critical use" exemptions (permission to continue using a substance) for methyl bromide, primarily as a pre-plant fumigant for tomato growers in Florida and strawberry producers in California. Instead of completing the methyl bromide phaseout as promised in 2005, sixteen nations asked for and were granted exemptions for use of 16,050 metric tons in 2005. In December of 2004 the Natural Resources Defense Council sued the U.S. Environmental Protection Agency over its handling of methyl bromide critical use exemptions.

Sources: Pesticide Action Network North America press release, July 29, 2005, www.panna.org. UNEP Report of Second Extraordinary Meeting of the parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, July 1, 2005, www.unep.org/ozone/index.asp; Associated Press, July 2, 2005; Background, Critical Use Exemptions for Access to Methyl Bromide, Dept of the Environment & Heritage, Australian Government, www.deh.gov.au/atmosphere/ozone/methylbromide/criticaluseexempt.html; PANUPS, December 10, 2004, April 5, 2004; Methyl Bromide Briefing Kit, 1995, Methyl Bromide Alternatives Network, www.panna.org.

Maine Environmental Groups Want Aerial Spraying Ban

The Maine People's Alliance and the Toxics Action Center (TAC) are seeking to ban all spraying of aerial pesticides in Maine, to ban organophosphate insecticides, and to limit other pesticide uses. In August the groups began a campaign to petition Maine's Board of Pesticides Control for more stringent restrictions on pesticide use by farmers, commercial lawn care and pest management companies. They want aerial spraying to be phased out; and renewed research

on pesticide drift, especially near Washington and Hancock county blueberry fields. The TAC reported in August that six of nine pesticides commonly used on blueberries are carcinogenic, and four affect reproductive and hormone systems.

Research conducted by the BPC from 2000 to 2003 showed that airborne pesticides travel hundreds of feet to, in one case, nearly a mile from application sites. Matthew Davis of Environment Maine said that small amounts of pesticides could affect endangered Atlantic salmon in rivers traversing blueberry lands.

The groups want organophosphate insecticides banned as well, because many are carcinogens and most are highly toxic. They also want better notification for homeowners when pesticides are to be used nearby, and they say applicators should pay the costs of notification. Currently, an informal system covers rural areas, and urban residents can pay \$20 to be on a registry requiring notification when lawn care or pest management companies will be making applications nearby. Also, the groups want the BPC to require that applicators provide interested people with Material Safety Data Sheets describing health risks from pesticides being used nearby.

The TAC report, "Catching the Toxic Drift," is available free at <http://toxicsaction.org> or for \$10 from Toxics Action Center, 39 Exchange St., Suite 301, Portland 04101.

Source: "Groups seek pesticide limits," Aug. 18, 2005, Bangor Daily News, www.bangornews.com/mainenews/ Also posted at www.gefreemaine.org/article.php?story=2005081814584318

Tell Home Depot You Want Pesticide-Free Lawn Products

Every year U.S. homeowners apply at least 90 million pounds of pesticides to their lawns and gardens, and use has risen rapidly. A recent survey reported that when informed about risks posed by lawn chemicals, nearly 70% of homeowners indicate a preference for non-toxic alternatives. Still, Home Depot and many other retailers are not responding to this consumer movement, nor are they offering information and products consumers need to switch to safer and healthier lawn care.

The chemical industry continues lobbying to prevent restrictions on pesticide use, and a major new public relations campaign is attacking public interest groups for misleading the public about the hazards of pesticides.

The Pesticide Action Network of North America and The National Coalition for Pesticide-Free Lawns is encouraging Home Depot, one of the largest U.S. home and garden retailers, to carry a full range of organic, non-toxic lawn care products; to train its staff in natural lawn care; to provide do-it-yourself materials; and to reconsider the sale of "weed and feed" lawn products. In October the groups asked consumers to help convince Home Depot to carry a full line of natural, non-toxic lawn and garden products by spring 2006 by writing to Brad Shaw, chair of Home Depot's Environmental Council, and leaving a copy of their letter at their local Home Depot. They also want Home Depot staff to be trained in natural lawn and garden care; and printed information to be available on these topics for customers.

Source: Pesticide Action Network North America press release, Sept. 2, 2005, panna.org/resources/panups/panup_20050902.dv.html

Arsenic in U.S. Rice May Stem from Pesticide in Soil

Rice grown in the United States contained more arsenic than rice grown in Europe, India and Bangladesh, according to a recent report. Researchers say that people consuming a subsistence diet of this rice may be consuming more than the maximum amount of arsenic provisionally recommended by the World Health Organization. The researchers suspect that the arsenic may be a legacy of arsenic-based pesticides used on cotton fields that later became rice fields.

Source: ATTRA Weekly Harvest Newsletter, Aug. 24, 2005; See also www.nature.com/news/2005/050801/full/050801-5.html

Study Documents Neurologic Effects of Chronic Pesticide Exposure

Chronic moderate pesticide exposure is linked to neurologic symptoms affecting both the central and peripheral nervous systems, according to an Agricultural Health Study published in the July 2005 Environmental Health Perspectives. As part of the AHS, almost 20,000 farmers and private pesticide applicators completed surveys on demographic characteristics, medical history and neurologic symptoms, lifestyle and pesticide use. Applicators with the most cumulative lifetime days of pesticide use reported more neurologic symptoms than those with the fewest, for pesticides overall. The relationship between cumulative exposure and symptoms was strongest with insecticides, with organophosphates and organochlorines having the strongest relationship with symptoms. For more information, see

<http://ehp.niehs.nih.gov/docs/2005/113-7/ss.html>

Source: ATTRA Weekly Harvest Newsletter, Aug. 3, 2005

Glyphosate Linked to Environmental, Health Problems

Two new peer-reviewed scientific studies have further confirmed the toxicity of glyphosate, the world's most commonly used herbicide. The June 2005 Environmental Health Perspectives reports that glyphosate, sold by Monsanto as "Roundup," damages human placental cells at exposure levels 10 times less than what the company claims is safe. A study in the August journal of Ecological Applications found that even when applied at one-third of the maximum concentrations typically found in waterways, Roundup still killed up to 71% of tadpoles. Similar glyphosate studies around the world have been equally alarming. The American Academy of Family Physicians epidemiological research linked exposure to the herbicide with increased risk of non-Hodgkin's lymphoma, a life-threatening cancer, while a Canadian study linked glyphosate exposure with increased risk for miscarriage. A 2002 study linked glyphosate exposure with increased incidence of attention deficit disorder in children. Roundup is sprayed heavily on 140 million acres of genetically engineered crops around the world.

Source: Organic Bytes #63, Aug. 11, 2005, Organic Consumers Assoc., www.organicconsumers.org/monlink.html

Fifteen Superweeds Resistant to Glyphosate

A study in *Outlooks on Pesticide Management* reports that 15 weed species now have complete resistance to the world's most widely used herbicide, glyphosate. Researchers say most of these "superweeds" have developed resistance over time, due to long-term overuse of the chemical. Glyphosate, most commonly applied as Monsanto's Roundup, has been heavily used globally for over 30 years and is widely used in crops that are genetically engineered to resist it.

Source: Organic Bytes #64, 8/29/2005; www.organicconsumers.org/ge/superweed081905.cfm

Spinosad Bad for Bees?

Research at Simon Fraser University in Canada has shown that adult bumblebees that were exposed to the pesticide spinosad during larval development showed signs of impaired foraging ability. Results published in the May 2005 issue of *Pest Management Science* indicate that pesticide levels previously thought to be safe for pollinators may prove harmful to wild bees.

Source: What's News in Organic, Summer 2005, Organic Trade Assoc., www.ota.org

Organic Diet Eliminates Some Pesticides in Kids' Urine

Scientists from the U.S. Centers for Disease Control have shown that switching to organic foods provides children with "dramatic and immediate" protection from toxic pesticides. The scientists tested the urine of elementary school children from 23 families in suburban Seattle for 15 days. Children ate conventional foods for 10 of the days and organic foods for five days. During those five days, the toxic organophosphate insecticides malathion and chlorpyrifos in the children's urine completely disappeared. These are two of the most commonly found pesticides on non-organic foods and are associated with nerve damage in children. Pesticide levels increased five-fold in the children's urine as soon as conventional foods were reintroduced to their diet. The study concludes, "An organic diet provides a dramatic and immediate protective effect against exposure to organophosphorus pesticides that are commonly used in agricultural production." The researchers point out that eating organic foods will not eliminate exposure to organophosphates if these insecticides are used in homes to treat insect infestations, for example.

Sources: Organic Bytes #65, Sept. 11, 2005, Organic Consumers Association; www.organicconsumers.org/school/organicstudy090405.cfm; "Organic Choice: Pesticides vanish from body after change in diet," by Ben Harder; *Science News Online*, Sept. 24, 2005; Vol. 168, No. 13; www.sciencenews.org/articles/20050924/fob6.asp; Lu, C., et al. In press. Organic diets significantly lower children's dietary exposure to organophosphate pesticides. *Environmental Health Perspectives*. <http://dx.doi.org/10.1289/ehp.8418>

Common Pesticide Linked to Reduced Fertility in Women

Methoxychlor (MXC), a common insecticide used on food crops, may interfere with proper development and function of the reproductive tract, leading to reduced fertility in women, researchers at Yale School of Medicine write in the August issue of *Endocrinology*. The

insecticide is most commonly applied to a long list of crops including apples, grapes, sweet potatoes and cabbage.

Using mice and human cell lines, the researchers found that MXC, which was manufactured to replace DDT, alters the estrogen-regulated gene *Hoxa10* in the reproductive tract and reduces the ability of the uterus to support embryo implantation.

The synthetic insecticide MXC is used to kill flies, mosquitoes, cockroaches and other insects, and is applied directly to food crops, livestock, home gardens and pets. It can mimic the action of hormones and in some instances interfere with endocrine function. MXC and other chemicals like DDT have been shown in other studies to induce abnormalities in tissue development and function in the female reproductive tract.

“MXC has an adverse effect on these mice similar to that of DES, a synthetic estrogen,” said senior author Hugh S. Taylor, M.D., associate professor in the Division of Reproductive Endocrinology and Infertility in the Department of Obstetrics, Gynecology & Reproductive Sciences at Yale School of Medicine. “Female offspring of women exposed to DES were more likely to have an abnormally shaped cervix, were more prone to cancer of the vagina, miscarriages, early labor and other complications.”

Source: Regional Farm and Food Project September News, Sept. 22, 2005, www.farmandfood.org; www.yale.edu/opa/newsr/05-09-06-02.all.html

Sustainability

Series on Sustainability in Norway, Maine

Aiming to get information about affordable, sustainable housing out, a series of free programs is being offered at the public library in Norway, Maine. The first program demonstrated building small homes with recycled lumber and using discarded tires in a foundation. The November and December programs explore photovoltaics, including using the tax credit. January programs will explore alternative building methods, including straw bale.

Termed “The Sustainability Series of Western Maine,” the idea evolved from the Affordable Housing committee of Bethel's Creative Economy Initiative. The first few programs focus on housing and energy, then will shift to farming and gardening in February, with tentative plans to offer study groups through area Adult Ed programs.

Also, the Paris and Bethel libraries have agreed to allot reference area space for resources about sustainability. People may lend books, videos, etc., to either library. To submit a proposal for a presentation, please contact Jan Kubiak at 824-4301 or jankubiak@yahoo.com. FMI: Kim Patnode, 824-0426, kpatnode@hotmail.com

Vertical Farms

Vertical Farms: the Agriculture of the Future?

As the human population increases and as more people migrate to cities, how will food production need to change? With approximately 80% of the world's arable land already in use, Dr. Dickson Despommier and his students at Columbia University's Mailman School of Public Health propose a multi-story, intensely managed, indoor farm producing traditional greenhouse crops as well as pigs and fowl year-round. See www.verticalfarm.com.

Source: ATTRA Weekly Harvest Newsletter, Aug. 24, 2005

Spring 2006

Agricultural Funding

Conservation Innovation Grants

The Natural Resources Conservation Service (NRCS) requests applications for Conservation Innovation Grants (CIG) to stimulate development and adoption of innovative conservation approaches and technologies. Applications are accepted from all 50 states, the Caribbean Area, and the Pacific Basin Area. For FY 2006, up to \$20 million is available for the National CIG competition. Three CIG components available in FY 2006 are: Natural Resource Concerns, Technology, and the Chesapeake Bay Watershed. Applications are requested from eligible government or non-government organizations or individuals for competitive consideration for projects of up to three years in duration. Proposals are due March 20, 2006. For more information, see www.nrcs.usda.gov/programs/cig/.

Antibiotics

Vegetables Contaminated with Antibiotics from Manure of Conventionally-Raised Animals

A study in the Oct. 12 online edition of the Journal of Environmental Quality shows that fresh vegetables may contain antibiotics when they're grown in soil that has been amended with manure that contains antibiotics (often included in conventional animal feed). Antibiotics that are not absorbed in the gut end up in manure. In greenhouse studies, green onions, corn and cabbage absorbed small concentrations of the antibiotic chlortetracycline, but not tylosin. The study authors warned that risks may be greatest for people who are allergic to antibiotics. For more information, see <http://jeq.scijournals.org/cgi/content/abstract/34/6/2082>

Cannabis

Drug Warriors Confuse Hemp and Marijuana

The hemp product industry is booming. With annual sales increasing by 50% per year, hemp is found in food, clothing, paper, cosmetics and more.

This is great news--for non-U.S. farmers. Hemp seeds and fiber can be imported into the United States, but the United States is the only industrialized nation that has not legalized industrial hemp as a crop, although the federal government encouraged farmers to grow it until 1970. Several states are working to legalize industrial hemp cultivation, but Tom Riley of the White

House Office on National Drug Control Policy told USA Today, "Let's not be naïve. The pro-dope people have been pushing hemp for 20 years because they know that if they can have hemp fields, then they can have marijuana fields. It's ... stoner logic."

Source: Organic Bytes #70, Nov. 30, 2005;
www.organicconsumers.org/organic/hemp112205.cfm

Fiber

Flax Adds Performance Features to Cotton Textiles

Agricultural Research Service scientists and engineers have created a cotton-flax denim blend that will make jeans more comfortable even in summer heat. Denim is one of the largest commodity fabrics produced in the world. Flax is nearly three times stronger than cotton and is among the strongest natural fibers known. Clothing materials, such as woven denims and knitted fabrics made from these particular cotton-flax blends, could be compared to a new, nonwrinkling form of linen.

At the ARS Cotton Quality Research Station in Clemson, South Carolina, mechanical engineer Jonn A. Foulk and technicians have blended cotton with flax to create new yarns. The new blends impart "moisture management" to woven denim and knitted fabrics. The work is being done at the station's state-of-the-art spinning facility.

Adding flax to clothing fabric helps keep skin cool partly because flax improves moisture wicking, the ability of fabric to pull moisture away from the skin, and the ability of fabric to dry quickly. The Clemson station's researchers are also embedding flax fibers into polymers to create composite materials and nonwoven sheets for industrial uses. The station is looking for additional industry partners, including mill and apparel manufacturers, to help develop the technologies.

Flax is a good candidate for growing in rotation with cotton in the Southeast. Also, byproducts from processing natural flax fibers are fully recyclable, but those from processing synthetic fibers generally are not. [Ed. note: Rotating cotton with flax crops should help break pest cycles and reduce pesticide use on non-organic cotton crops, now one of the largest users of pesticides in the world. Also, flax can be grown in Maine.]

Source: ARS News Service, Agricultural Research Service, USDA, Rosalie Marion Bliss, (301) 504-4318, rbliss@ars.usda.gov, Nov. 17, 2005. See the Nov. 2005 Agricultural Research at www.ars.usda.gov/is/AR/archive/nov05/fiber1105.htm

Fruit

Fruit Exploreres Find Heartier Apple Tree Stock

Grafts, genetic material and rootstocks collected during the 1990s from wild apple trees in central Asia may revolutionize the U.S. apple industry. This material shows potential for helping

breed trees that bear popular, domestic apples while standing up to destructive diseases and fungi, according to Agricultural Research Service (ARS) scientists. The genetic material was gathered during USDA-sponsored excursions to Asia and Europe aimed at expanding the known genetic diversity of apples.

Horticulturist Phil Forsline and plant geneticist Gennaro Fazio of ARS' Plant Genetics Research Unit have used the material to raise orchards of the exotic apples near their laboratory in Geneva, N.Y., and, with colleagues in ARS and Cornell University, they've documented with astonishment the disease resistance of many of these trees and of domestic species they've bred with them.

Fazio and Forsline are most impressed with material collected in Kazakhstan, especially accessions of *Malus sieversii*, an important forerunner of the domestic apple. This is logical, since Kazakhstan is a likely ancestral origin of familiar domestic apples (*Malus x domestica*) such as Red Delicious, Golden Delicious and McIntosh.

According to Forsline, the Kazak trees showed significant resistance to apple scab--the most important fungal disease of apples--as well as to fire blight. They were highly resistant to *Phytophthora cactorum*, which causes collar rot, and to *Rhizoctonia solani*, an agent of apple replant disease, according to Fazio. Both researchers found genes in the Kazak apples that allow them to adapt to mountainous, near-desert, and cold and dry regions.

Source: ARS News Service, Agricultural Research Service, USDA, Luis Pons, (301) 504-1628, lpns@ars.usda.gov, Jan. 3, 2006. See the Jan. 2006 Agricultural Research at www.ars.usda.gov/is/AR/archive/jan06/apples0106.htm

Genetic Engineering

Maine Study Shows No Economic Benefit to GE Canola—But Conventional Seed Lines Contaminated with GE DNA

Genetically engineered canola (or rape seed--used to make canola oil) has no economic benefit for Maine growers, and its genes have already contaminated canola seed. So say preliminary data from studies on two sites in one year (2005), according to Dr. John Jemison of the University of Maine Cooperative Extension. The work was published as an abstract and presented at the New England Weed Science Society meeting in Rhode Island recently, as well as at a GE Free Maine-sponsored session at the Maine Agricultural Trades Show in January.

The study, entitled Rape Seed Yield: Risks and Benefits of Genetically Enhanced Lines, was co-authored by Peter Sexton. The researchers planted 14 glyphosate-resistant (Roundup Ready) canola lines; three glufosinate-resistant lines and seven conventional lines at Presque Isle on June 1 and at Orono on June 14. The crop was grown conventionally and harvested. Marketable yields and return on variable costs (marketable yield sold at present value, minus the cost of seed, technology fees and herbicides) were calculated.

In a greenhouse study, the researchers also measured the level to which conventional seed was

contaminated with DNA from GE canola. This was done by spraying conventional and GE seedlings with the herbicide glyphosate, then counting how many survived after seven days. Surviving conventional seedlings were assumed to contain DNA from GE, herbicide-resistant plants. A mean of 4750 seeds per line were tested.

Results showed that marketable yields of GE lines were generally greater than those of conventional lines at both locations, but not statistically significantly so. The late planting date in Orono may explain the generally lower yields of conventional lines, said Jemison. No significant economic benefits were found from using GE lines. In fact, "In the Orono trial, it turned out we could save \$3 an acre not using the GE seeds," said Jemison.

Results of the greenhouse study showed that six of seven conventional lines were contaminated with the GE herbicide-resistant trait. Contamination was below the 0.9% set by the EU standard.

GE Free Maine organizer Rob Fish says, "The production of certifiable GE free canola is a market opportunity for Maine potato farmers [as a rotation crop] and the entire region. There's a strong demand for non-GMO canola overseas and within the natural/organic food industry. Marketing our canola as free of biotech pollution and building a GE-free canola processing plant would help Maine farmers and serve as a tool for economic development."

Russell Libby, executive director of MOFGA, told the Bangor Daily News, that Maine's \$10 million annual organic industry has, so far, "been fortunate not to have severe issues [with contamination from GE crops] in Maine, but the organic consumer is looking for non-GE food, and it is our job to provide that. There are some real questions about whether crops with even a minuscule amount of GE DNA can be marketed as organic." He added that Maine "has an opportunity to carve out a different kind of agriculture, and that will be organic."

Sources: John Jemison, personal communication, Jan. 20, 2006; GE Free Maine, www.gefreemaine.org/article.php?story=20060111030252332 and www.gefreemaine.org/article.php?story=20060113153955918 ; "UM researcher cites GE contamination; Genetic herbicide resistance found in seeds," by Sharon Kiley Mack, Bangor Daily News, Jan. 13, 2006; posted at www.gefreemaine.org/article.php?story=20060113153955918

Genetic Engineering Execs Call This Good News

Spanish farmer Felix Ballarin spent 15 years developing his organically-grown variety of red corn. It would bring a high price on the market because local chicken farmers said the red color lent a rosy hue to meat and eggs from their corn-fed chickens. But in last year's crop, yellow kernels were mixed with red, and DNA tests showed that Ballarin's crop was contaminated with a genetically engineered (GE) strain of corn.

Likewise, a British study of GE oilseed rape has shown that after one year of growth, the GE crops "contaminate the countryside for up to 15 years after they have been harvested" (see www.commondreams.org/headlines05/1009-04.htm), with a mean of two GE rape plants per square meter nine years later and one per square meter 15 years later.

As pollen from GE crops contaminates more and more fields, non-GE alternatives will become harder (or impossible) to find. Such concern prompted three California counties to ban GE crops, and Anheuser-Busch beer company demanded that Missouri keep GE rice fields 120 miles from rice grown to make beer. The European Union is trying to establish buffer zones to halt the unwanted spread of GE crops—but on Nov. 8, the Wall Street Journal reported, "Such moves to restrict the spread of GM crops often are ineffective. Last month in Australia, government experts discovered biotech canola genes in two non-GM varieties despite a ban covering half the country. 'Regretfully, the GM companies appear unable to contain their product,' said Kim Chance, agriculture minister for the state of Western Australia, on the agency's Web site."

The first GE crops were planted in open fields in the United States in 1995. Since then, genetically engineered crops have not lived up to their initial promise of huge profits for farmers and benefits for consumers. Promises of health benefits and reduced pesticide use with GE crops have not panned out. Farmers planting Monsanto's "Roundup Ready" seeds apply more, not less, weed killer.

Vice-President of plant genetics for Dow Agrosiences said recently, "There will be continuing bumps in the road, but we are starting to see a balance of very good news and growth. The genie is way out of the bottle."

Source: Rachel's Democracy & Health News #837, Jan. 5, 2006; www.rachel.org

Bumps in the Road More Like Huge Frost Heaves

Has the Dow scientist quoted above heard of recent research, such as:

- A study by Dr Irina Ermakova at the Institute of Higher Nervous Activity and Neurophysiology of the Russian Academy of Sciences found that more than half the offspring of rats fed GE, Roundup Ready soy died in the first three weeks of life, six times as many as those whose mothers ate normal diets. Six times as many were also severely underweight;
- Italian research found that GE soy affected the liver and pancreas of mice;
- Peas engineered by Australian scientists with a gene from kidney beans to create a pesticidal protein also created immune responses in mice, even though the gene does not have this effect when it occurs naturally in beans. Scientists found that the proteins engineered into peas included slightly different added sugar chains.
- Last May The Independent revealed a secret report by Monsanto showing that rats fed a diet rich in GE corn had smaller kidneys and higher blood cell counts than those fed conventional corn, suggesting damaged immune systems.

In the Russian study, Ermakova added 5 to 7 g of GE soy to feed from two weeks before rats conceived, through pregnancy, birth and nursing. Others received non-GE soy, and a third group got no soy. Among rats fed GE soy, 36% of offspring were severely underweight, compared with 6% of the offspring in other groups. Also, 55.6% of rats (25 of 45) born to GE-fed mothers died within three weeks of birth, compared with 9% from the non-GE soy regime, and 6.8% from the no-soy treatment. Ermakova presented results from her preliminary studies on Oct. 10, 2005, at a conference of the national Association for Genetic Security.

Adding to the bad news, a leading agricultural economist found that while some drug and biotechnology companies may profit from "pharma crops," aggregate farmer benefits will likely be small, and rural community benefits may be much more modest than often portrayed. Commissioned by the Union of Concerned Scientists, *The Economics of Pharmaceutical Crops: Potential Benefits and Risks for Farmers and Rural Communities* was written by Dr. Robert Wisner, University Professor in the Department of Economics at Iowa State University. This first analysis by a land-grant university economist of potential economic benefits and risks of pharma crops to farmers and rural America is available at www.ucsusa.org/food_and_environment/genetic_engineering/economics-of-pharmaceutical-crops.html

Sources: ATTRA Weekly Harvest Newsletter, Dec. 28, 2005; www.ncat.org; "GM: New study shows unborn babies could be harmed, Mortality rate for new-born rats six times higher when mother was fed on a diet of modified soya," by Geoffrey Lean, *The Independent*, Jan. 8, 2005; "Report: Most Offspring Died When Mother Rats Ate GMO Soy," by Jeffrey M. Smith, posted at www.gefreemaine.org/article.php?story=20051103200437983; "Genetically Modified Peas Caused Dangerous Immune Response in Mice, Other GM Foods are Not Tested for This and May Be Harmful," by Jeffrey M. Smith, available at gefreemaine.org

Terminator Seed Moratorium Revisited

When the Mississippi-based corporation Delta & Pine Land and the USDA patented a genetic process in 1998 to make harvested seeds sterile, farmers worldwide reacted in horror. For thousands of years, farmers have harvested and saved seeds in a collective process of agricultural development that continues to feed the world's populations. The public outcry around Terminator seeds resulted in a United Nations Convention on Biological Diversity de facto global moratorium on the technology. As this issue of *The MOF&G* went to press, an advisory working group of the Convention was meeting in Granada, Spain, to make a recommendation on the fate of the moratorium.

Terminator technology genetically modifies plants to produce sterile seeds. The technology was developed and patented by the multinational seed/agrochemical industry along with the United States government to protect private intellectual ownership of seed technology. The governments of Brazil and India have banned the use of Terminator seeds.

Terminator technology is also called GURT (Genetic Use Restriction Technology). Although Terminator seeds have not been commercialized or field-tested yet, they are being tested in U.S. greenhouses. A recent study commissioned by the UN to assess the potential impacts of Terminator technology found that the seeds could cause crop failure and hunger, damage the environment irreversibly, displace traditional farming systems and erode indigenous knowledge.

Peruvian Indigenous peoples describe how farmers have exchanged fertile seeds at local markets for centuries in order to improve their crops by natural means. According to Peruvian farmers, if Terminator seeds were to inadvertently enter this exchange system, farmers could lose their crops and face hunger, undermining trust in the traditional system of maintaining genetic diversity.

The international peasant farmer coalition Via Campesina has called for a global ban on Terminator technology, but seed and chemical corporations are pushing to commercialize Terminator seeds in collaboration with some governments, including the United States, Canada, Australia and New Zealand. Delta & Pine Land is most aggressively testing and patenting the technology in partnership with the USDA Agricultural Research Service. In October 2005, Delta & Pine Land and the USDA received European and Canadian patents for the Terminator technology they had already patented in the United States. "Once developed, we intend licensing of this technology to be widely available to other seed companies," a Delta & Pine Land representative revealed in an August 2004 statement.

Other corporations and university researchers own Terminator technology patents as well. Syngenta owns or has applied for 11 Terminator patents--more than any other corporation. Monsanto, DuPont, Purdue Research Foundation and Cornell Research Foundation also own Terminator patents. Public and university research funds have supported development of Terminator technology, although GURT was developed to protect private profits by establishing intellectual property rights rather than to help farmers.

Following the Working Group meeting in Spain, the final decision on the de facto moratorium on Terminator technology will be made at the 8th Conference of the Parties (COP8) to the United Nations Convention on Biological Diversity on March 20-31, 2006, in Curitiba, Parana, Brazil. The Ban Terminator Campaign is organizing broad support to continue the moratorium and to legislate nationwide bans on Terminator technology.

"When we plant a seed there's a very simple prayer that every peasant in India says: 'Let the seed be exhaustless, let it never get exhausted, let it bring forth seed next year,'" notes Indian agricultural diversity advocate Dr. Vandana Shiva. "But that prayer to let the seed be exhaustless seems to be changing into a corporate prayer, 'let this seed get terminated so that I can make profits every year.'"

Sources:^[1]^[SEP]Ban Terminator Campaign, www.banterminator.org/ "Indigenous Peoples of Cusco, Peru on the Potential Impacts of Terminator Submission to the Convention on Biological Diversity in 'Advice on the report of the Ad Hoc Technical Expert Group on Genetic Use Restriction Technologies'" 2003; www.banterminator.org/news_updates/news_updates/indigenous_peoples; Ad Hoc Open-Ended Inter-Sessional Working Group on Article 8(j) and Related Provisions of the Convention on Biological Diversity. 2003. "Report of the ad hoc technical expert group meeting on the potential impacts of genetic use restriction technologies on smallholder farmers, indigenous and local communities and farmers' rights." (UNEP/CBD/SBSTTA/9/INF/6) www.biodiv.org/doc/meeting.aspx?mtg=sbstta-09&tab=1; Via Campesina. 2002. "Proposals of Via Campesina for sustainable, farmer based agricultural production," www.viacampesina.org/en/index.php?option=com_content&task=view&id=229&Itemid=135; ETC Group and Greenpeace. 2005. "Who owns Terminator Patents?"^[1]^[SEP]www.banterminator.org/the_issues/the_industry/list_of_terminator_patents; Padgett Clark, Nic. 1998. "An interview with Dr. Vandana Shiva," In Motion Magazine,^[1]^[SEP]www.inmotionmagazine.com/shiva.html

USDA Fails Own Audit of GE Test Site Oversight

Time for a No Department Left Behind Act? A USDA audit of 91 field test sites from May 2003 to April 2005 found inadequate USDA regulation of field trials of GE crops. The report, issued in December 2005 by the USDA Office of Inspector General, says that biotechnology regulators did not always notice violations of their own rules, did not inspect planting sites when they should have and did not assure that GE crops were destroyed after field trials. Often, regulators did not know locations of field trials they permitted. Some violations involved stricter regulations on crops engineered to produce pharmaceuticals.

The audit did not find any known cases of harm to public health or the environment but said that problems noted above "increase the risk that genetically engineered organisms will inadvertently persist in the environment before they are deemed safe to grow without regulation."

The USDA's Animal and Plant Health Inspection Services (Aphis) said that it was taking steps to adopt most recommendations made by the inspector general, and to make other changes. W. Ron DeHaven, administrator of Aphis, wrote, "Since 1987, Aphis has safely regulated G.E. organisms and provided oversight and enforcement for over 10,000 field tests with no demonstrable negative environmental impacts having arisen from these tests."

In 2004, 67,000 acres were used to test GE crops, up from the 1994 figure of 8,700 acres; and GE crops now account for 114 million acres in the U.S., one-seventh of all crop acreage.

In two cases large harvests of pharmaceutical crops were stored for more than a year; regulators neither knew of nor approved the storage facility.

Sources: "Lax Oversight Found in Tests of Gene-Altered Crops," by Andrew Pollack, The New York Times, Jan. 3, 2006; Organic Bytes #73, 1/12/2006; www.organicconsumers.org/organicbytes.htm ; The report is posted at www.usda.gov/oig/webdocs/50601-08-TE.pdf.

Tough GE Laws in Europe

Swiss voters have adopted a five-year moratorium on GE crops and on importing GE animals; and Austria, which already bans GE crops, said it would launch a European Union-wide debate on GMOs as it took over the EU's rotating presidency in January 2006.

Following the example of Germany, Denmark passed a law that will punish farmers planting GE crops if they contaminate crops or fields of organic or non-GE farmers. Farmers growing conventional or organic crops will be compensated for losses by the government if their crops are contaminated. The government will recoup those costs from farmers of fields where the GE pollen originated.

Sources: ATTRA Weekly Harvest Newsletter, Nov. 30, 2005; <http://euobserver.com/9/20431>; http://today.reuters.com/news/newsArticle.aspx?type=scienceNews&storyID=2005-11-27T135520Z_01_MOL749996_RTRUKOC_0_US-FOOD-SWISS-GMO.xml&archived=False; Organic Bytes #70, www.organicconsumers.org, Nov. 30, 2005

Land Use

Little Land Left for Agriculture

More than one-third of the world's land is used to grow crops or graze cattle, according to scientists at the University of Wisconsin-Madison who combined satellite images with agricultural census data from every country, then mapped the prevalent land use in 6.2-mile grids worldwide.

The map for the year 2000 shows that about 40% of the land is growing crops or grazing cattle, compared with 7% in 1700. Striking changes have occurred in the Amazon basin, where rainforests have been cut to grow soybeans—in part to meet increased demand in China and the European Union.

Because of intensive farming practices, cropland has decreased slightly in the United States and Europe, while urbanization has taken advantage of that land availability.

The maps suggest that little land remains—primarily in Latin America and Africa—for agricultural expansion. The project will build an Internet-based databank called the Earth Collaboratory to bridge science, policy and environmental practices, to try to find ways to live sustainably.

Source: “Food Crisis Feared as Fertile Land Runs Out,” by Kate Ravilious, The Guardian/UK, Dec. 6, 2005.

Livestock

Avian Biosecurity

Recent avian influenza outbreaks around the globe have brought attention to biosecurity measures farmers can take to protect their flocks. Preventive health care, including attention to nutrition and sanitation, is an important aspect of a poultry producer’s organic farm plan and is required by the USDA National Organic Program Standards. Access to the outdoors is also important to livestock vitality and is required by the Standards. However, the National Organic Program also allows temporary confinement of poultry without loss of certification if the farmer can demonstrate that the health and welfare of the birds are at stake. This arrangement must be worked out between the poultry producer and his or her certifier. Should an outbreak of disease or some other threat prompt federal or state authorities to mandate confinement or other actions, organic producers may be required to follow these directives.

For more information about bird biosecurity, see the USDA Animal and Plant Health Inspection Service site www.aphis.usda.gov/vs/birdbiosecurity/. The site suggests measures to help prevent disease in your flock and has excellent photos of healthy and afflicted birds and fact sheets on specific diseases. Maine residents can report sick or dying birds to the office of the State Veterinarian at 207-287-3701.

Kimchi Fights Bird Flu?

After Kang Sa-Ouk of Seoul National University in South Korea gave kimchi juice to 13 chickens infected with avian flu virus and other diseases, 11 recovered. Spokesperson Kathy Stover from the National Institute of Allergy and Infectious Diseases told Washington Post reporter Elissa Silverman that the Institute couldn't comment on the dish's effectiveness, since researchers there hadn't studied it.

In South Korea, kimchi, a staple at the table, is usually made by slicing and salting Napa cabbage, setting it aside for hours, then rinsing it and adding crushed garlic, ginger, onion, sliced radish and fish sauce and a lot of hot pepper. According to New Scientist, the researchers found that sauerkraut--cabbage fermented in brine, but without the added spices--also worked. New Scientist notes that "in both Korea and Japan, where kimchi has become a chic food in recent years, there have recently been outbreaks of bird flu in poultry, but no human cases of the disease. Coincidence? Considerably better animal hygiene than elsewhere in the region? Or cabbage? You be the judge."

The Korean scientists believe that the Lactobacilli bacteria that make the fermented products stop the virus. "So there should be lots of other potential anti-flu foods about, from properly fermented buttermilk to Kosher garlic dills (the all-salt kind, none of this vinegar nonsense)," says New Scientist.

Sales of sauerkraut in the upper midwestern United States spiked after the news.

According to The Seattle Times, a recent study at the University of New Mexico suggests that sauerkraut may also reduce the risk of breast cancer. That risk nearly triples in Polish women who immigrate to the United States, says The Times, but of the hundreds of Polish and Polish-born U.S. immigrant women in the study, those who ate four or more servings of sauerkraut and cabbage per week during adolescence were 74% less likely to develop breast cancer than those who ate 1.5 or fewer servings per week.

Sources: Washington Post, Dec. 31, 2005, at www.washingtonpost.com/wpdyn/content/article/2005/12/30/AR2005; New Scientist, Nov. 26, 2005; www.newscientist.com/backpage.ns?id=mg18825272.800; The Seattle Times, Nov. 7, 2005; "Scientific Puzzle: Some Turks Have Bird Flu but Aren't Sick," by Elisabeth Rosenthal, International Herald Tribune, Jan. 11, 2006, at <http://www.nytimes.com/2006/01/11/international/europe/11flu.html?th=&adxnnl=1&oref=login&emc=th&adxnnlx=1137074595-KCc00b2OS25ETGVnAJoxJA&pagewanted=print>.

For an interesting critique of the tactic that some regulators are proposing if bird flu hits an area (i.e., confining birds indoors), see www.organicconsumers.org/foodsafety/avianflu012706.cfm.

To read a useful article about how organic farmers and gardeners who raise poultry may deal with bird flu, see www.newfarm.org/features/2006/0106/avainflu/frymanross.shtml.

For information about using probiotics (beneficial bacteria) to help prevent disease in humans and livestock, see Diane Schivera's article, A Primer on Probiotics, in the Sept.-Nov. 2004 issue

of The MOF&G.

Waste Management: It's About Thyme

Agricultural Research Service (ARS) scientists are developing a method to reduce problems with cattle manure—All they need is a little thyme.

Thymol, the active component in thyme oil, can be extracted from plants such as thyme and oregano. Because of its pleasant odor and natural antiseptic properties, thymol appears in mouthwash, throat lozenges and other products. ARS microbiologists Elaine Berry, Vince Varel and Jim Wells discovered that, when applied in slow-release granules to cattle feedlot soil or to manure pits in swine facilities, thymol reduced concentrations of odor-causing volatile fatty acids (VFAs) and such pathogens as coliform bacteria. [Ed. note: See Alice Percy's feature about raising pigs in moveable "tractors" in this issue of The MOF&G for an alternative to feedlots.]

Source: ARS News Service, Agricultural Research Service, USDA, Laura McGinnis, (301) 504-1654, lmcginnis@ars.usda.gov; Dec. 16, 2005; FMI: www.ars.usda.gov/is/pr

New England Club Lamb Sale in May

To provide an opportunity for 4-H youth in New England to learn how to buy and raise a market lamb, the Maine Sheep Breeders Association (MSBA) and the University of Maine Cooperative Extension will host the New England Club Lamb Sale on May 13, 2006, at Windsor Fair Grounds in Windsor, Maine.

Club or Market Lamb projects offer 4-H youth the chance to develop the skills necessary to care for and raise a lamb that is ideal for market, while assessing the costs of reaching this goal. Project lambs usually are sold at 4-H Market Lamb Auctions at fairs throughout New England during the summer and fall.

On May 13, educational seminars will be offered during the morning, with topics such as selecting an appropriate lamb, training and feeding, preparing animals for show, and showmanship skills. These free seminars will be open to all 4-H youth, whether they plan to buy a lamb at the sale or raise their own.

The Club Lamb Sale will offer New England sheep producers the opportunity to consign their top lambs to be auctioned. Lambs of various sizes will be sold to offer the 4-H youth the opportunity to buy a lamb that will reach an ideal size for the fair auction in which they plan to participate.

For more information on the New England Club Lamb Sale and for consignment forms, please contact Wendy Reinemann at (207) 785-2978 or reinemannbw@peoplepc.com.

Local Foods

Italian Slow Food Community Drives McDonald's Out of Town

Five years ago, McDonald's revealed plans to open a fast food restaurant in the southern Italian town of Altamura, Apulia. Area citizens, supported by Italy's Slow Food movement, campaigned against the development by establishing their own group "Friends of Cardoncello" (named after an Italian mushroom). Despite community opposition, McDonald's built a fast food store in town but struggled over the next few years, as townspeople's shunned the "golden arches" and supported local baker Luigi Digesù and other community restaurants. In Dec. 2005, McDonald's closed its doors and left town. "There was no marketing strategy, no advertising promotion, no discounts," Il Giornale, an area resident commented. "It was just that people decided the baker's products were better. David has beaten Goliath."

Source: www.organicconsumers.org/btc/slowfood010906.cfm

Nutrition

Native Foods Find New Generation of Support

An article in The New York Times reports on efforts to revive American Indian foods. On the Tohono O'odham Reservation southwest of Tucson, farmer Noland Johnson grows tepary beans, once a staple of the Tohono O'odham diet but now hard to find. Chefs nationwide are beginning to incorporate native foods--wild rice, squash, beans, corn, Pacific salmon, bison and persimmons, for example--into their menus. On the Pine Ridge Indian Reservation, an economic development company called Lakota Express wants to create an entire food line under the Native American Natural Foods label. Several other projects are encouraging a return to traditional agriculture and foods, including the White Earth Land Recovery Project, Native Seeds/SEARCH and Renewing America's Food Traditions (RAFT).

Source: ATTRA Weekly Harvest Newsletter, Nov. 30, 2005; FMI:
www.nytimes.com/2005/11/23/dining/23nati.html?adxnnl=1&adxnnlx=1132776114-HquVyavIZTDI8wVn6MiLww

Codex Alimentarius Would Severely Limit Access to Supplements

The United Nations created Codex Alimentarius in 1962 to control international trade of food, but corporate interests have exerted increasing influence over Codex—especially as it applies to health supplements. The World Trade Organization (WTO) imposes fines on countries that do not comply with Codex. The Vitamin and Mineral Guideline of Codex, scheduled to go into effect globally by 2010, would permit only ultra low doses of vitamins and minerals and make therapeutic doses of supplements illegal.

The U.S. Congress passed the Dietary Supplement Health and Education Act (DSHEA) unanimously in 1994. This law classifies supplements and herbs as foods, with no upper limits set on their use. The DSHEA, which protects us from Codex Alimentarius' Vitamin and Mineral Guideline, is under attack now by lobbyists from the pharmaceutical industry. Consumers can visit HealthFreedomUSA.org to take action.

Source: www.healthfreedomusa.org/

Promising Anti-Cancer Compounds in Soy

Scientists with the Agricultural Research Service (ARS) in New Orleans, La., have uncovered what could be a healthier soybean by encouraging the legume to produce health-guarding phytochemicals (plant-produced chemicals) called glyceollins. In 2001, ARS chemist Stephen Boué and collaborators with the Tulane-Xavier Center for Bioenvironmental Research in New Orleans discovered that glyceollins could block the growth of hormone-dependent breast cancer cells in the laboratory. Since then, Boué and colleagues from ARS' Southern Regional Research Center (SRRRC) have been searching for ways to coax soybeans into pumping out the promising chemicals.

Soybean plants naturally produce the beneficial compounds only when confronted with serious stress, as when defending themselves against disease-causing organisms in the soil. Research leader Ed Cleveland says that today's soybeans are grown in relatively "clean" fields where farmers take many disease-avoidance measures, so the plants aren't forced to defend themselves against attack--and they don't produce glyceollins and other possibly beneficial, disease-squelching compounds.

To mimic a microbial assault in the laboratory, Boué and Cleveland challenged just-germinated soybeans with the food-safe fungus *Aspergillus sojae*. The young, sprouted soybeans perceive the fungus as a threat, so they produce copious amounts of the protective compounds--evident from the bright-red coloring the chemicals form as they react on the soybeans' wound surfaces. Boué is sharing the isolated compounds with collaborating medical researchers and is searching for ways to induce glyceollin production on a large scale.

Source: ARS News Service, Agricultural Research Service, USDA, Erin Peabody, (301) 504-1624, ekpeabody@ars.usda.gov; Jan. 9, 2006. For more information, see Agricultural Research at: www.ars.usda.gov/is/AR/archive/jan06/soy0106.htm

Junk Food Additives Stop Nerve Cell Growth

Mixing the artificial sweetener aspartame and monosodium glutamate (MSG) causes nerve cell damage, say researchers at the University of Liverpool. Results from a two-year study were recently published in *Toxicological Sciences*. The researchers found the additives were much more potent in combination with each other than on their own. Mice were exposed to concentrations of MSG and aspartame relative to what a child would receive in an average snack and drink. Researchers were surprised to see the additives interfered with nerve signaling systems and actually stopped nerve cells from growing. Aspartame is commonly found in diet drinks, candies and flavored medicines, while MSG is frequently found in chips, processed cheese and many processed foods.

Source: www.organicconsumers.org/toxic/msg010306.cfm

Organic News

Half of Scottish Babies Eat All Organic Foods

A recent survey shows that more than half of Scottish children under two eat exclusively organic foods, even when parents cannot afford organic food for themselves. The 805 mothers and pregnant women surveyed cited "less risk of chemical pesticides" (87%); "no GM" (84%) and "no additives" (80%) as reasons for their purchases.

Anna Ashmole, head of the Soil Association Scotland, said, "Having children can be a wake-up call for parents in more ways than one. People naturally want the best for their children... The health implications of diet are particularly crucial for children as they have a higher intake of food and water per unit of body weight than adults, and their relatively immature organ systems may have limited ability to detoxify substances such as pesticides." She added that organic milk can contain up to 71% more health-promoting, omega 3 fatty acids than non-organic milk, and a better omega 3:omega 6 ratio than conventional milk.

Source: "Babies raised on organic food that parents cannot afford themselves," by Alison Hardie, The Scotsman, Jan. 2, 2006

Stonyfield Farm Helps Launch Organic Dairy Farm at UNH

The University of New Hampshire will establish an organic dairy farm for research, education and outreach, making it the nation's first land-grant university to have an organic dairy farm. Londonderry, N.H., industry leader Stonyfield Farm has donated \$200,000 to the estimated \$1.5 million project.

"This project represents completion of a full circle for Stonyfield Farm," said Gary Hirshberg, President and CE-Yo. "Nearly 24 years ago, Stonyfield Farm Yogurt was launched as a project of the rural education center, a small New Hampshire school created to help teach farmers new organic farming methods. Now we are proud to provide our largest single grant ever to the University of New Hampshire to continue the critical work of teaching the next generation of farmers. This could not come at a better time, as the organic dairy market in general and New England in particular are in need of more organic farmers."

The new farm, located on 200-acres of certified-organic land at the university's Burley-Demeritt Farm in Lee, began operating in Dec. 2005 with the acquisition of a herd of Jersey heifers. Construction of a composting-bedded pack barn and milking center, and acquisition of equipment and installation of fencing, will occur in summer 2006. Organic hay and baleage were already harvested for the 2005 winter feed. Certified organic milk production will begin in December 2006.

The project will be directed by a 20-person advisory board that includes eight dairy farmers from New England, New York and Pennsylvania, and veterinarians, grazing consultants and a nutritionist. The project also secured a significant gift from a retired conventional New Hampshire dairy farm couple toward the purchase of dairy cattle for the farm; and Hubbard, LLC donated feed mixing and processing equipment.

The University of New Hampshire is involved in a larger New England university effort to offer more research-based information to a growing organic dairy and feed industry. A recent \$829,000 USDA grant, awarded jointly to UNH and the University of Maine, charges researchers with studying ways to reduce New England dairies' reliance upon imported grains. Rotational grazing and research on grazing and feeding options will be a focus of the organic dairy farm.

The University of New Hampshire facilities include the Fairchild Conventional Dairy Teaching and Research Center, an equine farm, a miniature swine unit at Burley-Demeritt Farm, five greenhouses, and an organic garden. Projects at the University include a new, highly efficient, co-generation power plant, alternative fuels for campus vehicles, composting food waste from campus dining halls and local eateries, and an emerging interdisciplinary center focusing on the state's food security.

The 23-year-old Stonyfield Farm (www.stonyfield.com) is the world's largest organic yogurt manufacturer. It was the nation's first dairy processor to pay farmers not to treat cows with the synthetic bovine growth hormone rBGH. Stonyfield donates 10 percent of its profits to environmental causes; was America's first manufacturer to offset 100 percent of its CO₂ emissions from its facility energy use; and recently installed the fifth largest solar array in New England to help power its production plant.

Source: UNH Media Relations press release, Dec.5, 2005, Beth Potier, 603-862-1566, beth.potier@unh.edu

Resurgence Starts School of Organic Gardening and Cooking

Resurgence magazine is marking its 40th anniversary by starting a School of Organic Gardening and Cooking, after longstanding supporter Mehr Fardoonji donated her 2½-acre organic market garden in Cheshire to the organization. Resurgence plans to develop these gardens into a Learning Centre, where students will train for a year in organic gardening, marketing and cooking as they learn about ecology, Gaia theory, sustainability, economics as if people and planet matter, nutrition and related areas.

For more information: ^[1]^[2]Satish Kumar, Editor of Resurgence, Ford House, Hartland, Bideford, Devon EX39 6EE. www.resurgence.org

Rodale Recommends Organic Cropping System with No-Till

Research by the U.S. Department of Agriculture's Agricultural Research Service (USDA-ARS) suggests that nitrous oxide—with nearly 300 times the greenhouse potency of carbon dioxide—needs to be factored into greenhouse calculations. Nitrous oxides are associated with fertilizer nitrogen use and, like soil carbon levels, can be influenced by tillage regimes. Now, ARS soil scientist Rod Venterea and colleagues have shown that over a two-year period, the combination of anhydrous ammonia fertilizer use and no-till can lead to alarmingly high nitrous oxide emissions.

The Minnesota study found that fields treated with anhydrous ammonia had two to four times the

nitrous oxide losses compared with urea ammonium nitrate or pelleted urea. If the ammonia was injected more than 4 inches below the soil surface, however, nitrous oxide emissions were lower in no-till fields than in conventional- or conservation-till fields.

A distinctly unfriendly side of conventional no-till agriculture is its dependence on high rates of ammoniated fertilizer and herbicides. Dr. David Pimentel of Cornell University has estimated that 75 percent of conventional no-till's fossil fuel dependence for corn production is related to the use of ammoniated fertilizer. In addition to high energy costs, the use of synthetic nitrogen can contribute to environmental and health problems. In Iowa, Dr. Weyer and co-workers (2001) associated increased concentrations of nitrates in water with hyperthyroidism, increase of insulin-dependent diabetes and bladder cancer.

According to Townsend et al. (2003), human activity is responsible for most of the reactive nitrogen in the biosphere, surpassing all natural processes combined. A significant portion is related to fertilizer production. This review links global changes in the nitrogen cycle with excessive air and water nitrogen levels, leading to increased respiratory disease, cardiac abnormalities and cancer.

The Rodale Institute's Farming System Trial® shows that high yields associated with the use of anhydrous ammonia can be achieved readily with legume cover crops. In a legume-based organic cropping system, high corn yields can be maintained without the high energetic, environmental and health costs associated with ammoniated fertilizer use (Pimentel et al., 2005). In this regard, The Rodale Institute's work on a biologically based no-till system using mechanically killed cover crops offers a real alternative to conventional no-till systems based on intensive use of fertilizers and herbicides.

Source: Agriculture Today, Dec. 20, 2005; www.maine.gov/agriculture/newsletter/

Pesticides

Maine Board of Pesticides Control

Rules for Applying Pesticides Indoors: Two Decades and Counting

By Alice Percy

The Maine Board of Pesticides Control (BPC) opened its Oct. 28 meeting with a workshop session to decide the fate of the controversial proposed Chapter 26, a rule to implement Integrated Pest Management (IPM) in all buildings open to the public other than K-12 schools (already covered by a similar rule). Since the Sept. 9 public hearing, at which seven people opposed the rule and four supported it, the BPC had received nine opposing letters, 229 identical opposing postcards, and 51 supportive email messages. The staff provided the board with a new version of the rule, with such substantial revisions that the board had to discard the previous version and initiate a new rulemaking process, which will include further opportunity for public hearing.

To address the concern expressed by some members of the pest control industry that the new restrictions would encourage business owners to take a “do-it-yourself” approach to pesticide

applications, the definition of an “applicator” was expanded to include any person applying pesticides to buildings occupied by the public, as well as licensed commercial applicators. The staff also clarified that when the building manager is not the pesticide applicator, the applicator must provide the required information about a spray event to interested parties.

The previous version of the rule required building managers to notify personally new employees, tenants, inmates or long-term patients that they had the right to be notified before certain types of pesticide applications and that if they chose to be notified they had the right to certain information about the place, time and materials to be used for the application. The new version affords the same rights to building residents, but the notification for employees is provided in the form of a “conspicuous” sign in a common area, such as a lunchroom or entrance hall. Employees could at any time add themselves to a building registry to be notified before spray events. New language was added to forbid that building residents “delay or prohibit the applicator from performing the pesticide application as scheduled” through requests for additional information.

Applicators working in rented residences are no longer required to notify all tenants in the building unless they are making an application to a common area. The tenant of the residence to be treated still must be notified, and he or she could refuse treatment until alternative measures have been tried and have failed to control a hazardous pest problem. If the town’s public health or code enforcement officer determines “a need for immediate pest management,” the tenant’s objections may be overruled without any attempt at alternative control measures. Board members Lee Humphreys and Dan Simmonds expressed concern at the lack of notification for nearby tenants, pointing out that if the lawn next door was sprayed, then a tenant on the state notification registry would be notified, but if the apartment next door was sprayed, that tenant would have no protection. Assistant Attorney General Mark Randlett suggested that the rule could require that a notice be posted in a public area of the building stating that an application would occur somewhere in the building at a certain time; the board also considered adding indoor spray events to the jurisdiction of the current registry or setting up a separate indoor application registry.

The staff removed the requirement to treat buildings during unoccupied periods, in response to opponents’ complaints that the exemption for 24-7 facilities was unfair. This requirement was replaced by “risk minimization” standards that require applicators to “consider” factors such as the presence of children or chemically sensitive individuals, the likelihood of human or animal exposure, the volatility of the product, and the nature of the building’s ventilation system. Though head staff member Bob Batteese claimed that if someone complained about an irresponsible application the burden of proof would be on the applicator to show that he did consider these factors, the rule does not actually prevent applications from occurring under adverse circumstances.

The board also discussed the idea that a universal logo with a phone number could be posted on the entrance of all public buildings to provide building residents, employees and the public with the opportunity to inquire about recent or future spray events. Such a logo was supported at the September public hearing by MOFGA and members of the pest control industry, although the latter wanted it to replace the notification standards, and MOFGA wanted it to supplement them.

Board chair Carol Eckert, however, insisted that a logo would be more difficult to enforce than a notice posted inside the building, and supported it only as a voluntary measure. She agreed with MOFGA that the logo alone would be an insufficient replacement for notification standards. Board member John Jemison complained that the staff's current logo does not distinguish between sanitation methods (the use of detergents and other cleaning products) and actual pesticide treatment. The logo project may be handed over to the board's new public relations director.

The board began its regular meeting with a review of the staff's Program Evaluation Report, a paper required by the Joint Standing Committee on Agriculture, Conservation, and Forestry. The report, due on Nov. 1, was prepared so hastily that some faulty baseline figures in the "Performance Measures" section showed an increase in product registrations and public compliance with board rules that may or may not actually exist. The report also included a list of "emerging issues," which sparked a discussion of recent efforts by Environment Maine and the Toxics Action Center to lobby the BPC about pesticide use in blueberry fields. The environmental organizations petition drives collected signatures in support of banning aerial pesticide applications to agricultural fields, requiring the board to monitor drift and runoff, banning agricultural use of organophosphate pesticides, and removing the registration fee for the Pesticide Notification Registry. If enough signatures were collected – and Batteese said early reports indicate that the petitions had been filled at the Common Ground Country Fair – the BPC will have to initiate a rulemaking process for each measure (although that does not ensure passage of any of them). Board chair Carol Eckert voiced concern that the time the board would need to devote to these issues could again impede progress on the Chapter 26 rule, which has been in process for two decades.

Enforcement Action, Consent Agreements

Chief of Compliance Henry Jennings presented an enforcement action to be taken against Cory Capitan, formerly a commercial pesticide applicator working for Modern Pest Services. Capitan successfully offered 11 of his employer's customers his private services at a reduced rate, although he did not hold a license to perform commercial applications independently. The staff had offered a consent agreement fining Capitan \$2,995 – an amount equal to his profits from the illegal applications – but received no response. The BPC referred the matter to the Attorney General's office for enforcement.

The board approved six consent agreements negotiated with persons and companies in violation of state pesticide rules. Greg Moyer Landscaping of Bath was fined \$250 for permitting its employees to apply pesticides to customers' properties even though none of the employees were licensed commercial applicators.

Paul Dumont of Sunshine Apiary in Windsor was fined \$750 for using state Apiarist Anthony Jadczyk's applicator license without Jadczyk's permission to purchase Phostoxin, a restricted use pesticide used to control the greater wax moth. Phostoxin is potentially lethal to the applicator if misused and accidentally inhaled. Dumont also admitted to using the insecticide Mavrik to control varroa mites in his beehives, although Mavrik is not labeled for such use; any use of a pesticide that is not in accordance with the label is illegal. Degesch America, the company that

sold the Phostoxin to Dumont, was fined \$500 for distributing a restricted use pesticide to an unlicensed person and for distributing a restricted use pesticide without holding the proper distributor's license.

Lewis Brothers Golf & Property Services of Falmouth was fined \$100 for allowing an unlicensed employee to apply rotenone-pyrethrins and acetic acid to customers' properties without proper supervision.

Basham Tree Service of South China was fined \$100 for spraying the herbicide Krenite S within 50 feet of a stream in Byron when clearing roadsides for the Maine Department of Transportation. MDOT representative Bob Moosmann said that the department has recently started hiring roadside services through contracting bids instead of paying companies an hourly fee, which may encourage workers to take shortcuts, such as using power sprayers instead of backpack sprayers, when they are not directly supervised. However, board inspectors hidden in nearby brush observed the incident. Board member John Jemison voted against this agreement, explaining that in cases involving water quality issues he supported higher fines of at least \$250.

TruGreen ChemLawn of Westbrook was fined \$1000 for failing to notify a family on the Maine Pesticide Notification Registry of a pesticide application within 250 feet of their residence. The fine for this offense is usually \$500, but the company also committed a different violation earlier in the year, when it was fined \$3000 for applying pesticides to the wrong properties. The treated properties had the same street numbers as the correct properties, but were on a street with a different name in a neighboring town. In addition to the fine, the board responded to this incident by sending a letter to all of Maine's Commercial Master Pesticide Applicators notifying them of the board's new policy requiring companies to make a positive identification of a property (e.g. GPS coordinates or an electric meter number) before performing a treatment.

[End of BPC report]

Least Contaminated Produce

Produce with the lowest pesticide residue levels: asparagus, avocados, bananas, broccoli, cauliflower, sweet corn, kiwi, mangoes, onions, papaya, pineapples and sweet peas.

Produce with the highest pesticide residue levels: apples, bell peppers, celery, cherries, imported grapes, nectarines, peaches, pears, potatoes, red raspberries, spinach and strawberries.

Source: Organic Bytes #70, Nov. 30, 2005.

www.organicconsumers.org/organic/hemp112205.cfm

Residues of Banned Pesticides Found on Vegetables

In a small study, Beth Wolensky, a senior at Chatham College in Pittsburgh, screened 20 samples of washed organic and conventional carrots for a number of banned pesticides and their residues and found similar concentrations of the chemicals on both, with organic carrots even having higher concentrations of some chemicals than the conventional. Every carrot had traces of p,p'-

DDE, a breakdown product of the banned DDT; many had residues of the termiticide chlordane, and some had residues of heptachlor, another termiticide. Concentrations were low in all samples, with the skin having higher concentrations. Chatham and fellow student Tanieka Motley previously had found similar results in potatoes. The students' advisor, Renee Falconer—who has found residues of other chemicals from several sites—says that at the concentrations detected, none of the chemicals in the carrots or potatoes is dangerous alone, but that overall, organically grown crops should have far lower concentrations of agricultural chemicals that are now applied to conventional crops. Wolensky recommends peeling carrots and potatoes before eating them.

Source: "Organic Doesn't Mean Free of Pesticides," by Janet Raloff, Science News Online, Nov. 26, 2005; Vol. 168, No. 22; Original articles: Aigner, E.J., Leone A.D., and R.L. Falconer. 1998. Concentrations and enantiomeric ratios of organochlorine pesticides in soils from the U.S. corn belt. *Environmental Science & Technology* 32(May 1):1162; Motley, T., and R. Falconer. 2004. Measurement of chiral pesticides in vegetables grown organically, traditionally and in a controlled environment. Society of Environmental Toxicology and Chemistry North America Annual Meeting. Nov. 16. Baltimore; Wolensky, B., and R. Falconer. 2005. Organochlorine pesticides in storebought vegetables grown organically and traditionally. Society of Environmental Toxicology and Chemistry North America Annual Meeting. Nov. 14. Baltimore;

Summer 2006

Agricultural Funding

Making Co-op Economics Work
by Jane Livingston

Thirty years ago, the newly formed Cooperative Fund of New England (CFNE) made its first loan—\$5,000 to Buffalo Mountain Food Co-op in Vermont. Both the Fund and the Co-op are still going strong. By December 2005, CFNE had lent almost \$12 million to, in the words of its mission statement, "community based, cooperative, and democratically owned or managed enterprises with preference to those that serve low-income communities."

From mostly consumer-owned food co-ops, the Fund's borrower base has expanded significantly. Many worker co-ops and cooperative housing groups have come to CFNE for a loan. Land trusts, producer co-ops—any type of co-op can apply. A number of nonprofit community organizations have become borrowers as well. In some cases, borrowers have become investors. Borrowers include the highly successful worker-owned recycling company Cleanscape in Rhode Island; Corporation for Independent Living in Connecticut; Pelham Auto in Massachusetts; Deep Root Truckers' Co-op in Vermont; and FEDCO Seeds in Waterville, Maine.

Channeling the Money

The organization, a 501(c)(3) nonprofit, is run by a volunteer board of trustees (a number of Maine people have served) and one executive director. Independent contractors around New England serve as outreach coordinators and loan consultants. They stay in touch electronically as

they work in various committees, and four times a year they meet somewhere in the region for a day. They talk about who's lending, who's borrowing, who to go after, and how to fulfill their self-appointed role: channeling the money of enlightened investors and donors to people in New England working effectively to improve the lives of our most at-risk members toward sustainable well-being. Many of these groups had been rejected as too risky by conventional lenders. Since CFNE's inception, nearly \$12 million has been disbursed through approximately 350 loan transactions, and not one investor has ever lost a dime.

It was the '70s: CED meets SRI

The Cooperative Fund of New England was part of the 'community economic development' (CED) phenomenon in the '70s, which spawned a number of community loan funds, among other things. The National Community Capital Association and the CDFI (community development financial institutions) sector grew from that. Their national federation changed its name to Opportunity Finance Network in January 2006 to reflect a shift in emphasis from seeing the community as a glass half-empty to seeing it as a glass brimming with possibilities and resources. In 2005, this group's willingness to invest in low-income people attracted \$14 billion in capital.

Intertwined with the history of the CDFI sector is the story of socially responsible investing (SRI). As Amy Domini, one of the founders of the SRI movement and an investor in CFNE, says, "It's important to recognize that the Cooperative Fund of New England took on the hard part of the market. The Fund succeeded in meeting the needs of the borrowers while also providing investors with a reasonable rate of interest and a leveraged impact socially. That's pretty exciting."

Almost half of the investor mix in CFNE is from the religious community. Several Episcopalian Dioceses and numerous orders of Sisters are listed in a 30th Anniversary report the Fund recently issued (at www.coopfund.coop). Also included are co-ops and community organizations, trusts and banks and foundations, even the U.S. Treasury. It takes a village to make cooperative economic development happen. The Cooperative Fund of New England has been bringing together important members of that village for 30 years.

Western Maine Farm Fund Supports Rural Area

The Western Maine Farm Fund and five banks are offering guaranteed fixed-rate low-interest loans ranging from \$1,000 to \$25,000 for farmers in Oxford, Franklin, Somerset, Piscataquis and northern Androscoggin counties. The project strives to fill a niche in the financial services marketplace, enabling farms to access credit and thrive as vital enterprises. Since 2003 the Western Maine Farm Fund has assisted farmers with loans totaling more than \$250,000 at 4.5% fixed-rate interest for the purchase of new and used equipment, improvement or expansion of farm infrastructure, purchase or lease of land, working capital and marketing. The loans may cover up to 85% of the cost of the project and support primarily profit-motivated agricultural enterprises raising field crops, animals and fruit trees.

Farmers may visit a participating bank for information or a brochure: Bangor Savings, Franklin

Savings, Skowhegan Savings, Androscoggin Savings Bank and UnitedKingfield Bank; or contact Tricia Cook at the Western Mountains Alliance, (207) 778-7274; or visit www.westernmountainsalliance.org.

Crop Rotation

Grain-Forage Crop Rotations Boost Soil Quality

Soil scientist Douglas Karlen of ARS' National Soil Tilth Laboratory in Ames, Iowa, has found that crop rotations covering a minimum of five years, including at least three years of forage crops interspersed with corn and soybean, resulted in higher soil-quality ratings than either continuous corn or a two-year corn-soybean sequence. The longer-term rotations also were more profitable than continuous corn production.

According to Karlen, the study shows the need to create new markets and new uses for forage crops so that producers will have financial incentives to diversify their crop rotations. Larger farm size, specialization and separation of agricultural crop and animal enterprises--along with pressure to maximize short-term profit throughout the nation's corn and soybean belt--have decreased implementation of long-term crop rotations over the past 50 years. The result, according to Karlen, has been crop rotations that leave land bare for nearly six months each year, spurring organic-matter decomposition and erosion if the soils are tilled.

The researchers collected soil samples from three long-term crop rotation studies and one long-term organic study in Iowa and Wisconsin. They analyzed the samples for several physical, chemical and biological soil-quality indicators that were then used to develop an overall soil-quality index (SQI). Soil samples from extended rotations that included at least three years of forage crops such as alfalfa or oats scored the highest SQI values. The lowest SQI values were associated with continuous corn.

Source: Agricultural Research Service News Service, USDA, Luis Pons, (301) 504-1628, lpons@ars.usda.gov, April 14, 2006. This study, from the May/June 2006 issue of *Agronomy Journal*, is posted at <http://agron.scijournals.org/> and at www.ars.usda.gov/is/pr

Energy

Portland City Hall Drops 10,000 Pounds

Portland City Hall cut its carbon habit during Earth Week. “We’re shaving nearly 10,000 pounds off our carbon footprint for Earth Day,” said Peter Dewitt, communications director for Portland, Maine. “That’s how much carbon dioxide Portland will save with just one week of clean electricity.”

For perspective, nearly 770 trees would require a year to extract as much carbon dioxide (CO₂) from the atmosphere. Carbon dioxide is a greenhouse gas warming Maine’s climate and increasing extreme weather.

City Hall has offset emissions with wind and solar electricity, through renewable energy certificates (RECs) from Bonneville Environmental Foundation. Portland was Maine's first city to accept the Governor's Carbon Challenge, pledging to cut greenhouse gas emissions by 10 percent. The city is also conducting an anti-idling effort and biodiesel tests in city vehicles.

Brunswick-based Maine Green Power Connection (MeGPC), a project of the Maine Energy Investment Corporation, advised Portland on its green power purchase.

Also, the Natural Resources Council of Maine, with help from MeGPC, issued a Global Warming Challenge, challenging all Mainers to limit their climate impact. RECs are a simple tool for achieving this goal.

RECs represent the environmental benefits from renewable energy. They are sold separately from the electricity itself. Revenue from RECs allows wind and other green power producers to offer their electricity to the grid at a competitive price. The grid uses a relatively fixed amount of electricity, so more clean power means less dirty power and fewer greenhouse gas emissions. Because RECs displace greenhouse gas emissions, they can be used to make any activity "carbon neutral," including flying or driving.

The Maine Green Power Connection provides free public education and action possibilities on clean electricity from renewable resources. The Connection is a program of the Maine Energy Investment Corporation, a 501-c3 nonprofit based in Brunswick. MEIC conducts clean energy public education and market development programs. More information is available at www.RenewMaine.org.

The nonprofit Bonneville Environmental Foundation restores watershed ecosystems and furthers development and use of new renewable energy resources. Through revenues generated from sales of green power products, BEF funds projects that restore damaged watersheds and support new renewable energy projects from solar, wind and biomass. BEF pioneered the sale of Green Tags in 2000 and helped establish national standards for certification and trading. More information is available at www.b-e-f.org.

Source: Press release, April 14, 2006, Erika Morgan, (207) 729-9665, Maine Energy Investment Corporation, Brunswick, Maine

Sweden Switching to Renewable Energy

Sweden hopes to stop using oil within 15 years. Currently nuclear and hydro power supply most of the country's electricity, and fossil fuels power transportation. Without building new nuclear power plants, the country hopes to become oil-free by using alternative fuels, including using geothermal, waste heat, and other technologies. Already, renewables supply 26% of the country's energy, and grants are available for health and library services to convert; while homeowners receive tax benefits for using renewables.

Source: "Sweden Will Try to Wean Itself from Oil Within 15 Years," by John Vidal, Guardian, Feb. 8, 2006

Scientists Study Switchgrass for Energy Production

Two switchgrass plants per square foot the first year ensures a successful bioenergy crop harvest in subsequent years. That's the threshold for success established by an economic study by the Agricultural Research Service (ARS) and farm cooperators in Nebraska, South Dakota and North Dakota.

Switchgrass is a native prairie grass long used for conservation plantings and cattle feed in the United States. Interest in switchgrass ethanol has intensified as the federal government gains confidence in its potential as a bioenergy crop because of its wide adaptability and high yields on marginal lands. The northern Plains region was chosen first because the economics seemed most favorable there. Farmers can expect switchgrass yields to be high enough there to produce 100 to 400 gallons of ethanol per acre with current varieties. Results from the main part of the study--the economics of growing switchgrass for bioenergy--are promising.

Switchgrass can be converted to ethanol just as cornstalks can. It also can be burned to produce electricity. A perennial, switchgrass does not need to be planted and tilled annually—saving soil and energy. It can also reduce sediment and other pollutant losses to waterways.

The study's seedling threshold results are reported in the January issue of Crop Science.

Source: Agricultural Research Service News Service, USDA, Don Comis, (301) 504-1625, comis@ars.usda.gov, March 10, 2006, www.ars.usda.gov/is/pr.

Gardening

Grow the Winter Cache!!

Host a Workshop in Your Community

“The mission of the Winter Cache Project is to free ourselves from a dependence on industrial agriculture and to increase our community food security by developing sustainable local food systems. By growing and storing our own food to last throughout the winter, and educating ourselves about agricultural issues, we aim to create a working example of how we can come together as a community to provide for our basic needs using the principles of mutual aid, equal access and self-determination.”

The Winter Cache Project (WCP) started with gardens just outside Portland, Maine. During the growing season, community members collectively grow vegetables that are then stored in a root cellar and distributed free, biweekly, throughout the winter to those involved.

The WCP is extending its roots. Projects are in the works on the Blue Hill Peninsula, in Waldo County and in Boston, Mass., and the organization wants to take part in a larger educational and learning project around Maine. The Winter Cache Project organizers are excited to visit Maine communities to talk about building systems of year-round community food security. They can share information about their project and tell how to replicate it in other communities. They

would also like to learn more about existing projects that address similar issues.

For more information, contact wintercache@riseup.net or call 207-244-0908.

Genetic Engineering

MOFGA Adopts Position on Genetically Engineered Organisms

At its April 9, 2006, board meeting, MOFGA approved the following position on genetically engineered organisms.

The Maine Organic Farmers and Gardeners Association (MOFGA) opposes the use of genetically engineered (GE) organisms in agriculture and advocates significant changes in the regulatory framework governing this revolutionary technology.

The few unbiased studies conducted outside the aegis of the biotech manufacturers have indicated that various GE organisms may threaten human health, local farm communities, non-GE seed supplies (or other agricultural genetic resources), non-target insects, and natural biodiversity. Yet no government agency has assumed the responsibility of systematically testing the safety of GE products before they become available on the general market.

Manufacturers and processors are not required to label GE seeds or foods making it difficult for people who wish to avoid using them and impossible to assign responsibility should any health issues arise from their consumption.

The rules of the National Organic Program forbid the presence of GE material in organic agricultural products. Because GE material is carried by living organisms, it can easily reproduce and contaminate organically managed property. Therefore, GE technology directly threatens the certification and economic well-being of organic farmers.

Maine's agriculture is unique and exemplary. We have a high percentage of organic farms and the highest proportion of organic dairy farms in the nation. To encourage the growth of the organic sector, and to protect the interests and rights of the citizenry in general, the State must push an agenda for food and agriculture that views GE technology with skepticism. MOFGA will work cooperatively to promote ecologically, socially and economically beneficial alternatives to GE crops.

Recommended Policies:

1. Approach GE technologies with great caution. Farmers in Maine and beyond, and others who might use GE crops, should be skeptical about these technologies. The decision not to commercialize GE-wheat shows what can happen when a wide range of people fully assess the potential impact of

these technologies, not just on the farm but also on domestic and foreign markets.

2. Require labeling of GE foods or foods that contain ingredients made from GE crops. At least four times, at the request of Maine citizens, the Maine Legislature has considered legislation to require labeling of GE foods, but has succumbed to industry pressure not to label. To provide citizens with informed choice in their food-buying decisions, the State or Federal Government must institute mandatory labeling.
3. Protect farmers' rights. Genetically engineered crops present two major challenges for farmers. First is the potential for cross-contamination, when pollen, seeds or other plant parts from a GE crop show up in organic and non-GE crops. Second is the liability from such contamination. The manufacturer should be held responsible when its patented crops contaminate non-GE crops.
4. Encourage GE-free markets. Because relatively few Maine farmers are growing GE crops now, we can still develop markets for GE-free crops grown here. Maine should seek out those markets, whether organic or conventional, and help farmers supply them. This is particularly timely for canola, as Aroostook County is one of a few locations in the country with the potential to develop a GE-free specialty product – canola oil.
5. Establish buffer zones. The State should work closely with farmers to establish effective buffer zones between GE and non-GE crops. This will require strong language on minimum buffers in Maine's existing law on GE seeds. The Department of Agriculture and Cooperative Extension should create procedures to help farmers communicate with one another and minimize conflict.

Cornucopia Joins Lawsuit Against Genetically Engineered Alfalfa

The Cornucopia Institute and a coalition of farmers, farm groups, consumers and environmentalists have filed [a lawsuit challenging](#) the USDA's approval of Monsanto's genetically engineered (GE), Roundup Ready alfalfa.

Alfalfa is a prime forage crop for organic livestock farmers; it's drought resistant, has a high nutritional value, and grows well in areas of the United States where dairy and beef livestock are important. Growing on over 21 million acres, conventional and organic alfalfa is the country's third most valuable and fourth most widely grown crop. Alfalfa also greatly contributes to pork, lamb, sheep and honey production, and consumers frequently eat alfalfa as sprouts.

But the perennial plant spreads its pollen, with the help of bees, for miles—raising the specter of widespread genetic contamination of organic and conventional alfalfa. Organic farmers, such as Cornucopia member Jim Munsch of Coon Valley, Wisconsin, are concerned that GE alfalfa will ruin their ability to feed organic alfalfa to their organic livestock. "If this rule holds," says Munsch, "it's just a matter of time until all alfalfa will be contaminated with genetically engineered pollen. No farmer can put up a three-mile buffer zone to protect their neighbors."

“Gene-altered alfalfa poses special environmental, agricultural and economic risks for many different locations in the U.S.,” notes Will Rostov, Senior Attorney for the [Center for Food Safety](#) (CFS), which filed the lawsuit. “Given the potential significant and large-scale environmental effects, USDA must retract its approval and conduct a thorough Environmental Impact Statement.”

Nearly all alfalfa (83%) grown in the United States is raised without the use of herbicides. Some conventional farmers (mostly in the West) spray to kill the perennial when they are cycling fields out of alfalfa production after three to four years, and they may also spray when establishing the crop during its first year. Monsanto's GE alfalfa, though, will carry a gene making it Roundup resistant.

Why does Monsanto want to sell a crop that most raise without using herbicides? And why does Monsanto want to sell a crop that will then take an even stronger, more noxious herbicide than Roundup to kill? Munsch suspects that the corporation wants to pollute organic agriculture and force acceptance of GE crops, which the organic community has vehemently opposed. "We may no longer be able to say we are GMO (genetically modified organisms) free," explains Munsch, who coordinated The Cornucopia Institute role in the lawsuit. "Monsanto wants the organic community to back off the GMO issue."

The Cultivator, News from the Cornucopia Institute, Feb. 2006. www.cornucopia.org.

Montville Bans GMOs

At its annual town meeting on March 25, 2006, Montville became the first town in Maine to incorporate in its Comprehensive Plan policy that bans production of Genetically Modified Organisms (GMOs) in town.

Horticulturist Diana George Chapin amended an article presented by resident Kai George and others in the warrant that sought to protect the community's agricultural and forest economies, environment and private property from GMO contamination by declaring Montville a GMO free zone. Chapin's amendment strengthened the resolution to become an actual land-use ordinance.

“I was concerned that the language of the article didn't go far enough in terms of enforcing the resolution,” said Chapin, who holds a Master's Degree in Plant, Soil and Environmental Science and farms with her family at The Heirloom Garden of Maine. “I believe the GMO issue has important implications for anyone concerned with the quality of the food they eat and the security of the food system.

“For those who raise their own food, there are concerns that growing certain genetically modified crops in our town and region would put in jeopardy beneficial insects we rely on for pollination. In turn, our capacity to produce healthy fruits and vegetables and our ability to save seed could be detrimentally affected,” Chapin added.

Sources: Press Release, Diana George Chapin, March 28, 2006; 207/342-2117; info@theheirloomgarden.com. “Montville bans genetically altered seeds,” Tom Groening, Bangor Daily News, March 27, 2006; <http://bangornews.com/news/templates/?a=131154>; GE

Free Maine Press Release: www.gefreemaine.org/article.php?story=20060327143517995

World Leaders Vote Down Terminator Technology, GE Trees

At the United Nations Convention on Biological Diversity's (CBD) Eighth Conference of the Parties in Brazil, a majority of world leaders voted against the release of genetically engineered (GE) trees, referencing the possible spread of the plants into native forests. "Because there is insufficient scientific data regarding the biological impacts of transgenic trees, as well as an absence of socio-economic and cultural impact assessments, it is good scientific practice to invoke the Precautionary Principle, which is enshrined in the CBD," stated Dr. Ricarda Steinbrecher of the Federation of German Scientists. "This means no release of transgenic trees into the environment whilst this research is ongoing," she added.

A majority of world leaders also voted to maintain the moratorium on the "Terminator" technology, wherein plants are genetically engineered to produce sterile seeds, forcing farmers to purchase seeds year after year, rather than continuing traditional practices of saving seeds with each year's harvest. The United States and other leading biotech nations voted in the minority for the spread of these technologies.

Source: Organic Bytes #78, March 29, 2006; www.organicconsumers.org/ge/trees060324.cfm

WTO To Europeans: Eat Your Frankenfoods

The World Trade Organization (WTO), responding to intense pressure from the Bush Administration and the biotech industry, has ruled that the European Union's (EU) moratorium on genetically modified organisms (GMOs) from 1998-2004 was illegal. The moratorium, put in place because of EU concerns about human safety, environmental pollution and inadequate testing, has subsequently been lifted.

Canada, Argentina and the United States filed a complaint with the WTO in 2003, alleging that the moratorium violated international trade laws. The Bush Administration claimed that the EU ban has hurt U.S. farmers who grow genetically engineered crops, and that the EU should pay hundreds of millions of dollars in penalties to the United States. But market analysts point out that the WTO ruling will not benefit the biotech industry, because EU food manufacturers and supermarket chains, fearing a consumer backlash, will continue to refuse to sell food products containing GMOs, no matter what the WTO says. U.S. trade officials have admitted that the main impact of the WTO ruling will be to intimidate smaller nations from banning GMOs.

Source: Organic Bytes #75, Feb. 10, 2006. www.organicconsumers.org/ge/ruling060208.cfm

Pro-Biotech Columnist Took Monsanto Money

In January, Scripps Howard News Service ended its business relationship with columnist Michael Fumento, a senior fellow at the Hudson Institute. BusinessWeek Online learned that the columnist received a \$60,000 grant from Monsanto in 1999 to write *BioEvolution* (Encounter Books, N.Y., 2003), countering criticism of agribusiness and biotechnology. Fumento's book

and columns often praised Monsanto and its products, saying they would keep prices low and enable farmers to grow more food on less land.

The grant money became part of Fumento's salary at the conservative Hudson Institute. He did not reveal the Monsanto payment when he praised the company exclusively in his writings. Monsanto told Business Week that it did not pay the \$60,000 expressly for the book or the columns. Fumento claims to be the subject of a witch-hunt, says BusinessWeek Online.

Source: Eamon Javers, "A Columnist Backed by Monsanto," Business Week Online, www.businessweek.com/bwdaily/dnflash/jan2006/nf20060113_2851_db035.htm, Jan. 13, 2006.

All Polish Provinces Declare Themselves GMO-Free Zones

On February 24, 2006, the International Coalition to Protect the Polish Countryside gathered farmers, provincial leaders, politicians and activists from Europe to unite against the spread of genetically modified organisms (GMOs) in Europe—and to mark the final (16th) Polish Province to declare itself a GMO Free Zone. At the conference, held in Krakow, leading figures in the GMO Free Europe movement signed a Krakow Declaration, demanding a GMO Free Europe. The activists noted that:

- Between 70 and 80% of consumers in Europe oppose GMO foods;
- All 16 Polish Provinces have now declared themselves GMO Free Zones, making the whole of Poland 'GMO Free,' a status Poland shares with Austria and Greece. However, this position is not officially recognized by the Polish Government or the European Commission;
- Europe now has more than 170 regions and 4,500 GMO Free communities;
- Evidence shows that organic and conventional crops cannot "coexist" with GM crops.

Source: ICPPC--International Coalition to Protect the Polish Countryside, Międzynarodowa Koalicja dla Ochrony Polskiej Wsi 34-146 Stryszów 156, Poland; tel./fax +48 33 8797114; biuro@icppc.pl www.icppc.pl; www.gmo.icppc.pl www.eko-cel.pl, Feb. 22, 2006.

Genetic Pollution, It's What's for Dinner!

Greenpeace and Genewatch in the UK have released a report that contains a wealth of evidence on the contamination, illegal planting and negative agricultural side effects of GMOs. This report is the first from the online GM Contamination Register (www.gmcontaminationregister.org) and reviews cases reported in the public and scientific literature of contamination, illegal plantings and releases of GM organisms, and negative agricultural side-effects since GM crops were first grown commercially on a large scale in 1996. The organization has published an overview of national legislation on imports and labeling of GE organisms worldwide, including a map of potential GE dumping grounds as well as import and export figures. These are available at <http://www.greenpeace.org/bsp2006>.

The full report is available at www.greenpeace.org/international/press/reports/gm-contamination-report#

Keep Up to Date on GE News

A great source of up-to-date information on genetic engineering in agriculture is GE Free Maine's Web site, gefremaine.org.

More Illnesses Linked to Bt Crops

Evidence linking common transgenic proteins with serious allergic reactions is increasing, while regulators turn a deaf ear and approve more planting, says Dr. Mae-Wan Ho of the Institute for Science in Society. Previously, the Institute reported on dozens of illnesses and five deaths among villagers of south Mindanao in the Philippines that are suspected of being linked to genetically engineered (GE) Bt corn. Now, similar illnesses have been reported in Madhya Pradesh, central India, as a result of exposure to Bt cotton, which is engineered with the same or similar insecticidal protein(s).

Monsanto's Bt cotton varieties planted in Madhya Pradesh carry the insecticidal Cry1Ac protein (Bollgard) or both Cry1Ac and Cry1Ab proteins (Bollgard II).

Farmers from the Nimad region in Western Madhya Pradesh began complaining of health hazards after Bt cotton was planted, so a three-member team representing nongovernmental organizations (NGOs) surveyed six Nimad villages in late 2005. They interviewed 23 of the farm and factory workers who fell ill after handling Bt cotton. All had itching skin, 20 had eruptions on their bodies, and 13 had swollen faces. In some, itching was so bad that they had to discontinue work or take anti-allergy medicine to be able to work.

The team concluded: "All the evidence gathered during the investigation shows that Bt has been causing skin, upper respiratory tract and eye allergy among persons exposed to cotton... The allergy is not restricted to farm labourers involved in picking cotton but has affected labourers involved in loading and unloading Bt from villages to market, those involved in its weighing, labourers working in ginning factories, people who carried out other operations in the field of Bt cotton, or farmers who stored cotton in their homes etc."

Symptoms—most commonly on the skin—lasted from four or five days to six months. Those affected had no previous history of allergies, even though they had picked cotton before. Those with more severe symptoms on the skin also tended to have associated allergies of the eyes and respiratory tract. One woman was removed from the fields and was hospitalized for nine days.

Cotton fiber appeared to cause the allergy. (In the case of Bt corn in the Philippines, pollen was the suspected culprit.) Factory workers handling the Bt cotton also had symptoms.

The team is demanding a government enquiry; but that seems to have fallen on deaf ears so far.

Bt toxins come from the soil bacterium *Bacillus thuringiensis* (Bt), common strains of which produce a large family of insecticidal Cry proteins, each targeting a different range of insect pests. Strains of Bt were used as sprays or dusts to control insect pests in the United States for many years before transgenic Bt crops were created.

A study published in 1999 and funded by the U.S. Environment Protection Agency found that exposure to Bt sprays “may lead to allergic skin sensitization and induction of IgE and IgG antibodies or both.” The number of positive skin test responses was significantly greater in high- than in low- or medium-exposure groups of workers. In a previous public health survey of a large number of individuals exposed to a massive Bt pesticide spraying, symptoms included rash and deep swelling.

In 1992, Bt use in an Asian gypsy moth control program was associated with classical allergic rhinitis (inflammation of the nasal mucosa) symptoms, exacerbations of asthma, and skin reactions among exposed individuals reporting possible health effects after the spraying. Similar findings occurred during a 1994 Bt spraying.

Allergenicity is of particular concern because approximately 75% of asthma cases are triggered by allergens, and illnesses and deaths due to asthma have rocketed in recent years. Asthma deaths tripled in the United States from 1674 in 1977 to 5438 in 1998. The costs of asthma doubled from \$6.2 billion in 1990 to \$12.7 billion in 2000.

In 1996, Bt crops were introduced in the United States; they have expanded substantially in acreage since, with little or no further research on the toxicity or allergenicity of the Cry proteins released in greater and greater abundance into the environment. A research team in Cuba showed that Cry1Ac is a powerful immunogen, and when fed to mice, induced antibody responses similar to those obtained with the cholera toxin. Furthermore, Cry1Ac actively binds to the inner surface of the mouse small intestine, especially to the ‘brush border’ membranes on the cells lining the small intestine. All Cry proteins in Bt crops have amino acid sequence similarities to known allergens, and are hence potential allergens.

Regulators continue to approve Bt crops, despite surveys by scientists and NGOs demonstrating that Bt crops have failed to match the performance of local varieties, and farmers who bought into the aggressive sales propaganda have ended up in debt, and worse, have committed suicide.

Source: Institute of Science in Society press release, April 18, 2006; <http://www.i-sis.org.uk/MILTBT.php>

Lawns

YardScaping/BayScaping Seed Mix Available

To make your lawn more ecological, plant slow-growing, low-maintenance grasses that don't suffer from pests so much, don't require such fertile soil as some other varieties, and don't have to be mowed so often. A Bayscaping mix of fine fescues, perennial ryegrass and low-maintenance bluegrass is one example. It's being sold by Allen, Sterling and Lothrop in Falmouth and at www.allensterlingandlothrop.com.

Livestock

Third Case of Mad Cow Disease in United States

The U.S. Department of Agriculture's (USDA) announced a third case of mad cow disease in the United States in March 2006, this time at a farm in Alabama. This underlines the need for additional precautions, says Consumers Union, publisher of Consumer Reports. Mad cow disease has caused 150 deaths in the United Kingdom, apparently from eating tainted beef.

"It's unacceptable that the American public has been waiting for more than two years for the FDA to tighten its animal feed rules," states Jean Halloran, food policy expert at Consumers Union. After the first case of mad cow was discovered in the United States in December 2003, then FDA Commissioner Mark McClellan said that FDA would end the practices of feeding chicken coop floor wastes, restaurant wastes, and cows' blood to cattle, all of which FDA said at the time could potentially transmit the mad cow disease agent. However the agency never followed through.

In October 2005, the FDA proposed instead banning cattle brains and spinal cords from chicken and pig feed. The FDA argued that this would prevent any infectious material present in cattle brains from coming back to cattle via the chicken coop floor wastes. However this proposal is still pending and has been criticized as too weak by industry representatives and consumer advocates.

The cow that was killed this March was thought to be over 10 years old. The two cows that were previously said to have the disease included one born in Canada and raised in Washington state, whose brain was tested in 2003 after a two-week delay and whose carcass had been sold as hamburger; and a cow born and raised in Texas and identified with mad cow disease in 2005. Initial tests on this cow were ambiguous, and the USDA did not do follow-up testing for seven months.

Consumers Union also urged USDA to expand its surveillance program and to require that all cattle over 20 months of age be tested at slaughter for mad cow disease.

The USDA has refused to require universal testing for the fatal disease, as required in the EU and Japan, causing overseas sales of U.S. beef products to plummet. While 100% of cows in Japan, aged 24 months and older, are tested for the disease, only 1% of the 35 million cattle slaughtered annually in the United States are tested (and the USDA has announced it will be scaling back this level of testing).

As a result, a Kansas-based meatpacking company, Creekstone Farms Premium Beef, announced that it will voluntarily test all of the beef it processes, in order to meet the demands of some of its foreign buyers. In response, the USDA filed a notice against Creekstone, saying the company is not allowed to test its meat for the brain-wasting disease. Creekstone believes it has a right to test its meat and is suing the USDA. "Our customers, particularly our Asian customers, have requested it over and over again," chief executive John Stewart said. "We feel strongly that if customers are asking for tested beef, we should be allowed to provide that."

Consumers can minimize any risk of exposure to beef that may harbor mad cow disease by buying organic beef, says Consumers Union. Organic production prohibits any use of animal by-

products in feed. Consumers can also protect themselves by avoiding the higher-risk parts of the animal, such as brains, and beef cuts that combine meat from a number of animals, such as sausage, hot dogs and hamburger.

Sources: Consumers Union press release, March 13, 2006. Contacts: Jennifer Shecter, 914-378-2402; Urvashi Rangan, 914-378-2211, 646-594-0212; Reggie James, 512-657-6999; "Mad Cow Disease is Confirmed in Alabama," by Donald G. McNeil Jr., The New York Times, March 14, 2006; "USDA Sued for Not Allowing U.S. Producers to Test for Mad Cow," www.organicconsumers.org/madcow/lawsuit060326.cfm

GRAIN Says Global Poultry Industry is Root of Bird Flu Crisis

Small-scale poultry farming and wild birds are being unfairly blamed for the bird flu crisis now affecting large parts of the world. A report from GRAIN called "Fowl play: The poultry industry's central role in the bird flu crisis" (at www.grain.org/go/birdflu.) counters that the transnational poultry industry is the root of the problem and must be the focus of efforts to control the virus.

The spread of industrial poultry production and trade networks has created ideal conditions for the emergence and transmission of lethal viruses like the H5N1 strain of bird flu. Once inside densely populated factory farms, viruses can rapidly become lethal and amplify. Air thick with viral load from infected farms is carried for kilometers, while integrated trade networks spread the disease through many carriers: live birds, day-old-chicks, meat, feathers, hatching eggs, eggs, chicken manure and animal feed. Chicken manure and bedding from poultry factory floors are common ingredients in animal feed.

"Everyone is focused on migratory birds and backyard chickens as the problem," says Devlin Kuyek of GRAIN. "But they are not effective vectors of highly pathogenic bird flu. The virus kills them, but is unlikely to be spread by them."

For example, in Malaysia, the mortality rate from H5N1 among village chicken is only 5%, indicating that the virus has a hard time spreading among small-scale chicken flocks. H5N1 outbreaks in Laos, which is surrounded by infected countries, have occurred only in the nation's few factory farms, which are supplied by Thai hatcheries. The only cases of bird flu in backyard poultry, which account for over 90% of Laos' production, occurred next to the factory farms.

"The evidence we see over and over again, from the Netherlands in 2003 to Japan in 2004 to Egypt in 2006, is that lethal bird flu breaks out in large scale industrial chicken farms and then spreads," Kuyek explains.

The Nigerian outbreak earlier this year began at a single factory farm, owned by a Cabinet minister, distant from hotspots for migratory birds but known for importing unregulated hatchable eggs. In India, local authorities say that H5N1 emerged and spread from a factory farm owned by the country's largest poultry company, Venkateshwara Hatcheries.

A burning question is why governments and international agencies, such as the UN Food and

Agriculture Organization, are not investigating how factory farms and their byproducts, such as animal feed and manure, spread the virus. Instead, they are using the crisis to further industrialize the poultry sector. Initiatives are multiplying to ban outdoor poultry, squeeze out small producers and restock farms with genetically-modified chickens.

"Farmers are losing their livelihoods, native chickens are being wiped out and some experts say that we're on the verge of a human pandemic that could kill millions of people," Kuyek concludes. "When will governments realize that to protect poultry and people from bird flu, we need to protect them from the global poultry industry?"

Source: Grain press release, Feb. 27, 2006. GRAIN is an international non-governmental organization based in Barcelona that promotes the sustainable management and use of agricultural biodiversity based on people's control over genetic resources and local knowledge. For more information, visit www.grain.org

Proposed Legislation in Virginia Threatened Outdoor Poultry Production

The Cornucopia Institute helped Virginia family farmers [oppose a state legislative proposal](#) that could have eliminated raising fowl outdoors for eventual sale to consumers. The stated purpose of the controversial legislation, HB 982, was to control live bird markets—which Virginia does not have—but the bill's language also would have allowed the state to stop independent poultry producers from raising flocks outdoors because federal officials are worried about an avian flu epidemic. Virginia activists succeeded in making amendments to the legislation that passed their state Senate. "We have stopped, so far, what would have been a death bill for small poultry farmers," says Debbie Stockton of the [Virginia Independent Consumers and Farmers Association](#) (www.vicfa.net/).

The proposed legislation was "extremely troubling as consumers are increasingly hungry for organic and sustainable eggs and poultry that come from healthy birds raised outdoors," says Cornucopia's Mark Kastel. "Consumers have discovered that the purveyors of organic and direct-market eggs and poultry raised in healthy, outdoor conditions offer a superior-tasting product, and that scares the huge confinement operations." He noted that the bill was being pushed by the Del-Mar-Va Poultry industry, a giant industrial poultry cooperative.

Joel Salatin, a Virginia poultry farmer, is skeptical of the hype surrounding avian flu and domestic outdoor bird operations. "This has been an issue in Southeast Asia," said Salatin, "because of the extraordinarily unsanitary conditions their fowl are raised in." Salatin explains that because of potential theft in China, "families typically confine 200 birds in an 8-foot by 8-foot cage with no bedding provided. The birds are living on 6 to 8 inches of raw fecal build-up and locked in unhygienic squalor."

Such conditions contrast with the way U.S. organic and sustainable growers raise poultry. Salatin calls his birds "pastured poultry" because his thousands of chickens and turkeys are moved daily to fresh pasture paddocks and allowed to exhibit their natural, instinctive behaviors. Salatin, who has raised poultry for 50 years, strongly criticizes regulators and health experts for failing to grasp this different agricultural style: "Nobody—not the World Health

Organization, the European Union, or the USDA—has been willing to articulate the difference between clean outdoor housing and unhygienic outdoor housing.”

Source: The Cultivator, News from the Cornucopia Institute. Feb. 2006. www.cornucopia.org

Animal ID Program Opposed in Maine

Maine has plenty of critics of identifying individual farm animals and registering locations where they're raised. In fact, masked protesters threw “pies” made from cow manure and wood shavings at state veterinarian Dr. Don Hoenig and Shelley Doak, director of animal industry for the Maine Department of Agriculture after they discussed a farm animal ID plan in Ellsworth in March. A system for identifying animals would help the state track animals in case of a disease outbreak. Hoenig said that 12 of the last 13 major human infections, including SARS and bird flu, originated in animals. Critics say the proposed tracking system would be invasive, unenforceable, and costly enough to drive small producers out of the market.

Source: “Manure flingers end farm-rules session,” AP report, Portland Press Herald, Tuesday, March 14, 2006. <http://pressherald.maintoday.com/news/state/060314manure.shtml>

Bird Flu Basics from UMaine Extension

Two new fact sheets published by UMaine Cooperative Extension affirm that avian influenza (AI) currently represents little risk to humans, and that eating properly handled and cooked poultry is safe.

“What Maine People Need to Know About Avian Influenza” provides information for the public about the nature of avian influenza, the safety of poultry products and considerations when traveling internationally.

“What Small Flock Owners in Maine Need to Know About Avian Influenza” explains how people with backyard poultry flocks can keep their birds healthy, lists the symptoms of AI in infected birds, and provides instructions for having mortalities tested by the UMaine Veterinary Diagnostic Laboratory.

Avian influenza (AI) viruses are classified as “low-path” (low pathogenicity) or “high-path” (high pathogenicity). Low-path AI causes only mild illness, if any, while high-path AI causes severe illness and often death among infected birds. The H5N1 strain that has caused outbreaks among birds overseas is a high-path strain. No H5N1 is in North America now.

An important point clarified by the Extension information is that AI is a disease of birds. It occurs naturally among birds, and only some strains, such as H5N1, cause birds to become severely ill and die. While small numbers of people in Asia have contracted H5N1 from birds, human infection is rare. Those who have become infected have had prolonged contact with heavily contaminated environments. Extension Food Science Specialist Beth Calder helped put AI in context with this statistic: “Each year in the U.S. there are 76 million cases of food poisoning leading to 5000 deaths. There have been fewer than 200 confirmed human cases of

avian influenza worldwide since 2003.”

Both Extension fact sheets explain that properly prepared poultry is safe to eat. The U.S. government has taken steps to prevent infected birds or their products from entering the U.S. food supply. Poultry products that are cooked to safe temperatures—165 degrees F or 74 degrees C—are safe to eat regardless, as these temperatures destroy flu virus. Furthermore, infected hens usually stop laying eggs, so infected eggs are rare.

These publications say that all citizens share the responsibility to be prepared for emergencies. Simple common sense dictates that everyone practice basic hygiene strategies such as frequent hand washing and staying home when ill, and each family maintain a home emergency kit with supplies for at least three to five days.

UMaine Extension’s AI fact sheets were developed by Extension Veterinarian Scott Haskell, Extension Food Science Specialist Beth Calder, and Extension Animal & BioScience Specialist Gary Anderson. The fact sheets are available free from Extension’s online bookstore at www.umext.maine.edu or by calling 800-287-0274.

“Extending the Harvest” Available on Video

“We know that if we want to increase the economic bottom line for our farms with local sales, we have to produce what the local consumer wants, we have to extend our marketing season beyond summer and fall, and we have to make our products easily available for as much of the year as possible,” says Paula Day, project director of the Eat Smart Eat Local Project.

In February, more than two dozen farmers gathered in Skowhegan, Maine, to learn how to extend Maine’s growing season and how to extend market access to Maine-grown foods by changing the way harvested products are stored. Organized by Eat Smart Eat Local, an initiative of the Western Mountains Alliance, “Extending the Harvest” is now available on video.

February workshop presenters were Steve Belyea of the Maine Department of Agriculture; Jim Cook from Skylandia Farm and Crown of Maine Cooperative; Jay Robinson, who grows vegetables on two farms in Somerset County; and Ross Adams, a Farmington producer. Belyea shared specifics for low-cost, on-farm storage plans for particular crops; Cook came with years of experience in multi-crop, cooperative storage; Robinson explained his individual storage solutions; and Adams shared plans for a cooperative storage facility on his farm.

Both on-farm and centralized storage systems for such root crops as potatoes, carrots, onions, garlic and beets were presented. As a result, a small group of farmers with interest in collaborating on a storage facility agreed to work together.

According to Cook, who distributes Crown O’ Maine produce throughout New England, and Martha Putnam, who distributes Maine products throughout southern Maine via Farm Fresh Connection, the demand for most root products, except potatoes, is not being met.

In April, a second workshop “Back of the Calendar Farming,” explored hoop greenhouse

technology for year-round production in Maine.

The Eat Smart Eat Local project is funded by the W. K. Kellogg Foundation with the intent of encouraging large food service providers to adjust their purchasing and cooking practices to include more local products, while at the same time encouraging local farmers to gradually adapt growing and production practices to provide more of what large institutions, and all other local consumers, want.

Eat Smart Eat Local is a project of the Western Mountains Alliance and the Maine Alternative Agriculture Association. For more information, contact Maine Alternative Ag at 696-8044, maaa@gwi.net. To view a videotape of the workshop, contact the Western Mountains Alliance, 207-778-7274 or wma@maine.edu.

Source: Agriculture Today, March 22, 2006,
www.maine.gov/agriculture/newsletter/feature_7.htm

Nutrition

Healthy Farms + Healthy Animals = Healthy Food

"Greener Pastures: How Grass-fed Beef and Milk Contribute to Healthy Eating," from the Union of Concerned Scientists, is the first comprehensive study to confirm that beef and milk from animals raised entirely on pasture have higher levels than conventionally raised beef and dairy cattle of beneficial fats that may prevent heart disease and strengthen the immune system. The study also shows that grass-fed meat is often leaner than most supermarket beef, and raising cattle on grass can reduce water pollution and the risk of antibiotic-resistant diseases.

"When you eat grass-fed meat, you're getting beef with benefits," said report author Dr. Kate Clancy, a nutritionist and senior scientist in the Food and Environment Program at UCS. "There are no losers in producing cattle entirely on pasture. Farmers win, consumers win, the environment wins, and even the cattle win." UCS suggests consumers ask supermarket managers to carry these products. Increasing demand can encourage greater adoption of grass-fed production and keep more small farmers and ranchers on the land.

http://www.ucsusa.org/news/press_release/Grass-fed-Beef-and-Dairy-Study.html

Broccoli, Cabbage, Soy Cut Cancer Risk

Some vegetables contain chemicals that seem to enhance DNA repair in cells, which could help protect against cancer development, say Georgetown University Medical Center researchers.

Articles in the British Journal of Cancer and in Nature say that in lab studies, indole-3-carinol (I3C), found in broccoli, cauliflower and cabbage, and a chemical called genistein, found in soybeans, increased the concentrations of two proteins that repair damaged DNA. The senior author, Eliot M. Rosen, M.D., Ph.D., of Georgetown's Lombardi Comprehensive Cancer Center, says the

study clarifies that diets can affect molecular processes that affect cancer genes. Rosen found that as breast and prostate cancer cells were exposed to increasing doses of I3C and genistein, more repair proteins BRCA1 and BRCA2 were formed—possibly preventing cancer, speculates Rosen. Decreased amounts of these proteins are found in cancer cells.

Source: “Broccoli, Cabbage, Soy Found to Cut Cancer Risk,”

Environment News Service, February 10, 2006.

www.ens-newswire.com/ens/feb2006/2006-02-10-09.asp#anchor7

Turmeric and Curried Cauliflower May Help Prevent Prostate Cancer

Turmeric, the spice that colors curry yellow, may help treat and prevent prostate cancer, especially when combined with cruciferous vegetables, say researchers at Rutgers University. The scientists combined turmeric with phenethyl isothiocyanate (PEITC), a compound that is abundant in broccoli, Brussels sprouts, cabbage, cauliflower, kale, kohlrabi, turnips and watercress. Turmeric and PEITC, alone or combined, were significant in preventing cancer in laboratory mice, and the combination of PEITC and curcumin (a compound in turmeric) could treat established prostate cancers.

The researchers noted that prostate cancer, the second leading cause of cancer deaths in U.S. men, is much less common in India, where diets are high in disease-preventive foods.

The research, "Combined Inhibitory Effects of Curcumin and Phenethyl Isothiocyanate on the Growth of Human PC-3 Prostate Xenografts in Immunodeficient Mice," by Tin Oo Khor, Young-Sam Keum, Wen Lin, Jung-Hwan Kim, Rong, is available at cancerres.aacrjournals.org and published in *Cancer Research* (Jan. 15, 2006).

Source: “Curried Cauliflower Effective Against Prostate Cancer,”

Environment News Service, Jan. 16, 2006.

www.ens-newswire.com/ens/jan2006/2006-01-16-01.asp

Government Pushes Food Pyramid but Subsidizes Junk Food

An excellent article in *Grist* (Feb. 22, 2006, at www.grist.org/news/maindish/2006/03/02/jordan) discusses the U.S. government’s verbiage about eating more produce at the same time that the same government subsidizes the junk food industry, via corn subsidies. Providing subsidies encourages overproduction of corn (generally grown in ways that harm the environment) and overproduction of carbohydrate-rich, nutrient-poor, cheap foods.

In “I’m Hatin’ It,” author Tom Philpott says that 5% of the corn crop becomes high fructose corn syrup, which is added to drinks, breakfast cereals, baked goods and more. These, along with similarly inexpensive fatty foods, are the foods that lower-income people can afford, the foods that provide the maximum calories per dollar; while much less subsidized and healthier foods, such as fresh produce, have risen in price by 50% since 1980.

Adding to the problem, supermarkets are less likely to be located in poor neighborhoods, so the

poor must choose between traveling to a better neighborhood to shop, or going to more expensive convenience stores nearby, which tend to stock far more carbohydrates and fats than vitamins and minerals. This may be why obesity is greater among poor minorities than among the wealthier.

Philpott says that grassroots, community efforts may solve diet, health and economic problems better than the federal government. Efforts to build local, healthful, affordable food systems are cropping up all over the country. Communities are recognizing the value of local farms, farms tied to restaurants, and farmers' markets; the value of healthful foods in reducing obesity and other illnesses; and of local farms in local economies.

Lower Concentrations of Minerals in Milk and Meat Now

Milk and many meats in the United Kingdom have lower concentrations of minerals now than they did 60 years ago, according to an analysis of government records there. Data from 1940 and 2002 listed in the government publication *The Composition of Foods* show:

- 55% less iron and 7% less magnesium in rump steak;
- an average of 47% less iron in 15 meats;
- 60% less iron, 2% less calcium and 21% less magnesium in milk;
- 50% less iron in cream and in eight cheeses;
- 9% less calcium; 38% less magnesium and 47% less iron in cheddar;
- 70% less magnesium and 100% less iron in Parmesan.

The analysis, done by chiropractor David Thomas, who also sells mineral supplements, was published in the February 2006 *Food* magazine by the consumer watchdog Food Commission. Thomas believes the declines are due to intensive, industrial farming. The Food Commission has called for independent research on the subject, saying that the decreases cannot be due to better measuring and detection, as the industry claims.

Scientists at the University of Newcastle explain that as grass grows faster, nutrient uptake is diluted, possibly offering one explanation for the declines. Also, traditional farming used more clover, which is richer in minerals than grass. Today cows get hay and more grains.

The conventional food industry and the Food Standards Agency, which publishes *The Composition of Food*, argue that testing methods have changed, as have crop varieties, transportation and storage, and food preparation methods, so comparisons are difficult.

Source: "Mineral levels in meat and milk plummet over 60 years," by Felicity Lawrence, Feb. 2, 2006, *The Guardian* (London), www.guardian.co.uk.

Mental Health Declines Linked to Food Quality Declines?

The Mental Health Foundation in the United Kingdom and the UK group Sustain reported in January that changes to the human diet in the last five decades could be an important factor behind the major rise of mental illness there. Significant changes in the way food is produced and manufactured have reduced the amounts of essential fats, vitamins and minerals consumed

and have disturbed the balance of nutrients in the foods. Two studies are available free: [Feeding Minds: the impact of food on mental health](http://www.mentalhealth.org.uk/feedingminds/) (www.mentalhealth.org.uk/feedingminds/) was written for stakeholders in the mental health sector; [Changing Diets, Changing Minds: how food affects mental well-being and behavior](http://www.sustainweb.org/news_detail.asp?iEve=135&iType=1082) (www.sustainweb.org/news_detail.asp?iEve=135&iType=1082) is for those in the food and farming sectors.

Source: ATTRA Weekly Harvest Newsletter, Feb. 15, 2006.
<http://attra.ncat.org/newsletter/archives.html>

Organic News

Factory Farmed Organic Dairy?

The Cornucopia Institute has filed lawsuits and Freedom of Information Act (FOIA) requests regarding USDA rules concerning organic dairy production. The Institute, a Wisconsin-based farm policy research group and organic food watchdog, claims that the USDA has delayed enforcing federal organic farming standards requiring that organic dairy cows have access to pasture and obtain a significant portion of their feed from grazing. The USDA has not complied with three of the FOIA requests, filed since August 2005.

When the National Organic Standards Board (NOSB) was ready to close loopholes and tighten federal organic rules in August 2005, staff at the USDA blocked action by their expert advisory panel, says Cornucopia.

Cornucopia's report *Maintaining the Integrity of Organic Milk* and accompanying scorecard (at www.cornucopia.org), rank 68 retail organic dairy brands and measure the organic ethics and integrity involved in their production. Report author Mark Kastel notes that "...the vast majority of all brand-name organic dairy products are produced from milk from farms that follow accepted legal and ethical standards."

Two of the largest U.S. organic dairy companies, Horizon Organic (a subsidiary of Dean Foods) and Aurora Organic, a supplier of private brand name organic milk to Costco, Safeway, Giant and others, control 65% of the market and purchase the majority of their milk from feedlot dairies where cows have little or no access to pasture, alleges Cornucopia. It adds that these feedlots, many with thousands of cows, routinely import calves from conventional farms.

Clark Driftmier, vice president of Aurora Dairy, told *The Daily Times-Call* of Longmont, Colorado, that it complies with USDA rules and that Cornucopia's rating system is biased and unscientific. He added that Aurora Dairy is moving toward giving cows more space and more time on pasture. The Organic Trade Association also called Cornucopia's ratings unscientific.

In Feb. 2006, the USDA launched an investigation about Aurora Organic Dairy in Colorado after Cornucopia filed a formal complaint about the company.

Also, socially concerned investors filed a shareholder proposal this winter asking Dean Foods to

report to shareholders how it is responding to widespread concern that industrial-scale organic dairies supplying milk for Horizon violate consumer trust, thus jeopardizing share value.

On April 13, 2006, the USDA's National Organic Program (NOP) published an Advanced Notice of Proposed Rulemaking (ANPR) in the Federal Register, exploring the role of pasture in organic management of ruminant animals—particularly dairy animals. (See at www.ams.usda.gov/nop under Today's News for April 10.) The ANPR gives a history of the pasture issue as well as questions to consider for making formal comments. The comment period ends on June 12.

MOFGA-certified farmers who sell to Horizon meet federal organic standards for pasturing their animals, and MOFGA does not certify any big feedlot-style dairies.

Sources: Press releases, The Cornucopia Institute, April 12, 2006; The report is posted at www.cornucopia.org; "USDA Begins Investigation of Complaints Against Nation's Largest Organic Factory Dairy," The Cultivator, News from the Cornucopia Institute, Feb. 2006. www.cornucopia.org. "Dairy Debate: USDA Investigation Into Local Company Puts Spotlight on Fight over Organic Labeling," by Ben Ready, The Daily Times-Call, Longmont, Colorado, April 10, 2006; "Investors Challenge Dean Foods' Approach to Organics, Investment in Factory Farms Questioned," Press release, 03/02/06, Steven Heim, Boston Common Asset Management, 802-223-4627, and Mark Kastel, The Cornucopia Institute, 608-625-2042; Organic Trade Association Statement Regarding Organic Dairies, Organic Trade Assoc. press release, March 23, 2004, www.ota.org.

The Status of Organic

Organic food sales represent 2% of the U.S. food market now, having increased from \$3 billion to over \$10 billion between 1997 and 2003, and should reach 3.5% of the market by 2010. We import some \$1.5 billion of organic food annually and export \$150 million worth of organic foods. Organic milk consumption is increasing by 30% per year.

Transitioning to organic can be costly. The European government helps its farmers with "green payments," and in the United States, Organic Valley and Horizon help with transitioning costs. Most U.S. agricultural subsidies are for large, chemical- and energy-intensive farms and genetically engineered crops, making it difficult for family-scale farmers and ranchers to afford the three-year transition to organic production. "Unless more American farmers consider converting to organic practices, exporters are likely to capitalize on this lucrative market," says a January 2006 marketing report from the research firm Organic Monitor in London.

Other limitations to transitioning include difficulty getting production information, and higher costs and limited availability of organic grain.

A study by the Hartman Group says that people are buying organic foods for safety and health reasons, primarily; in the past, environmental concern was the prime motivator.

Source: "Demand for organic food growing faster than domestic supply," by Scott Faber, The Bay Journal, March 2006.

www.bayjournal.com/article.cfm?article=2760&print=yes; "Consumer Demand for Organics Explodes Whilst Supply Dwindles," Organic Bytes #78, March 29, 2006;
www.organicconsumers.org/organic/shortage060326.cfm; "Wal-Mart's Organic Offensive," by Pallavi Gogoi, Business Week Online, March 29, 2006,
www.businessweek.com/bwdaily/dnflash/mar2006/nf20060329_6971.htm

Cultivating Organic and Conventional Vegetable Production

Farmers who are considering a switch from conventional to organic production can now factor into their decision research findings from Agricultural Research Service (ARS) scientists in Lane, Oklahoma.

There, at the ARS South Central Agricultural Research Laboratory, scientists are working to improve production systems for vegetable growers using conventional or organic methods.

For example, ARS plant physiologist Vincent Russo is investigating whether organic practices can produce vigorous vegetable seedlings. Initially, organically grown bell pepper transplants appeared to be less vigorous than those in a conventional potting soil. But further examination revealed that suggested rates for some commercial organic fertilizer products were inadequate. Russo found that adding four times the label rate of an organic fertilizer to a commercially available, organically certified potting medium produced bell pepper seedlings similar to those grown with synthetic fertilizers and a conventional potting medium.

In addition, ARS agronomist Charles Webber is examining integrated vegetable production and weed-control systems using crop rotations, cover crops, and synthetic and organic herbicides. He is looking at alternative herbicides, such as corn gluten meal, pelargonic acid (a fatty acid found in plants and animals) and vinegar (acetic acid).

Working with ARS technician Buddy Faulkenberry and James W. Shrefler, an Extension horticulturist at Oklahoma State University in Lane, Webber recently developed an innovative device for applying corn gluten meal to the soil surface.

Webber's team also studied vinegar, previously been identified as an organic herbicide, to determine acetic acid concentrations, application volumes and the use of adjuvants -- additives such as orange oil or canola oil -- to improve its performance.

This research appears in the April 2006 Agricultural Research magazine at:
www.ars.usda.gov/is/AR/archive/apr06/organic0406.htm

Studies Keep Showing Benefits of Organic Diet

When researchers from Emory University in Atlanta analyzed urine from children ages three to 11 who ate only organic foods, they found virtually no metabolites of two common pesticides, malathion and chlorpyrifos. When the same children switched to conventionally grown foods, concentrations of the metabolites quickly jumped as high as 263 parts per billion, says the study published February.

Likewise, researchers from the University of Washington found in 2003 that children who ate organic produce had concentrations of pesticide six times lower than children eating conventional produce.

Nutrition data from the British government show that the mineral content of milk, cheese and beef dropped as much as 70% between the 1930s and 2002, Parmesan cheese had 70% less magnesium and calcium, beef steaks had 55% less iron, chicken had 31% less calcium and 69% less iron, and milk had 21% less magnesium. Copper, an important trace mineral, fell 60% in meats and 90% in dairy products.

A 2003 study in the Journal of Agriculture and Food Chemistry showed that organic produce had significantly more cancer-fighting antioxidants, which the plants produced to help repel insects and competing plants, according to the researchers.

Britain's Soil Association reviewed 400 nutritional research studies and concluded in 2001 that organically grown foods were richer in vitamins and minerals than conventionally grown.

The decline in nutritional value of nonorganic foods is thought to be due to intensive chemical farming practices that do not replace minor nutrients in the soil; that rely on herbicides and insecticides that kill microbes that help maintain soil fertility and promote plant growth; and modern varieties bred for quick growth and high yields. Add pesticide residues to the low-nutrient foods, and the mixture could be dangerous.

Source: "New Studies Back Benefits of Organic Diet," by Stephen Leahy, April 10, 2006, Inter Press Service News Agency, www.ipsnews.net/news.asp?idnews=32375

Organic Acreage Up Worldwide

The International Federation of Organic Agriculture Movements (IFOAM), the Swiss Research Institute of Organic Agriculture (FiBL), and the Foundation Ecology & Farming (SOEL), Germany, presented the latest global data on organic farming at the BioFach fair 2006 in Nuremberg.

According to the survey, more than 31 million hectares (about 77 million acres) of farmland are under organic management worldwide, a gain of around five million hectares in a single year. A major increase has taken place in China, where nearly three million hectares of pastoral land were recently certified.

In terms of organic land, excluding wild collection, Australia leads, with 12.1 million hectares, followed by China (3.5 million hectares) and Argentina (2.8 million hectares). Most of the world's organic land is in Australia/Oceania (39%), followed by Europe (21%), Latin America (20%), Asia (13%), North America (4%) and Africa (3%). Regarding the share of organic farmland compared with the total agricultural area, Austria, Switzerland and Scandinavian countries lead. In Switzerland, more than 10% of the agricultural land is managed organically. The editors of the study note that "the continued increase in the organic land area over the last

years is not just due to the ever greater interest in organic farming, but also a result of improved access to information and data collection each time the study is updated.”

In 2004, the market value of organic products worldwide reached 27.8 billion US\$ (23.5 billion EUR), the largest share of organic products being marketed in Europe and North America. Ongoing growth of the market and organic land area is expected for the foreseeable future, in part due to increased support of governments and development organizations.

Source: IFOAM press release, www.ifoam.org. The study, *The World of Organic Agriculture 2006--Statistics and Emerging Trends*, 8th revised edition, February 2006, International Federation of Organic Agriculture Movements (IFOAM), Bonn, Germany, can be downloaded for 10,60 Euros at www.ifoam.org.

Less Nitrogen Pollution from Organic Orchard

Stanford University researchers fertilized apple trees in Washington State with synthetic calcium nitrate, with composted chicken manure and alfalfa meal, or with combined conventional and organic fertilizers. About five times more nitrate leached from the conventional treatment than from the organic or combined treatments. Nitrogen can enter the atmosphere, adding to global warming, and can pollute watersheds and cause dead zones where rivers enter oceans.

Source: “Organic Farming Reduces Nitrogen Pollution of Groundwater as Well as Greenhouse Gas Pollution,” CommonDreams, Environment News Service, www.ens-newswire.com, March 8, 2006. The original study was in the March 6 online edition of the Proceedings of the National Academy of Sciences.

Organic Wal-Mart?

Wal-Mart will double its inventory of organic goods this year, stocking hundreds of organic items in several departments to try to meet consumer demands and lure better-off, “green” consumers as well as make organic affordable for its lower-income customers. It is also committing to buying wild-caught fish that meets the sustainability standards of the Marine Stewardship Council.

The move, given Wal-Mart’s scale, could force more manufacturers and competitors to move toward organic. It may also cut prices that organic farmers receive for their diligence. “Wal-Mart has the reputation of beating up on its suppliers,” South Dakota farmer Richard DeWilde told Business Week Online. “I certainly don't see 'selling at a lower price' as an opportunity.”

Wal-Mart joins other giant corporations in seeking large volumes of organic goods. Business Week cites Kraft, which owns Boca Burgers; Dean Foods, which sells Silk soy milk; and General Mills, which owns Cascadian Farms. Many worry that these mega-corporations will drive down the standards for organic production as well as the price for organic goods, likely buying from overseas suppliers in the process.

CEO Lee Scott said at Wal-Mart’s last annual meeting (quoted in Business Week), “We know

that customers at all ends of the income spectrum want organic and natural foods. But, frankly, most of them just can't afford the high prices the specialty stores charge. Well, we don't think you should have to have a lot of money to feed your family organic foods." Scott also claimed that by selling organic cotton yoga suits for 10 weeks at Sam's Club, the company "saved the equivalent of two jumbo jets of pesticides."

Sources: "Wal-Mart's Organics Could Shake Up Retail," by Marcus Kabel, Associated Press, Mar 25, 2006; "Wal-Mart's Organic Offensive," by Pallavi Gogoi, Business Week Online, March 29, 2006, www.businessweek.com/bwdaily/dnflash/mar2006/nf20060329_6971.htm; "Selling Luxury to the Masses," by Pallavi Gogoi, Business Week Online, Nov. 29, 2005, www.businessweek.com/bwdaily/dnflash/nov2005/nf20051129_4460_db016.htm

People

Mainer is Land Trust Accreditation Commissioner

The Land Trust Alliance has appointed David MacDonald of Mount Desert, Maine, to be one of 13 commissioners of the new "Land Trust Accreditation Commission: An Independent Program of the Land Trust Alliance." This organization will develop policies to provide a fair and transparent review of applications and procedures for granting a seal of accreditation to successful land trust applicants.

The Land Trust Accreditation Commission is dedicated to upholding ethical practices for land trusts around the country, ensuring the permanence and quality of land conservation.

For more information on this commission, contact:

Rand Wentworth, President, Land Trust Alliance 202-638-4725, or

Larry Kueter, Chair, Land Trust Accreditation Commission 303-292-5656.

Information about land trusts and the Land Trust Alliance is available at www.lta.org or from frothenberg@lta.org.

Four Maine Farmers Receive Organic Valley Award

In February, Organic Valley Family of Farms/CROPP Cooperative recognized 36 of its farmers with Gold Quality Awards for outstanding organic milk quality in 2005. This is the co-op's top milk-quality award, given to farmers who consistently deliver milk above and beyond the already high standards Organic Valley sets for organic milk produced by its farmers. Milk from these farms is consistently low in Somatic Cell Counts (SCC) and low in bacteria counts—the result of farming that benefits the cows, environment, farmers and consumers.

Maine farmers who received the award are Richard and Stephanie Calder; Dick and Julie Hall; Doug and Linda Hartkopf; and Geraldine Saunders.

Organic Valley is an independent co-op of 750 farmer-owners in 23 states. Its mission is to keep small and mid-sized farmers farming. Regional production serves local markets, uses local processors and features packaging that highlights area farmers. The co-op produces 200 organic

foods. It is looking for more organic farmers to join the cooperative. For more information, call 1-888-809-9297 or visit www.organicvalley.coop or www.farmers.coop.

Johnny's Selected Seeds to be Employee-Owned

Johnny's Selected Seeds, a privately-held Maine seed company since 1973, will soon be employee-owned. The announcement was presented by founder and owner Rob Johnston Jr. at an April 24 all-employee luncheon. The plan will be implemented over the next 10 years, with employees gaining majority shares by July of 2009.

What was once a more local and regional supplier of vegetable, flower and herb seeds has grown over the last three decades into a multi-channel, international seed merchant, providing commercial grower and home garden customers around the country and worldwide with quality seeds, as well as tools and supplies. The company has earned a reputation for quality product, service and technical advice.

"We're about to embark on a new adventure, turning Johnny's into an employee-owned seed company," said Johnston. "While every privately owned company eventually changes hands, this is selling out with a twist: the employees are buying it. This settles the ownership question moving ahead, and that benefits the whole Johnny's community -- customers, employees, suppliers and research cooperators. This place has a life beyond me, and that life begins now."

"The sale of Johnny's through an ESOP [Employee Stock Ownership Plan] is a tremendously exciting opportunity for all of its soon-to-be employee-owners," says General Manager Mike Comer. "It will reward our employees for their continued focus on building long-term relationships with our customers and for their creative solution-finding aimed at advancing operations to the benefit of our customers."

Source: Press release, Johnny's Selected Seeds, April 24, 2006

Colgate-Palmolive to Buy Tom's of Maine

Tom's of Maine, the popular maker of natural and organic body care products, has agreed to be bought out by the Colgate-Palmolive Company for \$100 million. Co-founder Tom Chappell claims, "We have a commitment from Colgate that our formulas will not be tampered with." Colgate says it can help Tom's of Maine increase sales and distribution in the fast-growing \$3 billion U.S. market for natural oral-care and personal products.

Source: Organic Bytes #78, March 29, 2006. Organic Consumers Association.
www.organicconsumers.org/bodycare/toms060326.cfm

Pesticides

BPC Continues Work on Indoor Pest Control Standards
by Alice Percy
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The Maine Board of Pesticides Control (BPC) opened its Jan. 20 meeting – its first meeting since Oct. 28 – with a workshop session to discuss ongoing revisions to the proposed Chapter 26 rule requiring Integrated Pest Management standards for certain pesticide applications in publicly accessible buildings. At the end of the previous comment period, the BPC had received nine letters and 229 form-letter postcards opposing the rule and two letters and 51 e-mail messages in support of the rule.

The previous version of the rule required building managers to post a notice in a common area of the building warning employees that pesticide applications might be made and allowing individual employees to request that they be forewarned of particular applications. The newer version of the rule omits the requirement for a permanent notice and instead requires that a notice specific to a particular application be posted in a common area 24 hours to seven days before the application. A similar requirement would hold for daycare facilities.

The previous version of the rule required a notice system for residents of long-term care facilities and nursing homes (or their guardians) similar to the system used for employees. The new version omits any notification of these groups, instead simply forbidding the use of sprays when persons other than the applicator or building manager are in the room. Baits, gels, pastes, granular materials, and crack and crevice treatments (including volatile liquids) may be used when people, including children, are present.

No previous notification is required for the use of baits, gels, pastes, dusts, or granular materials placed in areas “not readily accessible to residents, employees, or children,” such as the space under a counter. The applicator industry requested a similar exemption for crack and crevice treatments, but the BPC staff did not comply. The Board did not address the issue of potentially hazardous airborne particulate matter resulting from the application of pesticides in dust formulations. Board member John Jemison questioned the definition of “not readily accessible to employees,” citing a letter he had received from a carpenter who had worked under a cabinet in a restaurant and had some granular-form pesticide fall into his face. Staff toxicologist Lebel Hicks said that as a contracted (rather than a regular) employee, the onus was on the carpenter to inquire about recent pesticide applications. “The good news is that he’s not running into dead mouse parts.”

The current version of the rule includes no notification provisions for tenants in apartment buildings, other than the tenant whose apartment receives treatment. Board members had previously suggested that Chapter 26 include provisions for an indoor application registry similar to the Pesticide Notification Registry, a list of Maine residents who have paid an annual fee of \$20 to be notified when outdoor spray applications are made within 250 feet of their residence. The third version of the rule includes no such provision. Board member Lee Humphreys encouraged the staff to continue working on the indoor registry, saying, “It’s even more important to be protected in your residence than in your workplace.” However, she and the other Board members agreed with the staff that the indoor registry was not “key to the effectiveness of Chapter 26 and...would better be taken up separately at a later date.”

The BPC expressed continued skepticism regarding the use of a universal logo to be posted at the entrance of any publicly accessible building in which pesticides are used, although this is the

only proposed requirement favored by both the pest control industry and environmental organizations. MOFGA supported the logo at both public hearings because none of the other notification provisions could protect the casual public. The Board feared that enforcement of such a requirement would be too difficult due to the number of establishments involved. Chief of Compliance Henry Jennings suggested instead an “anti-logo” for establishments that do not use pesticides. Board member John Jemison suggested maintaining a list of pesticide-free establishments on the BPC Web site, but other Board members felt that this sort of effort was not the agency’s responsibility.

Browntail Moth Treatments and Lobster Populations

The Board heard the Environmental Risk Advisory Committee’s interim report on the effect on lobster populations of pesticides used to control Browntail Moth infestations. Browntail Moths are typically treated with aerial sprays of Dimilin, a treatment that at \$40 or less per acre is much cheaper than less environmentally risky methods, such as ground spraying (\$1380 per acre) or clipping webs out of trees (\$5400 per acre). The committee had so far concluded that the greatest risks for contamination of the marine environment came from spray drift contaminating a mudflat or direct application into the water if a pilot mistimed the operation of the spray boom. However, the committee also noted that Browntail Moth populations have declined sharply, and that no municipal spray programs have been organized for the near future because so many people oppose spraying that it is impossible to form a spray block with the minimum practical size of 20 acres. The committee expected to issue a final report in March.

Emergency Registrations

The Board then passed for the eighth year an “Emergency Registration Request” to the EPA to allow Maine growers to use Orbit (propiconazole) to control Mummyberry disease in blueberries. Syngenta Crop Protection, Orbit’s maker, has been waiting for approval of this use since 1997. Board chair Carol Eckert asked what would happen if the fungus gained resistance to propiconazole before the registration was complete; Pesticides Registrar Wesley Smith said that that situation had occurred before with other chemicals, including certain treatments for late blight in potatoes. Board member Lee Humphreys voted against the emergency registration.

The Board also approved an Emergency Registration “Quarantine Exemption” request to the EPA to allow IDEXX Laboratories of Westbrook to use Environ LpH for prion control on laboratory surfaces. IDEXX is a biotechnology laboratory engaged primarily in developing veterinary products. Its technicians handle tissues containing the prions believed to cause transmissible spongiform encephalopathies, such as Chronic Wasting Disease, scrapie and “mad cow disease.” Prions are much more difficult to deactivate or degrade than such disease-causing organisms as bacteria. Environ LpH has a pH of only 2.5, which could pose a serious hazard to the microorganisms used by publicly owned treatment works. The terms of the registration request required that IDEXX monitor and adjust the pH of the laboratory wastewater prior to discharge.

Bilingual Pesticide Educators

The BPC granted \$1,165 to the Training and Development Corporation and \$2,300 to the Maine Migrant Health Program to help support two bilingual pesticides educators to work with migrant workers in Northern and Western Maine. One of these is an AmeriCorps member who will work for all of 2006; the other is a Health Education intern who will work for six months in the spring and summer. Last year the program provided pesticide safety training for 562 adults and 62 children, as well as other health and language services. The BPC has included this grant money in its budget for the last 10 years.

Critical Pesticide Control Area Requirements

The Board passed a new policy regarding the designation of Critical Pesticide Control Areas (CPCA) for households. In response to a couple of drawn-out, problematic applications for CPCA designations, the Board attempted last summer to exclude single persons or families from CPCA eligibility, but withdrew the proposal when considerable opposition was expressed by MOFGA and others at a public hearing. Instead, the Medical Advisory Committee formulated requirements to ensure regular procedure and a sound medical basis for health-related CPCA designations.

Applicants must sign a statement permitting the pertinent medical records to become part of the public record. In addition they must submit reports from two medical providers demonstrating that certain substances could reasonably be expected to cause or exacerbate a longstanding medical condition. The medical providers must be certified by the American Board of Medical Specialists or be licensed osteopaths; no provision is made for testimony from naturopathic doctors or other alternative healers. The application must also include copies of standard medical tests documenting the health condition involved, and a toxicological profile, based on peer-reviewed scientific literature, of the substance of substances to be restricted, including exposure levels likely to affect the person's health. The applicant must be able to prove past exposure to the substance through a Board-documented enforcement case, or alternatively describe potential exposure scenarios based on physical and chemical data for the pesticide formulation and varying environmental conditions.

Chief of Compliance Henry Jennings presented a case in which a helicopter allegedly directly deposited the fungicide Orbit (the same substance for which the Board approved an Emergency Registration Request earlier in the meeting) onto the grounds of an organic farm owned by Mark Jacoby and his wife Lisa Mushrall in Columbia. The helicopter, owned by Maine Helicopters, Inc., of Whitefield, was hired by Wyman & Sons to treat a conventional blueberry field owned by Prescott Farren of Columbia. While turning between passes, the helicopter flew so close to the house that the dishes rattled; when the owners went outside to wave the helicopter away, Mushrall's face was sprinkled with drops of fungicide. Foliage samples from the target blueberry field, one corner of which was only 50 feet from the Mushrall-Jacoby house, showed propiconazole at concentrations of 7.44 to 11.7 ppm, while foliage samples taken near the house showed concentrations of 4.11 to 9.33 ppm, indicating that Orbit either drifted very heavily or was directly deposited onto the organic farm. Mushrall also noted that no signs were posted in the blueberry field giving notice of the spray event, and the same afternoon she had to warn workers from Wyman & Sons to stay out of the field to avoid exposure to the pesticide. The BPC inspector confirmed that no signs were posted. The Board referred this case to the Attorney

General's office to avoid a conflict of interest, as Board member Andrew Berry formerly owned Maine Helicopters, Inc.

Looser Notification Requirements for Schools

Fears of mosquito-borne illnesses caused the Board to loosen notification requirements for pesticide applications on school grounds. After two horses and a bird in York county tested positive for Eastern Equine Encephalitis, parents in the area pressured school districts to spray school grounds to control mosquitoes prior to events such as ball games. The Board's Chapter 27 regulations require a five-day prior notification for most spray events, but currently exempt applications of ready-to-use general use pesticides (e.g. DEET preparations) by hand or with non-powered equipment. The new policy also exempts powered applications for mosquito control when the Maine Center for Disease Control and Prevention has identified arbovirus positive mosquitoes, birds or mammals in the area. Upon questioning, Certification and Licensing Specialist Gary Fish said that "area" would be interpreted conservatively to exempt only neighborhoods or townships, not all of York county. The pesticides applied would most likely be synthetic pyrethrins; larvicide treatments would also be possible but because these are aquatic applications they would require a DEP permit.

Other Business

The Board approved a consent agreement negotiated between BPC staff and the Penobscot Valley Country Club of Orono. An employee at the Country Club made two applications of pesticides to the turf of the golf course, but no one at the course was licensed as a commercial pesticide applicator. Managers at the Club had previously talked to BPC staff about getting an employee licensed; when no one showed up for the exam, the staff decided to investigate. The Country Club was fined \$200.

The Board renewed a three-year permit to the USDA Wildlife Services Office to use pesticides to control vertebrate pests outdoors. The Maine Board of Pesticides Control Statute forbids killing vertebrate animals other than rats and mice, and English sparrows, starlings and pigeons inside buildings. The Wildlife Services Office uses the permit primarily to control large bird populations in feedlots. The USDA agents bait with untreated grain to ensure that the bait attracts only target species.

The Board approved Wyman & Sons' 2006 Blueberry Pest Management Plan for the Deblois Critical Pesticide Control Area. The CPCA was instituted to protect a state-owned fish hatchery (including its rearing pools and tributary water supplies, and all land within 1000 feet) from pesticide drift and runoff. The plan relies in some cases on less-toxic alternatives, such as fire pruning and Bt products, and in other cases on employing the usual high-toxicity products such as Imidan in spot treatments with backpack sprayers instead of swath treatments with boom sprayers. The plan also specifies that traps are to be set to provide pest counts, and pesticide treatments are to be performed only if the number of trapped pests exceeds certain threshold levels.

The Board ended its meeting by reelecting Carol Eckert and Andrew Berry as its Chair and Vice-

Chair.

Indoor Pesticide Applications and Annual Emergencies
by Alice Percy

The February 24 meeting of the Maine Board of Pesticides Control (BPC) opened with a public hearing on the third draft of the proposed Chapter 26 rule governing pesticide applications in all public buildings except K-12 schools.

Richard Stevenson Sr. of Modern Pest Services reiterated his and his associates' belief that a notification registry system or a universal logo posted on public entrances would be more effective and more enforceable than any of the notification systems proposed by the Board. He called the registry approach – which is already available for outdoor applications – “cheap healthcare, a real bargain at 20 dollars,” referring to the fee charged by the BPC for adding a name to the registry. The Toxics Action Center has petitioned the BPC to eliminate this fee, arguing that producers should pay the cost of protecting citizens from pesticide exposure. The Board has expressed an intent to institute a notification registry for indoor pesticide applications to help protect chemically sensitive or other concerned apartment dwellers from applications made in neighboring apartments. It has repeatedly rejected suggestions from MOFGA and the pest control industry to include a universal logo system in the rule.

Stevenson repeated a previous request that the Board exempt crack and crevice treatments from notification requirements. He argued that such treatments are frequently used for economically important pests, and that the 24-hour notification requirement would prevent Modern Pest Services from responding efficiently to customer calls. Board chair Carol Eckert said that “crack and crevice” has a broad definition and that certain crack and crevice procedures might be exempted. Stevenson responded that the two primary crack and crevice techniques are a “spaghetti tube” that deposits pesticides directly behind a baseboard, and spraying pesticides above the baseboard so that they drip behind it.

Ralph Blumenthal of Atlantic Pest Solutions asked that building managers instead of pest control operators have responsibility for notification. He stated that persons requesting information about an application should be able to get specific information, such as the scheduled time, without requiring managers or applicators to supply other, unwanted information. Currently the rule requires the applicator to answer any request for information with the trade name and EPA registration number of the pesticide, the date, time and location of the application, reasons for the application, re-entry interval listed on the product label, and a name and phone number for further information. Blumenthal was especially concerned that revealing reasons for applications would embarrass and violate customers' privacy, for example by revealing a flea problem to an apartment dweller's neighbor. He also feared that giving all this information severely restricted an applicator's flexibility by not allowing a technician to arrive late or choose a different pesticide formulation due to newly discovered circumstances.

Richard Stevenson Jr. of Modern Pest Services requested exemption for products listed by the EPA as “25-B Minimum Risk Products.” The EPA exempts these from registrations because they “pose little or no risk to humans or the environment,” but Maine requires their registration

because they make pesticidal claims. Most are plant-based and, Modern Pest Services finds, very effective. By exempting these, said Stebenson, the BPC would encourage their use over more dangerous formulations. Board members expressed interest but said they would need further research. BPC toxicologist Lebel Hicks said that she did not like the 25-B listing because companies were not required to generate safety data on these products, and some, such as cedar oil, are allergens. She is also concerned about propellants in 25-B aerosols.

Alice Percy on behalf of MOFGA encouraged the Board to revert to the previous two-stage notification requirements, arguing that a notice posted 24 hours before a pesticide application could fail to notify a part-time employee. She also encouraged reinstating notification requirements for nursing homes and long-term care facilities, according the same rights to inpatients as to children, workers and tenants. Mark Randlett, Assistant Attorney General serving the Board, had expressed concern that under the two-stage notification system managers would have to notify new employees even if they stopped having the building treated. Percy suggested that the rule allow businesses to cease notification if they adopted a formal policy prohibiting non-exempt applications. She opposed exempting any crack and crevice treatment, arguing that whether sprayed or applied with a spaghetti tube, liquids could leak from under baseboards or volatilize, increasing the risk of exposure. She agreed with the pest control industry that the primary responsibility for notification could lie with building managers, as they interacted daily with employees or tenants, and encouraged the Board to carefully research the issue of 25-B Minimum Risk products.

Dick Groton of the Maine Restaurant Association agreed with Blumenthal that revealing reasons for treatment threatened people's privacy, stating, "people are interested in the chemical, not the reason." He suggested the section require applicators or building managers to reveal "any or all" of the listed information instead of requiring all that information "at a minimum." He also said he intends to disperse the universal logo to his members to post voluntarily at entrances to their establishments.

Will Everitt of the Toxics Action Center said he would support the indoor registry if it did not carry a \$20 fee. "It should not be the public's responsibility to pay to know." He argued that anyone requesting information should automatically be given the Material Safety Data Sheet and a copy of the label for the pesticide to be used, as most would not know to ask for these. He opposed exempting crack and crevice treatments.

Annual Emergencies

The BPC unanimously passed the seventh annual Section 18 Emergency Registration Request for CheckMite+, a coumaphos product made by Bayer Healthcare to control varroa mites and small hive beetles in honeybee hives. Together with pesticide exposure, these pests are causing a continuing decline in honeybee populations around the country. According to state apiarist Tony Jadczak, beekeepers are now bringing in bees from Australia to replace their losses. Some organic honey producers have controlled varroa mites by stocking parts of their hives with sacrificial drones.

The Board passed a repeat Emergency Registration Request for use of Fomesafen, a broadleaf

herbicide marketed by Syngenta as Reflex, in dry bean plantings. The product is already registered for use on soybeans. This request has been made and granted annually since 1996 except in 1998 and 2003. Syngenta is pursuing a regular registration for the product, but BPC registrar Wes Smith said, “the requirements of the Food Quality Protection Act are slowing things down.” Board member Lee Humphreys gave the only dissenting vote, saying, “My usual [vote against repeat emergency requests] – but I can’t go against the bees.” Board member John Jemison – also a MOFGA Board member – voted in favor of the request but added, “I’ll be glad to host a cultivation demonstration for any dry bean growers who are interested.”

Fines and Other Business

The Board reviewed resumes of persons interested in joining a new committee to develop best management practices for lawn care applications in saturated conditions. Five were lawn care applicators or specialists, four were water resource specialists or consultants, and one was a leading staff person of an environmental organization. The Board authorized committee chairs Dan Simmonds and John Jemison to choose six to eight applicants.

The Maine General Medical Center in Waterville was fined \$500 for permitting a company employee to apply herbicides to the perimeter of a hospital building at the Seton Unit when no company employee was a licensed commercial applicator. At least five hospital employees experienced mild symptoms after smelling an odor from the application.

The Sandy River Golf Course in Farmington Falls was fined \$300 because the owner occasionally applied pesticides even though no one at the course was a licensed commercial applicator. The owner was given one warning and then fined when a follow-up inspection showed that he had continued the practice. BPC chief of compliance Henry Jennings said the fine was relatively small because the volume of pesticides was not large. “He was told twice,” responded Humphreys. “That fine is certainly not too much!”

JBH Helicopter of Pembroke, N.H., was fined \$3,500 for allegedly spraying a blueberry field in Columbia Falls in July 2004 without the owners’ authorization. Concentrations of the insecticide Imidan on the complainants’ property were consistent with average concentrations in a deliberately sprayed field. JBH was the only company operating a helicopter in that area that day. Although the company submitted to the consent agreement, the pilot and his supervisors deny that JBH was responsible for the event, since the complainants reported a blue and white helicopter (JBH operates green and gold helicopters) and the company’s GPS files depict a flight path 500 feet from the complainants’ property, at the closest. Jennings asserted that the GPS data were questionable and that the balance of evidence pointed to the company’s guilt.

BPC staff director Bob Batteese reviewed legislation, including results of a legislative committee hearing on LD 1791, An Act to Increase the Number of Members on the Board of Pesticides Control, which sought to add a structural applicator and a member of a state business organization. The committee tabled the bill but resolved to send a letter to the Governor asking him to appoint a structural applicator to fill the open position for a commercial applicator. Andy Berry, an aerial applicator who has served on the Board for over 25 years, currently holds this position. The other Board members were distressed by this development, declaring that Berry’s

long term gave him valuable experience and perspective that would be indispensable at the [then] upcoming public hearings on aerial agricultural pesticide applications. Humphreys volunteered to draft a letter to the governor opposing this change.

[End of BPC report]

Governor Baldacci Signs Executive Order to Phase Out Toxics

Governor John Baldacci signed an Executive Order on Feb. 22 to promote safer chemicals in consumer products and services. The Order commits the state government to phase out its use of long-lasting toxic chemicals while informing the public about safer alternatives to those chemicals. It will reduce state purchasing of toxic products and reduce pesticide use around state office buildings. The Order also spells out the next steps that Maine will take against chemicals that have already been identified as priorities, such as mercury, lead and pesticides.

The Governor also announced creation of a task force to identify safer alternatives to hazardous chemicals and to promote the use and development of alternatives. The task force will also identify ways to expand research and development into green chemistry at the University of Maine to, for example, move Maine toward production of nontoxic, bio-based plastics from Maine potatoes and wood waste. The task force will include representatives of environmental groups, people from the business and labor communities, members of the University system, state government and the general public.

The Governor worked with the Alliance for a Clean and Healthy Maine on the Executive Order. The Alliance includes representatives from The Learning Disabilities Association of Maine; The Maine Labor Group on Health; The Maine Environmental Health Strategy Center; The Maine Organic Farmers and Gardeners Association; The Maine People's Alliance; The Maine Public Health Association; Maine Physicians for Social Responsibility; The Natural Resources Council of Maine; and The Toxic Action Coalition.

In their roles as MOFGA representatives to the Alliance for a Clean and Healthy Maine, Sharon Tisher and Nancy Ross worked hard developing the vision and language for this Order. They will continue to lend their expertise as the task force takes shape.

Source: Press release, Governor's office, Feb. 22, 2006; Crystal Canney, 287-2531; Dan Cashman, 287-2531.

www.maine.gov/tools/whatsnew/index.php?topic=Portal+News&id=13630&v=article-2004.

MOFGA email, Heather Spalding, Feb. 2006

Olympia Resolution To Reduce Pesticides and Persistent Toxics

The City Council of Olympia, Washington, unanimously adopted a resolution in January to reduce the purchase and use of pesticides and persistent toxic chemicals. The resolution will ensure that the most toxic pesticides are not used in city parks and directs the city to reduce purchases of products such as PVC pipes, chlorine-bleached paper and mercury thermostats. The resolution is the first of its kind in the state to address both pesticides and

persistent toxic chemicals.

The resolution was promoted by a local coalition known as the Healthy Olympia Task Force, which includes Olympia residents, the Black Hills Audubon Society, People for Puget Sound and the Washington Toxics Coalition.

Persistent toxic chemicals include PCBs, mercury, dioxins and other chemicals that persist in the environment and build up in the food chain. These chemicals have been linked to certain cancers, birth defects and other reproductive problems.

Olympia joins a number of Washington cities, counties and school districts that have ended the use of pesticides that are linked to cancer, harm to the nervous system, and incur other serious health problems. These areas include the cities of Seattle, Snohomish, Lynnwood, and Bainbridge Island, King and Thurston Counties, and seven school districts, including Vancouver and Oak Harbor. In 2002, the City of Seattle also adopted a resolution to reduce its purchase of products containing or contributing to persistent toxic pollution.

Source: Press release, Jan. 2006, Angela Storey at Washington Toxics Coalition, astorey@watoxics.org, 206-632-1545 ext. 111; Gregg Small, Executive Director, Washington Toxics Coalition, 4649 Sunnyside Ave. N, Suite 540, Seattle, WA 98103; 206-632-1545, Extension 113; gsmall@watoxics.org; www.watoxics.org

Kitchen Meets Farm in Fight Against Late Blight

Agricultural Research Service plant pathologist Modesto Olanya and colleagues are investigating plant essential oils--including oregano, thyme and lavender--and other biologically based approaches to control late blight of potatoes. The disease (*Phytophthora infestans*), which can rapidly defoliate and destroy potato plants, quickly gains resistance to widely used systemic fungicides, so researchers constantly search for new ways to protect America's favorite vegetable.

Olanya, who works at ARS' New England Plant, Soil and Water Research Laboratory in Orono, Maine, has found that among the essential oils, oregano is showing the greatest promise as a late blight suppressor. In laboratory tests, the Maine researchers found that oregano and other essential oils greatly inhibited the growth of *P. infestans* fungi. However, oregano was less effective in suppressing late blight in growth chamber studies than in the laboratory. To increase their efficacy, Olanya is looking at pairing essential oils with other natural products, such as beneficial microorganisms.

The essential oils do have some limitations to overcome. According to Olanya, oregano is fairly volatile, so some of its fungi-fighting essence could evaporate from plant surfaces after it's been applied. Conversely, the oils can burn plant leaves if applied too generously.

Source: Agricultural Research Service News Service, USDA, Erin Peabody, (301) 504-1624,

ekpeabody@ars.usda.gov, March 13, 2006. This report appears at www.ars.usda.gov/is/pr

Kids More Vulnerable to Pesticides Than Previously Believed

Newborn infants are as much as 65 to 164 times more vulnerable than adults to two common agricultural pesticides, says University of California research. Thus, says the Natural Resources Defense Council (NRDC) and the Pesticide Action Network of North America (PANNA), current government safeguards may not protect children adequately.

The study, published in *Pharmacogenetics and Genomics*, addressed chlorpyrifos (Lorsban) and diazinon, which are used on many common crops, including almonds, lettuce, peaches, grapes, tomatoes and soybeans. In a related lawsuit, the NRDC filed a brief charging the U.S. Environmental Protection Agency (EPA) with failing to protect children from hazardous pesticides.

The UC Berkeley scientists have been studying Latina mothers and their children in California's Salinas Valley agricultural region since 1998, taking blood samples from 130 women and their babies and analyzing them for the key enzyme PON1, which normally helps detoxify organophosphate insecticides. The researchers found that the most sensitive newborns were 65 times more sensitive to diazinon and 131 to 164 times more sensitive to chlorpyrifos than adults. The study also revealed that susceptibility varies significantly even among adults and children. For example, the women varied in susceptibility to diazinon by a factor of 14, whereas variability among children was 26-fold. In the case of chlorpyrifos, sensitivity varied by as much as 35-fold among mothers, and as much as 65-fold among newborns. The researchers also found that the newborns had consistently lower levels of the protective enzyme than the mothers.

Previous research has shown that children of mothers exposed to organophosphates are likely to suffer low birthrate, premature birth and other problems.

Banned at Home, Widely Used on Farms

EPA banned chlorpyrifos and diazinon for household use in December 2001 and December 2002, respectively, largely due to their hazards to children, but allowed continued use on agricultural crops. The top uses of chlorpyrifos in 2003 in California were on cotton, alfalfa, almonds and walnuts; diazinon was used mostly on lettuce, peaches, almonds, prunes and spinach. Nationwide, the organophosphate pesticides account for 70% of all insecticides used.

In 2001, the most recent year for which EPA has reported data, about 20% of all foods for sale had residues of one or more organophosphate pesticide. The highest residues of chlorpyrifos tend to be on apples from New Zealand, grapes from Chile, tomatoes from Mexico and domestically grown soybeans. (See www.epa.gov/envirohealth/children/contaminants/e8.htm.)

In a lawsuit filed last August, NRDC and the Northwest Coalition for

Alternatives to Pesticides accused the EPA of failing to protect children's health as required by law, and as demonstrated by science. The litigation follows EPA decisions establishing new tolerances for several pesticides in dozens of foods, including fruits, vegetables, milk, eggs, meat, cereal grains and vegetable oils. In each case, the agency had failed to apply a child-protection factor as required by the 1996 Food Quality Protection Act. The case is being heard by the 9th U.S. Circuit Court of Appeals in San Francisco.

Source: Pesticides Action Network Updates Service, March 2, 2006, www.panna.org. For information about pesticide risks and the Food Quality Protection Act, see www.nrdc.org/media/pressreleases/030915a.asp

Beneficial Insects Safer than Pyrethroids

Pyrethroids, synthetic versions of naturally-occurring pyrethrins, have replaced organophosphate insecticides in many cases, because they were believed to be less toxic to humans. They are common in farm and home and garden products, such as Raid, Ortho Ant-B-Gon, Bonide and Pounce. However, the California Department of Pesticide Regulations is seeing increasing evidence that pyrethroids kill aquatic organisms on which fish feed, so the agency is asking manufacturers for more data.

Researchers have found concentrations of pyrethroids in many California rivers and streams that were high enough to kill amphipods, on which fish feed. The chemical has shown up in urban streams as well, signaling pollution via home and garden products.

In humans, pyrethroids can cause coughing, shortness of breath, chest pains, rashes, blisters, lower sperm counts, tremors and thyroid problems.

Alternatives include releasing beneficial insects.

Source: "A closer look--A type of pesticide seen as a safer alternative is getting a re-evaluation by state, federal agencies," by Warren Lutz, The Record, Feb. 27, 2006. www.recordnet.com/apps/pbcs.dll/article?AID=/20060227/NEWS01/602270312/1001

Pesticides Linked to Frog Mutations

Scientists at the University of California at Berkeley have shown that commonly used pesticides disrupt the development of sex organs in frogs, weaken their immune systems, delay and stunt development, and otherwise contribute to declining frog populations.

"If you look at one of these frogs, it's probably a hermaphrodite--plus, it metamorphoses late, which means it is subject to its pool drying up before it can become a frog," said lead researcher Tyrone Hayes, professor of integrative biology at U.C. Berkeley, and a Pesticide Action Network associate. "It's also smaller, if it metamorphoses at all, which increases the likelihood it will be eaten and decreases its ability to eat. Plus, it's immuno-suppressed, and more prone to die from

infection." The group observed that mixtures of pesticides that accumulate in ponds near farms increased frog stress hormone levels, creating holes in the thymus gland that likely cause the impaired immune response.

The researchers say that pesticides, introduced predators, ultraviolet light and global warming interact to cause the decline in frogs.

Four years ago, Hayes showed that atrazine, the most common weed killer used on corn in the United States, disrupts the sexual development of frogs by producing more hermaphrodites, decreasing the size of their vocal organs (critical to mating success), and causing a tenfold drop in testosterone in mature male frogs. In one of the studies published online in [Environmental Health Perspectives](#), Hayes reported even stronger evidence that atrazine, a powerful endocrine disruptor, both chemically castrates male frogs by blocking the action of the male steroid androgen and by stimulating the production of the female hormone estrogen.

"One week of exposure at the critical time is all that's required to make these males look feminine, which probably interferes with mating," he said. While some frogs seem to adapt to atrazine by delaying development, presumably so that the critical developmental period takes place when the herbicide is at its lowest, Hayes suspects that not all frogs would adapt quickly enough to survive. Plus, delayed maturation comes at the risk of having the pond turn into a puddle and dry up before the frog completely metamorphoses.

Hayes and his colleagues also examined combinations of atrazine, three other herbicides, two fungicides and three insecticides used on Midwestern cornfields. All nine were found in the scientists' study area in Nebraska in pools of water beside cornfields early in the growing season, when spraying typically occurs. Levels ranged from 0.1 parts per billion (ppb) to 10 or more ppb. Data indicate that while some of the pesticides used on corn fields may not, individually, noticeably impact frogs, combinations create significant effects. Among these are delayed maturation (tadpoles take longer to metamorphose into frogs), retarded growth and increased susceptibility to meningitis caused by normally benign bacteria. All nine compounds together at 0.1 ppb--one of the lower concentrations measured in the field--lengthened the time to metamorphosis by 15 days--about 25 to 30 percent. The mixture also caused a frog mortality of 35 percent.

All nine compounds together also produced a startling effect: The longer a tadpole took to mature into a frog, the smaller it was. Normally, the opposite is true, Hayes said. Separately, six of the pesticides did not affect this correlation, but three disrupted frog metamorphosis to the degree that there was no relationship between time and size. "In humans, this is like saying, 'The longer you are pregnant, the smaller your baby will be,' which means the womb is no longer a nurturing environment," Hayes said.

"Estimating the ecological risk and the impact of pesticides on amphibians using studies that examine single pesticides at high concentrations only may lead to gross underestimations of the role of pesticides in amphibian declines," Hayes concluded.

Sources: Pesticide Action Network news release, Feb. 28, 2006; Hayes, Tyrone B., et al. 2006.

"Pesticide mixtures, Endocrine disruption, and amphibian declines: Are we underestimating the impact?" [Environmental Health Perspectives Online](#), Jan. 24, 2006.

www.ehponline.org/members/2006/8051/8051.pdf; Hayes, Tyrone B., et al. 2006.

"Characterization of atrazine-induced gonadal malformations in African clawed frogs (*Xenopus*

laevis) and comparisons with effects of an androgen antagonist (cyproterone acetate) and exogenous estrogen (estradiol 17Beta]): Support for the demasculinization /feminization hypothesis." Environmental Health Perspectives Online, Jan. 24, 2006.
<http://www.ehponline.org/members/2006/8067/8067.pdf>

Dow and Monsanto Sued Over Agent Orange

In January, the Seoul High Court ruled that Dow Chemical and Monsanto, which made Agent Orange, should pay \$62 million to 6,700 Korean war veterans, claiming that the chemical was associated with non-Hodgkin's lymphoma, Hodgkin's disease, prostate cancer, diabetes and seven other conditions. It added that Agent Orange contained cancer-causing dioxins at concentrations higher than permitted.

Korea has little authority to claim the money for veterans if Dow and Monsanto refuse to pay. If the companies don't pay, the veterans would have to sue in a U.S. court, a tactic that failed in 1994. No U.S. court has ever associated Agent Orange with more than minor skin disorders. Still, in 1984, Dow, Monsanto and five other U.S. companies did pay \$180 million—without admitting any wrongdoing—to U.S. veterans who claimed to have health problems from Agent Orange.

Last year a U.S. federal court in New York rejected a claim by a Vietnamese group that said Agent Orange has caused medical conditions such as birth defects, miscarriages and cancer. This court also ruled that since the U.S. government ordered the chemical companies to produce Agent Orange, the companies are not liable for resultant problems.

The Vietnamese civilians and Korean Victims of Agent Orange Veterans Association (KAOVA) are joining forces to seek compensation. They say that over a million former soldiers and civilians in Vietnam were harmed by Agent Orange—more than 19 million gallons of which were used to defoliate vegetation in Vietnam from 1962 to 1971. Over 320,000 Korean troops fought with U.S. soldiers in Vietnam, and over 131,000 of these troops say they suffered from Agent Orange. The groups hope that new scientific evidence about Agent Orange will help their case.

Source: Korea Times;
<http://times.hankooki.com/lpage/nation/200602/kt2006021517452111970.htm>; By Kim Tong-hyung, Feb. 15, 2006.

Nontoxic Lawns and Pest Control are Safer for Kids and Pets

The ASPCA Animal Poison Control Center (APCC) says that June, July and August are the most dangerous months for companion animals. In 2005, the Center received approximately 10,000 calls in July, and over 4,700 of these involved animals being exposed to pesticides. These included flea and tick products, rodenticides (mouse and rat baits) and herbicides (weed killers).

The ASPCA Animal Poison Control Center recommends caution when choosing and applying pesticides on pets, adding that some products that are safely used on dogs can be deadly to cats, even in small amounts. For example, over 18 brands of permethrin insecticide spot-on products

for flea and tick control are labeled for "use on dogs only." These products have a good margin of safety when used on dogs, but even a few drops of concentrated permethrin could be lethal to a cat.

The ASPCA says to consult with a veterinarian before using a flea and tick product on a very young, pregnant or elderly animal—or use a flea comb. If you do use a flea and tick product, observe your pet closely. If a pet exhibits unusual behavior or becomes depressed, weak or uncoordinated, call a veterinarian immediately.

The ASPCA Animal Poison Control Center handled over 1,700 cases about rodenticides during the summer of 2005. The most dangerous forms include zinc phosphide, strychnine and commercial rat and mouse baits. Some baits contain inert ingredients that can attract an animal. If a pet ingests a rodenticide, seizures, bleeding or death may result. When using any rodenticide, place it where pets can't get at it.

Last summer, the Center received over 1,700 calls about herbicides—many from owners concerned about letting pets walk in an area treated with a weed killer. The Center says to read product labels carefully.

These products are not necessary for lawn care and can be harmful to pets. Researchers at Purdue University questioned owners of 83 Scotch terriers that had bladder cancer and owners of 83 other Scottish terriers that presented other health problems to veterinarians. The owners were asked about their use of lawn or garden chemicals during the year before diagnoses.

The researchers found that the risk of bladder cancer (transitional cell carcinoma of the urinary bladder) was four times greater in dogs exposed to lawns or gardens that had been treated with phenoxy herbicides (such as 2,4-D weed killers and their relatives, as found in some weed-and-feed lawn treatments) than in dogs exposed to untreated lawns or gardens. The particular bladder cancer in this study is the most common urinary tract cancer in dogs, and one that is six times more common now than it was in the 1970s. (www.pesticide.org/terriers.html)

“Until additional studies are performed to prove or disprove a cause-and-effect relationship, owners of Scottish Terriers should minimize their dogs' access to lawns or gardens treated with phenoxy herbicides,” say the researchers. (Glickman, L.T., Raghavan, M., Knapp, D.W., Bonney, P.L., Dawson, M.H. Herbicide exposure and the risk of transitional cell carcinoma of the urinary bladder in Scottish Terriers. *J. Am. Vet. Med. Assoc.* 2004 Apr 15;224(8):1290-7.

Or...maybe the dog owners (and landowners in general) should minimize their lawns' access to phenoxy herbicides.

These weed-and-feed treatments aren't necessary for a trophy lawn. A trophy lawn isn't necessary either, of course, but if you want a good looking lawn and a healthy environment (and dog), look for ways to keep the lawn itself healthy, using methods that don't rely on toxic synthetic chemicals. Limit fertilizer applications, too, since runoff and/or leaching of nutrients can pollute surface and groundwater.

This is an important message. According to Maine's YardScaping program (www.yardscaping.org), "over 2.9 million pounds of yard care pesticides were brought into Maine in 2004. This number has tripled since 1995 and coincides with a triple explosion in yard care companies in Maine."

Nationally, "homeowners apply at least 90 million pounds of pesticides to their lawns and gardens," says the group Beyond Pesticides. "Home use of pesticides has risen steadily since 1998, and now represents the only growth sector of the U.S. pesticide market. Pesticides are also applied more intensively for lawn care, where children—more vulnerable than adults to the effects of pesticide exposure—live and play.

"Of the 30 commonly used lawn pesticides, 19 are carcinogens, 13 linked with birth defects, 21 with reproductive effects, 15 with neurotoxicity, 26 with liver or kidney damage, 27 are irritants, and 11 can disrupt the hormone system. Pregnant women, infants and children, the aged and the chronically ill are at greatest risk from pesticide exposure. Pets too are regularly poisoned." (www.beyondpesticides.org/pesticidefreelawns/)

What if you have an environmentally safe lawn but your neighbor doesn't? Beyond Pesticides has made signs to hang on neighbors' doors (or hand to them personally) that briefly list potential problems with lawn care chemicals and note alternatives. The first 50 door hangers are free from beyondpesticides.org.

The basics of nontoxic lawn care are:

- Build good soil for healthy plant growth;
- Use organic or slow-release fertilizers at moderate rates and only when necessary, and avoid phosphorus fertilizers if your soil has enough phosphorus already;
- Plant slow-growing, low-maintenance grasses (such as the Bayscaping mix of fine fescues, perennial ryegrass and low-maintenance bluegrass being sold by Allen, Sterling and Lothrop in Falmouth; also available via www.allensterlingandlothrop.com/);
- Mow high (2.5 to 3.5 inches) with sharp lawnmower blades so that grass outcompetes weeds;
- Leave grass clippings on the lawn to recycle nutrients there so that you'll minimize or eliminate the need for additional fertilizers;
- Lime the lawn as necessary (a soil test will tell when);
- Accept the fact that life—and lawns—aren't supposed to be perfect.

The YardScaping Web site (yardscaping.org) is a great resource for more detailed information.

If your pet may have been exposed to a potentially toxic substance, contact your local veterinarian or the ASPCA Animal Poison Control Center (1-888-426-4435) immediately.

For additional tips on poison-proofing your home, visit "Make Your Pet's Home Poison Safe" at www.asPCA.org/apcc.

Practices Used by Blueberry Industry May Affect Salmon
Environment Maine Research & Policy Center, the Maine Environmental Policy Institute

(MEPI) and Toxics Action Center have released a report entitled *Agribusiness and Atlantic Salmon: The Effects of Large-scale Blueberry Production on Endangered Atlantic Salmon*, detailing threats that pesticides used by the blueberry industry have on the species.

Some of the findings include:

- Sedimentation from low-maintenance roads throughout fields near Down East rivers create increased problems with sedimentation of gravel beds, which are important Atlantic salmon egg and alevin habitat;
- Nutrient loading is not extensive, but fertilizer applications to fields have some potential to cause algal blooms and decrease dissolved oxygen in nearby streams and rivers;
- Pesticides used on blueberry fields have limited acute toxicity to Atlantic salmon, but indirect and chronic effects may be severe;
- Hexazinone, an oft-used herbicide, is likely concentrated enough from drift, runoff and groundwater seepage to change aquatic organismal communities, decreasing fitness of fry and parr;
- Malathion and azinphos-methyl (two organophosphate pesticides) may have direct, acute effects on Atlantic salmon physiology and survival, even in low concentrations;
- Water withdrawal can dramatically affect Atlantic salmon and the entire aquatic ecosystem, particularly in late summer and early fall;
- Discharges from processing plants and other wastewater may adversely affect water temperature and dissolved oxygen in rivers, but is limited to small portions of Atlantic salmon habitat;
- Sulfur applications to lower soil pH are infrequent and sporadic, yet may be of concern for all life stages of Atlantic salmon.

"Clearly there is a lot of work to be done to further protect salmon from chemicals used by agribusinesses," says Matthew Davis, one of the authors of the report and advocate with Environment Maine Research & Policy Center.

In addition to recommending changes through the Maine Board of Pesticides Control, the report calls on the Maine Department of Environmental Protection to do more to mitigate stormwater runoff, fertilizer and nutrient loading, and to continue its water withdraw rulemaking.

Source: Press release, March 30, 2006, Maine Environmental Policy Institute, <http://www.meeipi.org>. Matthew Davis, Environment Maine, (207) 253-1965 (office), (207) 318-5162 (cell); Will Sugg, Maine Environmental Policy Institute, (207) 622-9766; Will Everitt, Toxics Action Center, (207) 871-1810 (office), (207) 671-1315 (cell).

Study Links Pesticides to IQ Decrease

The IQ scores of North Dakota farm children who were chronically exposed to pesticides averaged 5 points lower than those of their peers, writes Patrick Springer in *The Forum*. The difference was significant. Springer cited a preliminary study by psychologists Patricia Moulton and Thomas Petros from the University of North Dakota of 64 children living near or on farms compared with 64 living at least a mile from farms. Funded by the National Institutes of Health, the study will next look for a dose-response relationship between test scores and pesticide concentrations in blood and urine.

Source: www.in-forum.com/articles/index.cfm?id=121375§ion=News, March 24, 2006.

Pesticides Linked to Childhood Leukemia

Children born to women who used insecticides in the home while pregnant and after the birth were nearly twice as likely as other children to develop acute leukemia, say French researchers who interviewed 568 mothers about their pesticide use. Of the group, 280 children had been diagnosed with leukemia. Insecticidal shampoos used to kill head lice also doubled the risk of leukemia; and use of fungicides and garden insecticides more than doubled the risk of the disease. The results were statistically significant.

Dr. Florence Menegaux and colleagues of the research institute INSERM in Villejuif, France, published the study in *Occupational and Environmental Medicine* on Jan. 17, 2006. They said that they could not identify single pesticides as causing leukemia, but recommended preventive action based on the study.

Sources: “Pesticides Raise Child Risk of Leukemia—Study,” Reuters, Jan. 17, 2006; “Household Chemicals Could Double Child Leukemia Risk,” by Sam Lister, *The Times* (London), Jan. 17, 2006; Organic Bytes #74, Organic Consumers Assoc., Jan. 26, 2006, www.organicconsumers.org/school/leukaemia012006.cfm.

Quebec Bans 210 Lawn Care Products

The final phase of Quebec's Pesticide Management Code, begun in March 2003, went into effect in April with a ban of 20 active ingredients. This resulted in removal of 210 lawn pesticide products from the market. Quebec now has the toughest standards in North America.

The ban includes products containing 2,4-D, used to kill dandelions and other “weeds” in lawns; and common insecticides, such as Sevin. Denmark, Norway and Sweden also have 2,4-D bans.

Health Canada warned that pesticides have been linked to childhood cancer, birth defects and neurological disease. Twelve years after Sweden banned 2,4-D (in 1977), some cancer rates stopped increasing.

Source: “Quebec Beefs Up Pesticide Ban,” by Irwin Block, *The Gazette* (Montreal), April 4, 2006

School Food

Wanted: Western Maine Farmers to Supply Local Schools

As part of the campaign to stimulate a viable local food system, Western Mountains Alliance and the Maine Alternative Agriculture Association are working to put fresh, locally grown produce in two local school systems. Long range, the goal is to have a variety of foods grown on local farms served from fall to spring in school kitchens. Starting this year with what is already produced in the area, there is a demand for fresh carrots and potatoes.

The overall number of pounds required this year will be relatively small, but this opportunity

opens the doors of school cafeterias to local farmers interested in accessing a large, previously underserved, local market. By starting small as they build working relationships, farmers and food service personnel will be able to discover ways to best accommodate each others' needs.

Issues of size, uniformity, packing and delivery requirements are still being worked out with the schools, but producers are encouraged to think of the future potential and plan now, during planting time, to participate this fall.

For more information, interested farmers should contact Paula Day at 696-8044 or maaa@gwi.net.

Fall 2006

Climate

Crop-Yield Study Casts Doubt on a Climate-Change Prediction

Leading crop-production models predict that higher temperatures and dryer soils will diminish crop yields as a result of global climate change in the year 2050. The models also predict that another anticipated climate-change phenomenon--the yield-stimulating effects of elevated carbon dioxide--will offset those losses. So nothing gained or lost, right? Not quite, says a team of scientists from the Agricultural Research Service (ARS), University of Illinois at Urbana-Champaign (UIUC) and Switzerland.

The researchers contend that today's simulation models overestimate the "CO₂ fertilization effect," which refers to the improved efficiency of some crops in using sunlight to convert CO₂ into sugars. The problem is, the models rely on data from enclosure studies, say ARS plant physiologists Donald Ort and Elizabeth Ainsworth, UIUC scientists Stephen Long and Andrew Leakey, and Josef Nösberger of the Institute of Plant Science in Switzerland. According to their recent paper in *Science*, trapped heat, poor airflow, high humidity and other conditions inside greenhouses and growth chambers skew plant responses to elevated CO₂.

To avoid these problems, the researchers used free-air concentration enrichment (FACE) to simulate the atmosphere of 2050 under actual field conditions. The method continuously exposes crop plants within 66-foot-diameter plots to 550 parts/million (ppm)--the CO₂ concentration predicted for 2050. The current level is 380 ppm. Ort monitored growth and yield of corn and soybeans there with his ARS and UIUC colleagues. In Maricopa, Ariz., an ARS collaborator monitored wheat and sorghum; in Switzerland, Nösberger examined forage grasses.

The scientists compared their data with earlier growth-chamber-based simulations. The difference was dramatic: CO₂ fertilization-effect yield increases measured in the FACE experiments were 50% lower than in the chamber simulations.

According to Ort, the finding warrants a reexamination of CO₂'s role in forecasting future yields, especially in the presence of other climate-change concerns such as ozone pollution, which is toxic to crops.

Meanwhile, in Holland, rose grower Frank van Os floods the atmosphere in his greenhouse with pure carbon dioxide from a Royal Dutch Shell oil refinery to increase growth of his roses. Shell hopes to reduce the refinery's emissions by 8% by enriching 500 greenhouses. This effort will not reduce greenhouse gas emissions from vehicles that later use the gasoline produced at Shell's (or other companies') refineries.

Sources: Agricultural Research Service News Service, USDA, Jan Suszkiw, (301) 504-1630, jsuszkiw@ars.usda.gov, June 30, 2006. FMI: www.ars.usda.gov/is/pr.

"A Refinery Clears the Air to Grow Roses," by Jad Mouawad, The New York Times, June 30, 2006

Genetic Engineering

Kansas Welcomes Genetically Engineered Rice

Ventria Bioscience, a small Sacramento company, and a Topeka-area economic development agency have proposed a \$10 million rice processing facility in Kansas. Over the past two years, rice farmers and anti-biotech groups prompted Ventria to abandon plans to plant its GE rice in California and Missouri.

The rice, engineered with human genes to produce human-derived proteins found in breast milk, is meant to help children recover from diarrhea. Ventria would extract the proteins for use in oral rehydration solutions, pending FDA approval. Because Kansas has no rice industry, no organized opposition from rice farmers has occurred there.

Ventria also has a permit from the USDA to grow 335 acres of GE rice in North Carolina. The company says rice is self-pollinating, so it won't cross with conventional rice (which is not grown nearby, anyhow); and Ventria will grind the rice and extract the proteins before shipment, so the GE material shouldn't mix with conventional rice. Environmentalists disagree and disapprove of growing pharmaceutical crops outdoors.

Ventria hopes to add the GE proteins to infant products, including formula, according to the Associated Press. Such products would not have to be labeled in the United States as containing GE ingredients. Infant formula is a lucrative business, and Ventria sees its product as benefiting weaning children.

Sources: National Sustainable Agriculture Information Center, June 15, 2006.

<http://attra.ncat.org/news/>; "Biotech Firm Raises Furor with Rice Plan," by Paul Elias, AP, KDKA, Pittsburgh, Pa., May 15, 2006, www.precaution.org/lib/06/prn_furor_over_human_gene_in_rice.060514.htm

Driving Down the Wrong Ethanol Road?

Congress has approved \$5.7 billion in federal tax credits to support the ethanol market, in addition to the \$10 billion U.S. corn farmers annually receive in subsidies. While the corn-industry-lobbying-machine has President Bush predicting ethanol will replace gasoline, the science behind corn-based ethanol suggests that this alternative fuel may be more about politics than an actual solution to the energy problem. According to the U.S. Department of Energy, it takes the equivalent of three barrels of oil to create four barrels of corn-based ethanol--and ethanol gets lower miles per gallon than gasoline.

Other nations are demonstrating that plant-based ethanol fuels can help meet our energy needs. Brazil makes ethanol from sugar cane, which is almost eight times more energy efficient to produce than the U.S. corn-based fuel. Crops with high cellulose or sugar content that can be grown easily in the United States, such as sugar beets, hemp or switch grass, make much more efficient fuels.

Source: Organic Bytes #82, Organic Consumers Association, May 27, 2006.
www.organicconsumers.org/2006/article_461.cfm

CFS sues FDA Re GE Foods

The Center for Food Safety sued the Food and Drug Administration on June 7, seeking to force the U.S. government to review genetically engineered (GE) foods and require labeling of approved GE foods. Currently, GE crops and food products are neither labeled nor independently tested. The FDA ignored a 2000 petition filed by the CFS and 50 environmental and consumer groups regarding testing and labeling.

Source: "Consumer group sues FDA over biotech foods," Reuters, Jun 7, 2006

Chickens Engineered to Produce Medicines

Origen Therapeutics has engineered white leghorn chickens that carry inserted genes in their sperm or egg, thus passing traits to future generations. Previously, the same company engineered human genes into chickens one at a time so that their eggs contained human monoclonal antibodies to fight cancer; the trait was not passed to offspring. The newer technique incorporates a fluorescent marker gene that makes the chickens glow under ultraviolet light, showing only that the techniques works. The company now wants to use the technique to engineer monoclonal antibodies into birds' eggs, which it sees as a cost-effective way to produce these medicines.

Source: "Biotech company makes chickens with new gene," by Lisa Krieger, MercuryNews.com, www.mercurynews.com, June 7, 2006.

Santa Cruz County to Adopt GE Moratorium

The Santa Cruz County, California, Board of Supervisors voted recently in favor of the concept of a county moratorium on genetically engineered (GE) crops, says the San Francisco Chronicle. The precautionary action addresses the lack of adequate federal and state oversight of GE crops. Three other California counties have ordinances against GE crops, but the state Assembly is considering a bill that would take away the right of municipalities and counties to enact regulations on GE crops. Fifteen states have passed laws to prevent local seed regulation.

Source: ATTRA Weekly Harvest Newsletter, June 15, 2006.

<http://attra.ncat.org/newsletter/archives.html>

GE Corn May Result in Herbicide Production in Human Intestines

Liberty herbicide (glufosinate ammonium) does not kill Pioneer Hi-Bred's genetically engineered (GE) Liberty Link corn, even though it is taken up and translocated throughout the plant, because the corn inactivates the herbicide. Genes engineered into the corn produce enzymes in every cell of the corn plant that change glufosinate ammonium into N-acetyl-L-glufosinate, or NAG. When you eat the corn, though, you are also eating NAG that accumulated in the crop with each herbicide application. Some of that NAG may be transformed back into the toxic herbicide in your gut, possibly by bacteria. Two studies with rats showed conversion rates of 1% and 10% respectively, while a study with goats showed conversion of more than one-third. The revived herbicide may travel to kidneys, liver, muscle, fat and milk, where it may be toxic.

More information about this conversion is presumably found in "Toxicology and Metabolism Studies" on NAG, submitted to European regulators by AgrEvo (now Bayer CropScience) as part of the application seeking approval of herbicide-tolerant canola. When the UK government's Pesticide Safety Directorate attempted to provide some of this information to an independent researcher, the company threatened legal action. The studies remained private.

Source: GMWatch # 177, 2/6/2006, at www.gmwatch.org/archive2.asp?arcid=6599. Original article: "Genetically Engineered Crops May Produce Herbicide Inside Our Intestines," by Jeffrey M. Smith, Spilling the Beans/Institute for Responsible Technology, www.responsibletechnology.org; reproduced in Organic Bytes #83, June 8, 2006. Organic Consumers Association. www.organicconsumers.org.

(Jeffrey Smith is the author of Seeds of Deception and a forthcoming book, Genetic Roulette: The documented health risks of genetically engineered foods, due out this fall.)

In South America: Soy Kills Yet Another Reason to Eat Local Foods

Dr. Ignacio Chapela of the University of California at Berkeley reports that massive parts of the Amazon basin are being converted to soy monocultures, specifically herbicide resistant GE varieties. The social costs of establishing the Soy Republic, comprising the eastern watersheds of Bolivia, Argentina, Brazil and Paraguay, are staggering.

Grupo de Reflexion Rural (GRR) is publicizing this transformation, which, it says, includes murder, mass evictions, land-grabbing and bloody confrontation. For example, says GRR:

Serapio Villasboa Cabrera was a member of the Paraguay Campesino Movement and the brother of a prominent member of CONAMURI, an indigenous and campesino women's organization. He was brutally killed near his home by a death squad from the Citizens' Brigades, believed to include over 13,000 armed and trained operators who perform evictions, detentions, torture and murder upon those who do not accept a new, illegal order in the Paraguayan countryside. Just in Villasboa's region of San Pedro, brigades are responsible for the death of at least 10 campesinos.

Citizens' Brigades operate on behalf of large landowners and soy industrialists, who refer to them as "Garrote Commission." They work with the tacit approval of the interior ministry, and pretend to eliminate all indigenous and campesino organizations, which, however, continue to emerge in response to growing unrest due to rapid consolidation of land holdings by monopolistic soy producers. Soy plantations are advancing at an estimated rate of 600,000 acres/year, associated with some 90,000 campesino transfers to urban poverty yearly.

Paraguay already devotes 64% of its arable land to soy cultivation and is the world's fourth largest soy exporter. The government, influenced by international interests, plans to expand soy cultivation.

Promotion of soy monoculture is at the root of the violence against and impoverishment of rural communities throughout South America. Resistance against this monoculture has become a human rights struggle.

This soy is exported mostly to produce cheap meat for Europeans and industrial foods for Northern populations.

Source: GMWatch # 177, 2/6/2006, at www.gmwatch.org/archive2.asp?arcid=6599

Churches Say Stop Terminator

The World Council of Churches (www.wcc-usa.org) has called for an end to "terminator technology," a genetically engineered way to sterilize plants. This technology "turns life, which is a gift from God, into a commodity. Preventing farmers from replanting saved seed will increase economic injustice all over the world and add to the burdens of those already living in hardship," says the Council.

Source: "World Council of Churches Leader Says 'Stop Terminator,'" HortIdeas, June 2006

Building a Maine Center for Food Sovereignty

GE Free Maine plans to build a Maine Center for Food Sovereignty in Thorndike. The group envisions this Center as a place to coordinate its activities, share resources with the community, and research and develop the new strategies, policies and structures required to build a more just food system in Maine. The Center will contain living space for staff and interns, and nearby garden plots will be available to local schoolchildren and community members. The Center will also enable GE Free Maine to move beyond policy and into the fields, cultivating rare varieties

of local vegetables and grains to maintain a genetically diverse seed pool. The Center will be based in a log home recently donated by a supporter.

According to Rob Fish, organizer with GE Free Maine, "As GE Free Maine has matured as an organization and begun working in close coalition with the Winter Cache Project and the Independent Food Project, it has become increasingly evident that the struggle against the proliferation of genetically engineered crops is only one part of a larger struggle to provide Mainers with the tools--knowledge, land, experience and policy--to become sovereign in all aspects of food production."

Food Sovereignty in action, according to the National Family Farm Coalition, includes "empowered communities everywhere working together democratically to advance a food system that ensures health, justice and dignity for all. . . Farmers, ranchers, and [fishermen and women] will have control over their lands, water, seeds, and livelihoods..."

Efforts to promote food sovereignty in Maine may include:

- disavowing dependency on patented and genetically modified seed and chemicals, and preventing patenting of Maine's forest and marine resources;
- encouraging proliferation of seed saving;
- encouraging eating locally and seasonally;
- assuring an adequate supply of healthy food in the face of Peak Oil;
- supporting movements for food sovereignty around the world;
- educating Maine's youth on the importance of local, sustainable food systems and how to be a part of them;
- assuring that food left in fields is not wasted but gleaned, assisting farmers and providing food for local food pantries;
- developing markets for commodity farmers transitioning to organic production;
- providing access to land for local, long-term gardening/farming opportunities;
- supporting policies that remove roadblocks and add incentives to create a sustainable future for resource-based industries in Maine.

For more information, please contact GE Free Maine at 207-244-0908, info@gefreemaine.org or visit www.gefreemaine.org.

Marker-Assisted Selection to Supercede Genetic Modification?

Writing on *Common Dreams*, author Jeremy Rifkin speculates that a new agricultural technology called Marker Assisted Selection could make genetically modified crops obsolete and, ironically, an obstacle to progress. Marker Assisted Selection uses crop genome mapping to rapidly accelerate classical plant breeding. Scientists can locate genetic traits in different varieties or in wild relatives of food crops. The technique could be much more effective in introducing desired traits than the single-gene splicing of genetic modification. One impediment to successful application of Marker Assisted Selection may be that the seed of several major crop plants has been contaminated with DNA sequences originating in genetically engineered plants, which complicates the genome mapping process.

Source: ATTRA Weekly Harvest Newsletter, July 12, 2006; original article at www.commondreams.org/views06/0706-21.htm.

Greenhouse

Maine Greenhouse Group Foils High Heating Costs

The threat of global warming and the high cost of energy are causing members of the Mid Maine Greenhouse Growers Association (MMGGA) to look for ways to economize on the amount of fuel needed to heat their greenhouses. Last year we undertook a group purchase of a product called Astrofoil, which consists of two layers of bubble wrap polyethylene material sandwiched between two layers of heavy aluminum foil, for a combined thickness of 3/8 inch and an R value of approximately 10. The material is manufactured by Innovative Energy, Inc., of Lowell, Indiana, comes in 4' x 125' rolls (other sizes available) and was shipped directly to individual members by UPS. Cost per roll was \$140, or 28 cents per square foot, including shipping.

We found this material to be ideal for insulating parts of the greenhouse where light transmission was not necessary, such as knee walls under benches, end walls and north facing surfaces during the winter, when the sun angle is low. Astrofoil is tough, easily cut with scissors and has a good fire retardancy rating, because the aluminum foil protects the plastic inner layers.

Since most heat loss in greenhouses is radiational, a reflective barrier such as Astrofoil can make a real impact on heating costs. We liked the fact that this material is lightweight, flexible, easily installed and resists moisture. There are undoubtedly many other applications where such a material can help Maine farmers and gardeners battling our cold climate. (Note that no light is transmitted through Astrofoil.) We found the people at Innovative Industries to be very helpful and easy to do business with. The MMGGA is considering another group purchase this year.

For information on Astrofoil, visit www.insul.net or call 1-800-776-3645. For information on MMGGA, contact Michael Zuck at Everlasting Farm (947-8836).

Livestock

Zinc and Vitamins A and C Help Fight Bird Flu

The British Society for Ecological Medicine (BSEM) and the Alliance for Natural Health (ANH), at the invitation of the United Nations World Health Organization, wrote a detailed, evidence-based report on natural prevention and treatment recommendations for a potential human avian influenza pandemic.

The report, entitled "The Pivotal Role for Natural Products in Countering an Avian Influenza Pandemic," focuses on zinc and vitamins C and A as primary interventions for preventing and treating human H5N1 influenza infection and its complications. It was written by four leading scientists and doctors in the fields of nutritional medicine and health.

After reviewing over 250 peer-reviewed studies, the authors believe that nutritional protocols involving primarily zinc and vitamins A and C can buy time and fill the gap between the outbreak of a pandemic and the months or years required to develop and manufacture effective vaccines. Also, enough of these nutrients can be easily and cost-effectively manufactured to meet global needs. Detailed protocols are in the free report (pp. 55-61) at www.alliance-natural-health.org/_docs/ANHwebsiteDoc_232.pdf.

Present international strategies rely heavily on antiviral drugs such as Tamiflu and on improved personal hygiene, quarantine and social distancing. Other interventions could counter the possibility of multiple pandemic viral strains and the risk of viral drug resistance developing early in a pandemic.

The prevention and self-treatment protocols in the report can be easily accessed and self-administered by populations everywhere. The hospital treatment protocols are for serious or rapidly deteriorating cases, requiring intravenous therapy, and may help populations in developing countries that may not have access to antiviral drugs or vaccines.

Source: Joint Press Release, Alliance for Natural Health and British Society for Ecological Medicine, April 25, 2006.

For further information, contact Isobel Bradley or Meleni Aldridge, The Alliance for Natural Health, The Atrium, Curtis Road Dorking, Surrey RH4 1XA, UK Tel: +44 (0)1252 371 275 Mob: +44 (0)7771 750230; info@anhcampaign.org; www.anhcampaign.org.

The WHO Web site on avian influenza is www.who.int/csr/disease/avian_influenza/en/

Input Sought on State Poultry Processing Facility

Cooperative Poultry Producers (COOPP) has received a \$30,000 grant from the Maine Department of Agriculture, Food and Rural Resources as part of the Agricultural Development Fund. The project title is Development of Cooperatively Owned, State Inspected Poultry Processing Facility. COOPP has hired the Cooperative Development Institute of Massachusetts to help implement the project.

Maine needs a state-inspected poultry processing facility. Without one, the Maine poultry industry is severely limited. Current laws allow only two exemptions for farmers to raise and sell processed poultry: Farmers who raise up to 1,000 birds may process their own birds and sell them only at the farm gate; and farmers who raise up to 20,000 birds may process them in their own facility, but such a facility must meet many costly requirements. The latter birds can be sold anywhere in the state.

The first step in the COOPP project is a feasibility study. This will examine alternatives to achieving a state inspected facility, from various sizes of a stationary building to a mobile unit that could serve many areas of Maine.

If you are interested in working with COOPP on this project or have ideas that COOPP should consider, please contact Bill Blaiklock, 443-3725, or Diane Schivera, 568-4142.

BSE Confirmed in 15-Year-Old Manitoba Beef Cow

The Canadian Food Inspection Agency (CFIA) has confirmed bovine spongiform encephalopathy (BSE, the agent of mad cow disease) in a mature, crossbred beef cow from Manitoba. The animal was purchased by the owner as part of an assembled group of cattle in 1992, so it was at least 15 years old and would have been born well before the 1997 introduction of Canada's feed ban.

Investigators are attempting to locate the birth farm, to identify the animal's herd mates and feed to which it may have been exposed at a young age. Such efforts may be constrained by the age of the herd and lack of detailed records. A calf born to the affected animal in 2004 is also being traced.

Canadian officials also report a seventh suspected case of BSE, this in a 50-month old dairy cow from Alberta—this one born well after the 1997 introduction of Canada's feed ban. This animal died on the farm and no part of the carcass entered the human or animal food chain.

The CFIA says Canada's food supply remains safe through the removal of specified risk material (SRM) from all cattle slaughtered for human consumption. SRM are tissues that have been shown in infected cattle to contain concentrated levels of the BSE agent. This measure is internationally recognized as the most effective means to protect the safety of food from BSE.

On June 26, 2006, the CFIA announced regulatory enhancements to Canada's feed ban to further strengthen the animal feed system.

Source: Agriculture Today, Maine Dept. of Ag., July 14, 2006.
www.maine.gov/agriculture/newsletter/news_briefs.htm

Consumers Union Decries Cut in Mad Cow Testing

Consumers Union, publisher of Consumer Reports, has criticized the USDA for reducing its mad cow surveillance program.

“The USDA is playing Russian Roulette with public health,” says Michael Hansen, Ph.D., a staff scientist at Consumers Union. “We must have continuing, increased monitoring of U.S. cattle for mad cow disease, not just a two-year ‘snapshot.’ Just because we only found three cases so far, doesn't mean U.S. cattle are immune. Yet today [July 20] USDA has reduced testing to a minuscule level—40,000 cows a year, or a tenth of one percent of all cows slaughtered.”

The USDA claims that its testing program, which has sampled 759,000 cows in the last two years and found two additional cases of mad cow disease in addition to the one found previously, shows that the incidence of the brain-wasting disease in U.S. cattle is less than 1 in a million. Consumers Union counters that USDA primarily tested dead animals, rather than higher risk

cattle, such as animals exhibiting symptoms of nervous system disease. “We don’t agree with USDA’s modeling of risk, and USDA has refused to disclose many key details of its test program,” Hansen states. “Therefore, it is impossible to draw definitive conclusions from USDA’s test program to date.”

Consumers Union points out that the U.S. now has no restrictions on imports of beef or live cattle under 30 months of age from Canada, where the seventh case of mad cow disease in six years was recently confirmed. Hansen comments, “With such a small testing program in the U.S., if an infected Canadian cow came across the border, USDA would almost certainly fail to catch it. Steak from the cow could end up on some consumer’s dinner plate, while its remains could be converted to feed for pigs and chickens, potentially spreading the disease.”

Source: Consumers Union press release, July 20, 2006

rBGH: Monsanto’s Dairy Hormone Losing Ground, Even on Factory Farms

The genetically-engineered hormone rBGH (recombinant Bovine Growth Hormone) is injected into about one-third of U.S. dairy cows, according to its manufacturer, Monsanto. The Organic Consumers Association puts the figure at 18 percent. Whatever the use rate, the synthesized hormone, banned in all 25 European countries, Japan, Australia and Canada, is under increasing attack as U.S. consumers demand pure milk.

An article in The New York Times noted that U.S. women who consume dairy products seem to be five times as likely as vegans to bear fraternal twins. Dr. Gary Steinman, assistant clinical professor of obstetrics at the Albert Einstein College of Medicine, compared records of 1,042 vegan mothers with records of those who consumed dairy products regularly. He reported his results in the May 2006 issue of The Journal of Reproductive Medicine.

Steinman found that an increase in insulin-like growth factor (IGF-1) in the blood of dairy consumers was associated with increased rates of multiple ovulation. The same is true in studies of other animals. Steinman cited a 2000 study that showed 13% less IGF in vegan women than in women who eat dairy products regularly. He said that his findings need to be confirmed by others before health care recommendations can be changed; while an association between IGF and twinning figures occurs, evidence that multiple ovulation is caused by eating more dairy is not conclusive.

All cow's milk contains naturally-occurring BGH, but cows injected with the synthetic version, rBGH, produce more milk and more calf twins.

According to the Swedish Medical Center in Seattle, Eli Lilly & Co. reported a 10-fold increase in IGF-1 levels in milk of cows receiving the hormone. While IGF-1 is naturally present in humans, research suggests that elevated levels are associated with breast, colon and prostate cancers, says the Center. The Harvard Nurses’ Health Study found higher blood levels of IGF-1 in women with breast cancer than in those without.

Other factors that may influence twinning are folic acid, genetics, and delayed childbearing, according to the Times article. However, Steinman suggested that the continuing increase in the birth rates of twins in the United States since 1994, when rBGH was approved for sale, might be associated with the synthetic hormone. The rate of twin births here is more than twice that in Great Britain, which banned rBGH.

Meanwhile, the Oregon Physicians for Social Responsibility (PSR) notes that rBGH has been under increasing attack lately. For example:

- On June 9, The Dairy & Food Market Analyst reported that Dean Foods, Wal-Mart, Kroger and possibly others are seeking milk from cows that were not treated with rBGH, while Monsanto is lowering the price of rBGH to try to cling to its dwindling market.
- A June 4 Associated Press article in the Montana Independent Record reports that the state's largest milk processors, Darigold Farms and Meadow Gold, now require their farmers to sign affidavits saying they're rBGH-free—a decision made by farmers after they noted consumer demand for untainted milk.
- On June 1, the huge Garelick processing plant in Florence, New Jersey, declared itself rBGH-free. Garelick's plant supplying milk for Maine went rBGH-free a few years ago, because Maine consumers had already "voted with their dollars" by buying Oakhurst's milk from untreated cows.
- Other Oregon dairies to go rBGH-free include Tillamook, for its cheese but not other products; Eberhard; Alpenrose; and Darigold (for its processing plant in Portland and for its yogurt).
- Health Care Without Harm (www.noharm.org <http://www.noharm.org>), an international coalition of 443 organizations that promotes healthy practices in hospitals, issued a position statement in June 2005 against rBGH. Since then, numerous U.S. hospital systems have initiated actions toward going rBGH-free.

The nonprofit Food and Water Watch features a chart of rBGH-free products by state at www.foodandwaterwatch.org. (Most of Maine's organic dairies are not on the list and might ask to be added.) The Organic Consumers Association (www.organicconsumers.org) and Center For Food Safety (www.centerforfoodsafety.org) have been leading advocates for rBGH-free products for many years and cover food safety issues well.

The Organic Consumers Association notes that Starbucks still serves coffee drinks using dairy products from cows treated with rBGH—"another good reason to patronize local independently owned coffee shops that offer organic and Fair Trade alternatives."

Sources: "Rise in Rate of Twin Births May Be Tied to Dairy Case," by Nicholas Bakalar, The New York Times, May 30, 2006; "Recombinant Bovine Growth Hormone (rBGH) on the Run," Oregon Physicians for Social Responsibility Campaign for Safe Food, June 14, 2006, www.oregonpsr.org; Organic Bytes #84, Organic Consumers Assoc., June 15, 2006;

www.organicconsumers.org/2006/article_747.cfm; “Nation’s Largest Dairies Trying to Avoid Monsanto’s Bovine Growth Hormone,” Organic Consumers Assoc., Organic Bytes #84, June 15, 2006, Organic Consumers Association, http://alerts.organicconsumers.org/trk/click?ref=zqtbkk3um_0-1ex242x3104925&; Swedish Medical Center (Seattle), www.swedish.org/111038.cfm

Update on the Scrapie Program: The Clock is Ticking for Maine
By Donald E. Hoenig, VMD, State Veterinarian, Maine

The United States Department of Agriculture (USDA) National Scrapie Eradication Program (NSEP) is entering its sixth year with the goal of making U.S. sheep and goats scrapie-free by 2010. In Maine, approximately 60 flocks have enrolled in the NSEP. These flocks receive an annual flock inspection, usually conducted by Dr. Chip Ridky, Maine’s federal veterinarian, as well as free scrapie identification tags and the pliers to apply the tags. Flock owners who do not wish to enroll in the NSEP but who do move animals interstate for sale or show are required by the USDA to have their animals identified with scrapie identification tags prior to movement. These owners can also receive tags and pliers free, but their flocks are not inspected annually. In Maine, about 90 flocks fall into this category.

In order to move sheep and goats in interstate commerce with minimal restrictions, states must meet the requirements of the Code of Federal Regulations (CFR) as specified for the NSEP. Currently, 27 states are considered “consistent” with the CFR, having enacted the required identification rules. Maine is currently NOT one of these states, because we have not yet adopted a regulation that would **require identification of sheep and goats on change of ownership for intrastate movement**. (We have until Oct. 1, 2006, to adopt such a regulation, or we become “inconsistent” with the NSEP).

What are the consequences for our producers if we do not adopt such a requirement? First, we will no longer be permitted to have the two-tiered flock status described in the first paragraph. Everyone wishing to move sheep or goats interstate for any purpose will need to enroll in the NSEP. This would be a significant burden for those of us in regulatory roles, as we do not have the staff to meet the needs of the additional influx of enrolled herds. This has the potential to result in significant delays in enrolling new herds or flocks and be a real inconvenience to producers.

Second, and most important in my opinion, producers would need to obtain a certificate of veterinary inspection (often called a “health certificate”) every time they wish to ship an animal out of state, even to slaughter. Of course, this could greatly increase the cost of doing business and would be a major impediment to commerce, since many areas of the state are currently under-served by large animal veterinarians.

We are soliciting input from sheep and goat producers on how to proceed. The fact that this is an “animal ID” issue heightens our desire to be open and transparent before we move in any direction. We welcome your comments. Please call me if you have any questions at 287-7615. To enroll in the NSEP or to request tags, please call the USDA office in Sutton, Massachusetts, at 508-865-1421.

Organic

Cotton: The Good and the Bad

Organic cotton is a small but growing force for improving the environment. For example:

- The Organic Consumers Association lists sources of organic cotton goods at www.organicconsumers.org/clothes/organic_cotton_products.cfm and urges consumers to look not only at whether products are organic, but whether they are produced under sweatshop-free conditions and sold according to fair trade practices. Coop America (coopamerica.org) is also an excellent resource for organic, fair trade, cotton goods.
- At San Joaquin Valley's Windfall Farms, growers are intercropping cotton with alfalfa to provide a sink for the Lygus bugs, and they're using annual hedgerows of sunflowers, corn, sorghum, dill and mustard to provide habitat for beneficial insects.
- The Levi's® brand will introduce its Levi's® Eco jeans, made with 100% organic cotton or a significant percentage of organic cotton, this November, and additional products in spring 2007. Some Levi's will use recycled buttons, rivets and zippers and natural indigo dye.

These efforts are especially welcome as serious questions about genetically-engineered (GE) cotton increase. The Warangal district of Andhra Pradesh, India, seems to be seeing serious problems with GE Bt cotton. Farmers there say that more than 1,800 sheep, and goats, got sick and listless, their stomachs swelled, and some died after grazing for four to five days on crop residue in fields where GE Bt Bollgard cotton was growing. A fact-finding team also found lesions in animals' mouths, nasal discharge and diarrhea. Shepherds say that animals grazing on non-Bt cotton were fine.

Previously, civil society organizations reported illnesses in farm workers and handlers who contacted Bt cotton in Madhya Pradesh, India; and in 2003, villagers in Philippine areas where Bt corn was growing suffered illnesses and deaths that some speculated were due to the crop.

Monsanto calls the concerns unfounded and unsubstantiated. In a press release on May 12, 2006 (at www.scoop.co.nz/stories/SC0605/S00039.htm), Monsanto said it had fed Bt cottonseed to goats in a study in which control groups were fed non-Bt cottonseed. "It was concluded... that Bt cottonseed is as wholesome and safe for animal feed as non-Bt cottonseed." Monsanto's press release does not address the effects of cotton leaves in animals' diet. Uma Sudhir reports that Monsanto says Bt protein is present in such minuscule amounts in cotton leaves that a goat would have to eat over 24 tons of old leaves to ingest the upper safe limit of 4300 mg/kg body weight of Cry 1Ac toxin present in the Bt plant. She adds that Monsanto says the deaths could have been due to pesticide residues.

The Indian government is investigating the case.

Meanwhile, a study commissioned by the World Wildlife Fund says that growing Bt cotton in India does not benefit farmers. Monsanto and its lobbyists claim that Indian farmers are growing Bt cotton on ever-increasing acreage because it delivers "consistent benefits in terms of reduced pesticide use and increased income." They quote their commissioned surveys showing 60% net profit increases from Bt vs. conventional cotton.

Indian NGOs, however, say that massive hype increased the cultivation of Bt cotton. Regarding profit, the WWF study largely confirms those of other independent studies. Farmers growing Bt cotton invested relatively more and got lower yields and far less income than non-Bt cotton growers--despite the fact that farmers growing both Bt and non-Bt cotton tended to reserve their best land for the Bt cotton.

Sources: "Report from Cotton Tour 2005," by Matt Valdin. Community Alliance with Family Farmers, www.caff.org/programs/fd/scp.shtml; Press release, Levi Strauss & Co., July 5, 2006; www.levistrauss.com; Organic Bytes #83, June 8, 2006, referring to original report: "BT cotton in yet another controversy," by Uma Sudhir, NDTV, June 1, 2006, www.organicconsumers.org/2006/article_646.cfm; "Mass Deaths in Sheep Grazing on Bt Cotton," Dr. Mae-Wan Ho, The Institute for Science in Society (ISIS) press release, April 25, 2006; www.i-sis.org.uk/MDSGBTC.php; "Mortality in Sheep Flocks after Grazing on Bt Cotton Fields – Warangal District, Andhra Pradesh." Report of the Preliminary Assessment April 2006, www.gmwatch.org/archive2.asp?arcid=6494; GMWatch # 177, 2/6/2006, www.gmwatch.org/archive2.asp?arcid=6599; based on C. S. Pawar, "Bt Versus Non-Bt Cotton: A Critical Analysis of On-farm data, Impressions and Opinions: Study in Khammam district, Andhra Pradesh, India, 2005-2006

USDA Publishes Final Rule on NOP Regulations

The USDA published a final rule in the Federal Register on June 7 that revises National Organic Program (NOP) regulations to comply with the final court order in the Harvey v. Johanns lawsuit and to implement the 2005 amendments to the Organic Foods Production Act of 1990 (the Act or OFPA).

The final rule restored the National List of synthetics used in products labeled as "organic" to the pre-lawsuit status made by the 2005 amendments to the Act. It revises NOP regulations to clarify that non-organically produced products listed in section 205.606 of the regulations may be used as ingredients in or on processed products labeled as "organic" only when such organic products are not commercially available.

The final rule also revises section 205.236 of the NOP regulations to eliminate the "80/20" feed provision. Thus, after June 9, 2007, transitioning dairy producers will no longer be able to use 20% non-organic feed during the first nine months of whole herd conversion from conventional to organic production. The final rule further addresses dairy herd conversion by allowing crops and forage from land, included in the organic dairy system plan, of a dairy farm that is in its third year of organic management to be fed to the converting animals.

While the final regulation eliminates the "80-20" feed exemption for dairy animal conversion to

organic, any farmer using this exemption up to the date before this regulation was published in the Federal Register may complete the remainder of the 12 months of conversion under the old rule, provided no milk may be labeled as organic after June 9, 2007. USDA also mentioned that further rulemaking would address dairy animal replacements.

Sources: Agricultural Marketing Service News Release No. 138-06, June 6, 2006; Joan Shaffer (202) 720-8998, Joan.shaffer@usda.gov; Billy Cox (202) 720-8998, billy.cox@usda.gov. "OTA: USDA Moves Ahead with Final Rule," Organic Trade Association press release, June 8, 2006; www.organicnewsroom.com. For the final rule: [www.ams.usda.gov/nop/PublicComments/HarveyRule/HarveyvJohannsFR05_23_06_\(2\)_%20\(2\).pdf](http://www.ams.usda.gov/nop/PublicComments/HarveyRule/HarveyvJohannsFR05_23_06_(2)_%20(2).pdf)

USDA Helps Industrialize Organic Dairy, Claims Cornucopia

New federal organic livestock regulations are coming under sharp criticism for failing to close critical loopholes that allow a handful of factory-scale dairy farms in western states to continue bringing into their milk herd new animals raised with antibiotics, hormones and genetically engineered feed produced with toxic pesticides, says Mark Kastel of The Cornucopia Institute, a Wisconsin-based farm policy research group.

The new rules ignore recommendations endorsed by the USDA's own expert advisory panel, the National Organic Standards Board (NOSB). In 2002 and 2003, the NOSB unanimously passed recommendations that all animals being brought onto an existing organic dairy farm had to be under organic management starting no later than the last three months of pregnancy.

"In the study that we released last month, *Maintaining the Integrity of Organic Milk*, which rates the country's organic dairy brands, we found that the majority of organic dairy producers are able to replenish their herds, on an ongoing basis, through on-farm reproduction," says Kastel. "But these large factory dairies, which are an anathema to organic consumers and farmers alike, push their cows for such high productivity that their ill health and short lifespans require constantly bringing replacement animals into the milk herd. This is not organic!" Many of these large dairies have also been accused of confining their cattle rather than allowing them to graze on pasture as required by federal regulations.

"Some of these large factory farms, including one operated by Dean Foods that is selling milk under their Horizon label, are gaming the system," Kastel continues. Dean has admitted to shareholder groups that to maximize profits, it sells all calves born on its 4000-head farm, allowing them to save on providing expensive organic feed to animals for the first year of their life. They then purchase one-year-old animals that have been administered drugs and fed nonorganic feed to replenish their herd.

"While other 'legitimate' organic farmers are providing the same quality organic milk to their calves as consumers would pick up at the store, Horizon's factory farm in Idaho is selling \$700,000–\$1,000,000 in additional milk that they should instead be feeding to their young

calves and future replacement animals. This puts ethical family-scale producers at a huge competitive disadvantage,” states Kastel.

"During the last five years USDA inaction has allowed a handful of mega-farms, in the arid West, milking 2,000–10,000 cows, to grab a growing share of the organic milk market,” Kastel said. “Our study found that over 80% of the name-brand organic dairy products are produced with high integrity. We cannot allow a few bad actors to economically injure our nation's family farmers and put the reputation of the organic label at risk,” Kastel adds.

Source: “USDA Criticized for Helping “Industrialize” Organic Farming Agency Allowing Nonorganic Cattle in Dairy Production,” by Mark Kastel, Cornucopia Institute, May 10, 2006; 608.625.2042; <http://cornucopia.org>

People and Programs

John Piotti Heads Maine Farmland Trust

In July, John Piotti of Unity became executive director of Maine Farmland Trust. He succeeds LouAnna Perkins of Penobscot, who was executive director since 1999, when the organization began. Perkins will continue working for Maine Farmland Trust as a special projects manager and legal counsel.

Piotti was director of the Maine Farms Project for Coastal Enterprises, Inc. (CEI) in Wiscasset for the past 11 years. At CEI, he helped channel over \$12 million in critical services to over 400 Maine farms. He is also a state legislator representing eight Waldo County towns and co-chairing the Committee on Agriculture, Conservation, and Forestry. He led the Legislature’s effort to stabilize and support dairy farms in 2003–2005. More recently, he led the effort to get the Legislature to approve adding Katahdin Lake to Baxter State Park. He will balance both jobs by scaling back his work for MFT when legislative work is most intense.

Piotti has helped Maine boost smaller farms and create new markets for local farm products. He contributed to Maine’s Agricultural Viability Task Force, Dairy Task Force, and Millennium Commission on Hunger and Food Security. He also served as a past chair of the Northeast Sustainable Agriculture Working Group and a past director of the National Campaign for Sustainable Agriculture.

In 2005, Piotti was one of eight Americans who received the prestigious Eisenhower Fellowship. As a Fellow, he studied sustainable agriculture in Sweden and farm policies at the European Union in Brussels.

His primary interests, however, are local. “I got involved in agriculture almost 15 years ago, when I co-chaired Unity’s Comprehensive Plan Committee with a local dairy farmer,” he explains. “He and other local farmers challenged me to learn more about farming. I began to see the struggle many farmers face, but also to understand how farms could play a bigger role in Maine’s future.”

Piotti has served for six years on the board of Maine Farmland Trust, four years as vice-president. Maine Farmland Trust holds protective easements on 17 farms in 11 counties, totaling 2,480 acres. Its 12 pending easements will preserve another 1,856 acres of farmland.

Maine Farmland Trust's FarmLink program, now coordinated by Esther Lacognata, matches retiring farmers with new farmers who want to buy or lease Maine farms. FarmLink has linked 19 Maine farms consisting of 1,608 acres.

"We must greatly accelerate our efforts to both protect Maine farmland and to keep Maine farms viable and successful," says Piotti, "and I believe both farmland protection and farm viability are closely intertwined."

Maine has over a million acres of farmland including over 440,000 acres in production—the bulk of this in commodities such as potatoes and dairy products. Commodity farming nationwide and in Maine is being squeezed by low prices and rising costs, particularly energy costs.

"When Maine farmland is protected by easement, the value of the land stays as its use as a farm, not at its use for residential or commercial development. That makes farmland more affordable for those who want to farm," Piotti says.

He concedes that most Maine farmers cannot afford to donate protective easements, especially as they get ready to retire. The Land for Maine's Future Program, matched by federal funds, will spend \$2 million over the next few years to buy development rights on identified Maine farms.

"With real estate values at new highs, even \$2 million cannot protect a significant amount of farmland," notes Piotti. "We must launch a private initiative to purchase important farmland, protect it with easements, and resell it to the next generation of farmers. We call this program "Buy/Protect/Sell," and we see it as another way to keep more farmland in active use."

Piotti's goals for Maine Farmland Trust include adding new programs that target Maine's vulnerable farmland; expanding FarmLink; increasing technical assistance to farmers; making farms more economically viable; partnering with other Maine organizations; and increasing public awareness of the need to protect and enhance Maine's working farms.

"Helping a current farmer make a profit is not enough," he explains. "Many profitable farms will not survive a transition to a new owner, if the farmland sells at its development value. To secure farming's future, we need to permanently protect farms, so they can be purchased in the future at their value as farmland, not houselots."

That is exactly what Maine Farmland Trust, now based in Belfast, is doing.

"There is no more important work in Maine agriculture," says MFT's new executive director.

For information, visit www.maineFarmlandtrust.org, email info@mainfarmlandtrust.org or call 338-6575.

Women's Agricultural Network (WAgN) Celebrates Tenth Anniversary

WAgN, a well-developed, innovative, educational network connecting underserved farmers with resources to meet their educational needs, is celebrating its tenth anniversary! The Women's Agricultural Network of Maine (WAgN) enables women and other underserved people to successfully own, operate and support agriculture-related enterprises.

The Women's Agricultural Network offers its members access to an extensive network through its meetings and events throughout Maine and New England. It provides opportunities for mentoring, a safe environment to discuss common experiences and needs among farmers, and acts as an information clearinghouse. The Network empowers its members and prepares them to take on the tasks necessary to successfully operate their agricultural businesses.

WAgN's basis has been informal with no conventional "organization" that would require officers. Volunteers support the network in various roles, and in-kind support comes from University of Maine Cooperative Extension, Time & Tide Resource Conservation & Development Area, Maine Forest Service and Maine Centers for Women, Work and Community. Financially, WAgN has had a few small grants or contracts to support specific projects but no ongoing significant budget or funding. Three years ago WAgN initiated a voluntary membership fee with scholarships available.

University of Vermont Cooperative Extension and other partners founded the Women's Agricultural Network in Vermont in 1995. In 1997, sister programs were established in New Hampshire and Maine through the Beginner Farmers of New Hampshire and University of Maine Cooperative Extension, respectively. The three states work together to provide New England-wide programs as well as an annual New England Conference and do collaborative fundraising and grant writing. Maine and Vermont WAgNs have provided program development support to the newly formed Pennsylvania (2003), Massachusetts (2005) and New Jersey (2005) WAgN groups.

In addition to statewide programming, WAgN supports groups that serve the special needs of its members. The Aroostook County chapter was formed to provide more localized events for Aroostook farmers. Another chapter serves a minority group's needs.

The Women and the Woods Program provides educational activities to women woodland owners and managers through collaboration with the Maine Forest Service.

WAgN collaborates closely with the Maine Centers for Women, Work and Community. This partnership provides small, rural business entrepreneurs with information, advice, coaching and skills to help them grow and prosper by maximizing their access to resources.

One challenge the Network faces is Maine's size and unique geography. The Women's Agricultural Network of Maine has served thousands of farm women and other underserved farmers all over the state and nation -- primarily women who are either potential or active farmers. It has significant outreach to women woodland owners through the Women and the Woods Program.

On-farm network meetings are held in different areas of the state in an effort to accommodate as many people as possible. Over 1300 people are on WAgN's mailing list, with the potential for many more.

The Women and the Woods Program holds kitchen table gatherings throughout the state and will have a multi-day educational track at the WAgN conference in December 2006. Last October, Maine WAgN and other WAgN-type organizations from around the United States conducted a three-day international conference for Women in Sustainable Agriculture for over 400 people.

This spring, WAgN published the 2nd edition of the WAgN Member-to-Member Directory, which enables women in agriculture to network and to create mentoring relationships among its members. This edition highlights women who have volunteered to help other women through mentoring. Mentoring is a tool that creates relationships for learning, sharing skills and supporting each other. The directory encourages women to visit and learn about the farms and farmers in their own county and beyond. This directory is also a tool for members to find products, services, agricultural resources and supportive organizations.

This year WAgN celebrates its 10th anniversary with a three-day conference on December 8, 9 and 10, 2006. See the sidebar for details.

Susan Watson of USDA's Time & Tide Resource Conservation & Development and Vivianne Holmes of University of Maine Cooperative Extension bring in-kind support to WAgN through their organizations. Mary Ann Haxton, WAgN state coordinator and Western Mountains regional organizer, is contracted for specific projects as funds are available. Haxton also volunteers many hours to WAgN and assumes key leadership roles. Audrey Zimmerman of Maine Centers for Women, Work and Community provides in-kind organizational outreach for the farm women in Aroostook County. Patty Cormier and Kevin Doran of the Maine Forest Service provide in-kind organizational outreach for the Women and the Woods Program. WAgN has a core of volunteers who help in so many wonderful ways.

Sidebar

Women Connecting -- Field, Forest and Self

A Conference to Celebrate 10 Years of Maine Women's Agricultural Network, the Women and the Woods Program and Women's Networks.

Bangor, December 8, 9 and 10, 2006

Celebrations, Educational Sessions, Networking, Relaxation, Farm Tours, Keynote Speakers, Educational Displays, a Women and the Woods track, and so much more.

Hold the dates! Spread the word!

For more information call 1-800-287-1458 or email vholmes@umext.maine.edu

Tours and Hands-on Activities include:

- Globe positioning system (GPS)
- Food Science & Kitchen tour at UM
- Diversified farm tours
- Woodlot walk and talk

Concurrent educational sessions include:

- Financial Goals
- Nuts & Bolts of Marketing
- Basics of a Small Home-based Food Business
- Specialized Services for a Small Home-based Food Business
- Animal Identification Maine
- Work Smarter, Not Harder
- Cost-share Programs
- Creative Economy
- Farming is a Business
- Maine's Current-use Property Tax Programs
- Getting Started in Grant Writing
- Grant Resources
- Protecting Maine's Farmland
- Grassroots Organizing
- AGR-Lite & Financial Recordkeeping
- AGR-Lite & Liability Insurance
- Alternative Forest Products
- Forest Management Planning
- Wildlife Habitat in Managed Landscapes
- Working with Forestry Professionals
- Bridging the Generational Divide
- Slow Food and Soul Food
- Telling Our Stories
- Nature Writing and Self

Pesticides

Aerial Spraying, Organophosphates, Browntail Moth Control Addressed by Board of Pesticides Control

By Matthew Davis and Russell Libby

At its May 12, 2006, meeting, the Maine Board of Pesticides Control (BPC) unanimously approved a 24 I Special Local Needs Registration for Ranman Fungicide (cyazofamid) to control pink rot on potatoes, for which older fungicides, such as Ridomil, are not working. Ranman also controls late blight, which is in the same genus as pink rot. Staff toxicologist Lebel Hicks said that Ranman is not carcinogenic in rodents, is not acutely toxic, and is less toxic and has fewer health effects than other fungicides. Thomas Qualey, new Board member and potato grower, affirmed that pink rot is hard to discover and diagnose. Often potatoes look fine at harvest but rot in storage.

Chapter 26 Passed After Two Decades

The Board adopted—after two decades of work—Chapter 26: Rules for notification of indoor pesticide application in structures other than schools, after the staff made minor language improvements. Section 3a was changed after comments that the building manager or owner should share responsibility for notice with the applicator. A paragraph added that the applicator may provide information to the landlord or building manager, who can then post it or provide it to tenants. The applicator must confirm with the manager or landlord that the information has been posted. Board member Lee Humphreys was pleased that both parties must confirm notification.

The BPC staff also changed the rule so that applicators need not give the reason for pesticide applications when posting information or alerting tenants or workers. The Board and applicators were concerned that owners of sprayed apartments may not want others in their building to know, for example, that they had bed bugs.

In a few places in the rule, baits, gels and crevice applications are allowed if humans are present. The staff said that labels on some baits, gels and crevice products say that they cannot be applied while humans are present. The staff did not want applicators to interpret that the rule overrode labeling requirements. The staff recommended exempting these applications only if the label did not indicate they were not safe to apply in the presence of humans.

The Board generally agreed to begin the rule in January 2007, to give the Secretary of State time to review it and to give the BPC time to train applicators and phase in materials and notices.

Regarding the notice of application to be posted in common areas being sprayed, the BPC clarified that concerned occupants would contact the applicator, and that the notice would have the BPC number on it as well.

New Board member and structural pesticide applicator Richard Stevenson suggested that any non-spray liquid of 25b (minimum risk pesticide) used for crack and crevice application be exempted from notification and human occupancy limitation. He requested waiving notification on dusts and liquid 25b products. Hicks voiced concern about allergic reactions to 25b products, such as oils, even if they are “natural.” She noted that she looks at whether allergic reactions are triggered by any presence of a chemical.

Proposed Amendment to Chapters 22

Regarding a proposed aerial spraying ban, Humphreys said that houses, water bodies, organic fields and other sensitive areas need better protection against pesticide drift. She suggested a stronger drift rule. Simonds agreed with the need to review the drift rule but did not want to ban aerial spraying.

Board member John Jemison learned from the hearings that when potato growers can't get into wet fields, which is also when disease are worst, they need the option of aerial spraying; he is

less sympathetic with blueberry growers who cannot get on their fields with trucks or tractors because of rough terrain. He supports improving the drift rule.

Board member Clyde Walton wanted more information on how problematic aerial spraying was. Qualey did not support the ban. Stevenson thought the public comments raised more questions than they answered—especially about forestry spraying—so he might abstain.

Board chair Carol Eckert, M.D., raised the need to look at the drift rule aggressively. She would like more public comments.

Simonds suggested using new standards that have been used elsewhere, which the industry might voluntarily follow, rather than updating the rule. Some problems could be solved simply by moving the technology ahead 20 years, he explained.

Upon recommendation of their legal counsel, the Board decided not to vote on the petition to ban aerial spraying, which would have the same effect as voting against it. No Board members expressed interest in banning aerial spraying, nor did they object to not voting on the rule change. Eckert and Humphreys wanted the record to show that the Board was interested in re-opening and improving the drift rule. At its July meeting, the Board decided to develop a multi-party stakeholder group to report ideas for minimizing drift and conflict with neighbors when organophosphates are used.

Chapter 28: Registry Fee and Material Safety Data Sheets

Eckert expressed interest in changing the fee to be on a notification registry, and changing distribution requirements of Material Safety Data Sheets. Qualey said that waiving the Registry fee would burden the BPC staff too much, and providing MSDS might cause a paperwork nightmare. Walton disagreed with Qualey, but Stevenson strongly opposed waiving the Registry fee and even recommended raising it, saying, “The day the fee drops, the day it [the Registry] is abused.” Simonds suggested retaining current rules, due to limited public comment on these issues.

Stevenson said that providing the MSDS by email or paper to people on the Registry would be no problem; most applicators give them out already.

Humphreys supported both changes, saying they deal with the public’s right to know. Jemison supported making information more accessible to the public, but was interested in doing something other than simply waiving the Registry fee.

The Board agreed that people should be able to get MSDS for pesticides more easily. However, Qualey was concerned that providing the sheets might make people ask applicators or farmers about toxicology more frequently, and he did not want to feel obligated to respond. Hicks reminded the Board that those questions should be referred to her.

Humphreys motioned to adopt the proposed amendment to require applicators to provide MSDS to Registry members. Walton seconded. Voting in favor were Humphreys, Eckert, and Walton.

Jemison, Simonds, Stevenson and Qualey opposed the proposed change. The Board did not motion to vote on adopting the amendment to waive the Registry fee, which effectively rejected the proposed amendment.

Chapter 40: Organophosphates

Regarding the proposal to ban organophosphate pesticides (Ops), Jemison opposed such a broad ban but was heartened by Hicks' sales data showing their declining use. Humphreys supported the proposed ban, because farmers, citizens and scientists agree that Ops are dangerous and OP use is declining. Simonds would not support a ban; he believes Ops are the best pesticides for some pests. Stevenson and Qualey agreed that OP use has declined in their respective industries, structural pesticide applications and potato farming, but they opposed a ban, as did Walton, who thought a ban would create economic problems for agriculture. Eckert claimed that a ban might be a little premature, but she wants to hasten the decline of OP use to zero.

Eckert and Humphreys voted to ban Ops; other Board members opposed the motion. Jemison agreed that these chemicals deserve more attention and proposed promoting more alternatives.

Browntail Moth Spraying

A new law requires the BPC staff to address the risks and benefits of controlling browntail moths with pesticides in coastal communities. Browntail moth caterpillars cause major health issues such as itching and allergic reactions in many people, but pesticides may impact coastal fisheries. Henry Jennings of the BPC staff explained that staff member Heather Jackson was preparing to monitor the spraying, although no extra funding exists for this purpose. She should have six sites where she can monitor hand-held hydraulic spraying; no one has inquired about aerial spraying.

Another provision requires the Lobster Conservancy and the BPC staff to talk more about protecting lobster from pesticides. The Conservancy and the BPC's Environmental Risk Assessment Committee (ERAC) disagree about whether juvenile lobsters are threatened by the spraying. If the Conservancy can provide research about lobster development and timing, then ERAC could meet with Freeport area residents and lobstermen.

Eckert said that if the ERAC and lobstermen can agree on a buffer zone, the Legislature could support that. She recommended that the BPC staff provide monitoring data, reconvene ERAC, and hold a public hearing or information session, then make recommendations to the Agriculture, Conservation and Forestry Committee.

At its July 2006 meeting, the BPC started gathering information on the subject. Jennifer Anderson from Environment Maine encouraged considering alternative products while the moth population pressure is low. Elizabeth Ring from South Freeport spoke of the challenges of living with browntails and the need to balance control with preserving the environment for coastal fisheries. She wants the state to find a way to eradicate this health hazard. Eckert believes that the moths may trigger long-term health problems, such as asthma.

Tim Linsey from Bartlett Tree challenged the Board to prove that spraying insecticides near water creates a risk to coastal fisheries. Board member Richard Stevenson raised similar questions, and both questioned the impact of insecticides on aquatic life relative to that of fuel slicks they've seen on coastal waters.

The Maine Lobsterman's Association is pushing the Legislature to monitor the issue closely because of a die-off in Long Island Sound a few years ago, where insecticides were considered one probable cause. The ERAC will draft a report for the Board to consider this fall. Because of limited options (cutting out webs and possibly using pheromones in areas of light population pressure), pressure exists to control browntail moth populations whenever they are near residential areas. The extended wet spring in 2006 seems to have knocked populations down.

Groundwater Monitoring

Staff member Heather Jackson gave an update on the third statewide groundwater monitoring report, which is compiled every five to seven years. Results are similar to those in the last report. This session, the Legislature passed LD 1890, which requires a report every six years. Eckert noted the large amount of hexazinone used in blueberry country and acetylaniline used on corn. Jackson explained that a hexazinone-only groundwater study is done every four years and that the new report should be done soon, with more sites than the last study.

Product Registration More Costly

The Agriculture, Conservation and Forestry Committee approved an increase in the product registration fee from \$120 to \$150 on Jan 1, 2007. The Committee would like the BPC staff to organize two statewide, unused pesticide collections in 2007 with the money from the first year.

The Agriculture Committee reaffirmed that the Board must review two pesticides a year based on use pattern or toxicity risk. Hicks said that the staff has been doing approximately two risk assessments each year recently and is developing a database to reflect this.

Grubs in Lawns

At its July meeting, the BPC learned that as lawns are managed more intensely and kept greener for a longer periods, they become more attractive to a wide range of grubs. The Board discussed whether to make Trichlorfon, an organophosphate, more accessible, i.e., a Restricted Use rather than Limited Use insecticide. Limited Use pesticides can be used only by meeting certain criteria, including economic hardship—which is difficult to show for a lawn. Restricted Use materials must be applied by trained applicators and aren't available to the general public, but otherwise have relatively few restrictions.

Grub populations in Maine seem to be changing. Japanese beetles are widespread, as are grubs from rose chafers and Asiatic garden beetles. Nematodes provide control, but applications have to be matched to the biology of the prevalent pest, and a July-August application is important. For pesticides, Diazinon, once widely used to control grubs, has been withdrawn. In much of the country, but not in Maine, Trichlorfon is available for general use. That leaves carbaryl (Sevin)

and imidacloprid (Merit) as materials of choice here. Carbaryl is applied several times during the season, while Trichlorfon can be used once after a problem is recognized.

Gary Fish from the BPC staff has been working with a committee to develop Best Management Practices for lawn care. The committee is trying to identify the best options for control, and the relative risk/benefits of different controls. After extended discussion, the Board voted to open a rulemaking hearing on this request over the winter, after reviewing the draft Best Management Practices.

Violations and Waivers

In May, the Board approved an enforcement action against Aaron Turner, who admitted to filling out applicator license recertification forms under different names—including for someone who didn't attend a recertification conference. Board members hope that by taking action, word will spread that they are cracking down on this illegal behavior.

The Board unanimously approved an enforcement action against Lawn Dawg, which made numerous pesticide applications during two days of heavy rain in May 2005. Humphreys said that the punishment was lenient and that lobstermen would be annoyed if they knew how lightly the company was getting off. Jennings said that this investigation made lawn care companies respond more quickly and follow the law more closely than in the past.

The Board unanimously approved enforcement action against a Wal-Mart store that sold Diazinon 14 months after such sales became illegal, despite heavy publicity by the Board, industry and media.

In July, after repeated attempts to reach agreement, the Board voted to have the Attorney General seek enforcement action against the Turf Doctor. The Turf Doctor allegedly made applications to a private landowner's lawn after the landowner (a judge) asked for no further services. This case sparked a long discussion about written contracts and how landowners can avoid getting services they no longer want.

Another consent agreement was approved, with a fine of \$300, regarding a company that applied pesticides as part of general maintenance work without proper licensing.

Priorities

Among the high priority issues for the year ahead are aerial application standards, organophosphates, and developing a waiver provision for the Board's notification standards. The Board voted to have the staff develop a proposed rule on the waiver provisions.

The BPC staff has also been asked to begin working on a process to address aerial applications and organophosphates. The two issues are closely related, since much of the impetus for the petitions the Board heard this spring was based on aerial spraying of organophosphates near residences. The Board is interested in reviewing its standards for aerial spraying to see if new technology should be recommended to help minimize drift. While the EPA is reviewing all

organophosphates, and azinphos-methyl (Guthion) apparently won't be used after 2010, the Board's focus here is on developing a multi-party stakeholder group to report ideas for minimizing drift and conflict with neighbors when organophosphates are used.

Other Actions

The Board asked the staff to develop a proposed rule that would consolidate commercial categories. Maine has many more categories than most other states. The staff was also asked to develop another draft about how to deal with unauthorized applications. Lee Humphreys was nominated and elected vice-chair of the Board.

Eckert presented former BPC member Andy Berry with an award for 25 years of service.

The next BPC meetings will take place on Sept. 15 and Oct. 13. Meeting dates and agendas are posted at www.maine.gov/agriculture/pesticides/about/index.htm#meeting

Sidebar with BPC report

Pesticide Applications: Your Right to Be Notified

Do you want to be notified when a neighbor's lawn, farm or orchard is being treated with pesticides? Maine law assures you that right through a notification registry or a self-initiated request for notification.

The Notification Registry is a list of Maine residents who wish to be contacted by commercial and at-home applicators before they use pesticides. The registry best serves urban and suburban residents who otherwise have no way of knowing when pesticides are going to be applied on neighboring lawns, in landscapes or around structures.

For an annual fee of \$20, residents' names and addresses are distributed to licensed commercial applicators. Once on the list, residents can expect applicators to provide pretreatment notification via telephone, personal contact or mail. Such communication must occur between six hours and 14 days before outdoor pesticide use within 250 feet of a registrant's property.

At-home applicators treating their own property will be required to notify registrants too. Pesticides used in agriculture are exempt from notification via the registry, however.

To receive an application in November so that you can be listed on the next registry, contact the BPC at 207-287-2731 or pesticides@maine.gov, or download the Pesticide Notification Registry Application.

Self-Initiated Request

If you live or work within 500 feet of any outdoor site sprayed with pesticides--including agricultural land--you are entitled to be notified. This law exists to enable you to obtain basic

information from your neighbor applicator, such as what pesticides are applied and a forewarning as to when they are applied.

This right of notification begins with you, however; you must ask your neighbor to notify you. That request may be made in any fashion, as long as the applicator is aware of your name, address, phone number and--of course--your interest in being notified. Be as specific as possible about what you are requesting to minimize misunderstandings. Making a request in person is your best means of communicating.

The request should be made to the person responsible for managing the land on which a pesticide application takes place. If you aren't sure who this is, contact the landowner directly. Your town or municipal office keeps names and addresses of landowners in the local tax records.

Thereafter, the law says your neighbor must make sure you are notified before pesticides are used, at no cost to you. Once the applicator, land manager or landowner receives your request for notification, you can expect to be informed. The timing of this notification must be agreed upon both by you and your neighbor.

Communications between pesticide users and you can prevent the most common aggravation between neighbors: the element of surprise. Communication informs the applicator to stop pesticides from drifting onto your property as required by law. And, you can take measures to protect yourself and your family from unintended or accidental exposure by closing windows, taking clothes off the laundry line or keeping children and pets indoors.

2005 Registry

Nineteen citizens are listed on the 2005 registry, which was distributed to all commercial master-level applicators in Maine. The list is also available to anyone upon request. For more information contact Robert Batteese, staff director, at 207-287-2731 or robert.batteese@maine.gov.

For a copy of the regulation that assures your right to notification, call the BPC at 207-287-2731 or download Chapter 28: Notification Provisions for Outdoor Pesticide Applications.

For more information, including links to the Notification application and the regulation, see www.maine.gov/agriculture/pesticides/public/registry.htm.

Arsenic Contaminates Over Half of Non-Organic Chicken Products

The Institute for Agriculture and Trade Policy has released a study revealing that arsenic is present in most non-organic chicken products. Of 155 samples from supermarket chicken products tested, 55% carried detectable levels arsenic, a highly toxic carcinogen. All 90 fast food chicken products contained arsenic. The non-organic chicken industry adds arsenic to chicken feed to kill parasites and promote growth. Arsenic is not allowed in organic chicken feed.

Source: Organic Bytes #79, Organic Consumers Association, April 24, 2006;
www.organicconsumers.org/foodsafety/arsenic060405.cfm

EPA Pressured to Allow Dangerous Pesticides

Leaders of nine local chapters of the American Federation of Government Employees, National Treasury Employees Union, and Engineers and Scientists of California have written to EPA administrator Stephen Johnson, complaining that EPA scientists are being pushed by political pressure to inadequately test toxic pesticides. Insufficient testing by EPA managers and the pesticide industry, says the letter, will allow continued use of 20 organophosphate and carbamate pesticides that are nerve poisons that can easily enter the developing brains of children, infants and fetuses. The pesticides are used to kill mosquitoes, in agriculture and horticulture, on golf courses, in flea collars and on pest strips.

Union leaders suggest tighter restrictions on the use of these pesticides until they are adequately evaluated. Jennifer Sass of the Natural Resources Defense Council says that since newer, safer alternatives are available, the "old style" pesticides in question should not be used.

Sources: "EPA Scientists Pressured to Allow Continued Use of Dangerous Pesticides," by Ohn J. Fialka, Wall Street Journal, May 25, 2006;
<http://online.wsj.com/article/SB114852646165862757.html>; Organic Bytes #82, Organic Consumers Association, May 27, 2006, www.organicconsumers.org/2006/article_540.cfm

Lawsuit Forces EPA to Phase Out Toxic Pesticide

A lawsuit filed by the United Farmworkers of America against the Environmental Protection Agency (EPA) has forced the agency to begin phasing out a highly toxic organophosphate pesticide that has contaminated food and poisoned farmworkers. The pesticide, azinphos-methyl (AZM), is used on a variety of food crops, including potatoes, cranberries and peaches. It is a highly toxic neurotoxin derived from nerve agents used during World War II. In 2001, the EPA found that AZM posed unacceptable risks to farmworkers, but due to industry pressure, the agency kept it on the market.

"This pesticide has put thousands of workers at risk of serious illness every year," says Erik Nicholson of the United Farmworkers of America. The EPA will phase out AZM over the next four years.

Source: Organic Bytes #84, June 15, 2006, Organic Consumers Association. FMI:
http://alerts.organicconsumers.org/trk/click?ref=zqtbkk3um_0-1ex240x3104925&

Study Bolsters Link between Pesticides and Parkinson's

People who have been exposed to pesticides are 70% more likely to develop Parkinson's disease than those who haven't, according to a new study. The results suggest that any pesticide exposure, whether occupationally related or not, will increase a person's risk of the disease; so

using pesticides in the home or garden may be as harmful as working with the chemicals on a farm or as a pest controller.

The study of over 143,000 people over 20 years, published in the July Annals of Neurology, provides the strongest evidence to date of the link between pesticide exposure and Parkinson's. The 413 people who developed confirmed cases of Parkinson's spent more time around pesticides than those who did not develop the disease. "Low-dose pesticide exposure was associated with a significant increase in risk for Parkinson's disease," says lead author Alberto Ascherio of the Harvard School for Public Health. Earlier animal studies associated chemical compounds commonly used as pesticides with degeneration of dopamine-producing neurons. A shortage of dopamine causes muscle tremors, muscle rigidity and other motor problems in those with Parkinson's.

The researchers found no correlation between Parkinson's and other materials studied, including asbestos, coal dust, exhaust, formaldehyde and radioactivity. The study could not determine how the frequency, duration, or intensity of pesticide exposure affected the incidence of Parkinson's. The scientists did note that this is a relative increase; i.e., while the lifetime risk for developing Parkinson's is 3%, pesticide exposure increases the risk to five percent.

In addition, a recent Emory University study links exposure to dieldrin in lab research and Parkinson's. Dieldrin, a pesticide targeted by Pesticide Action Network's "Dirty Dozen" Campaign since 1985, was banned in the United States in 1987 and designated for worldwide phaseout as one of the initial persistent organic pollutants (POPs) listed under the Stockholm Convention. Like other POPs, dieldrin breaks down very slowly and remains dangerous in soil long after application.

Source: "Study Bolsters Link Between Pesticides and Parkinsons," June 26, 2006, scientificamerican.com. Pesticide Action Network News Update Service, July 13, 2006. www.panna.org

Canada to Protect Public Health from Pesticides

The federal Pest Control Products Act was enacted in July to protect Canadians from hazardous pesticides. The new act requires the federal Minister of Health to review pesticides with active ingredients that are banned by other member nations of the Organization for Economic Cooperation and Development (OECD) for health or environmental reasons. Once a review is initiated, pesticide manufacturers must prove that their products are not harmful.

Source: Pesticide Action Network News Update Service, July 13, 2006. www.panna.org

DDT Exposure Linked to Lower Mental/Motor Skills

Babies of farmworker women in California who were exposed to DDT have delayed neurological development, according to scientists at the University of California, Berkeley. Scientists measured levels of various pesticides in 360 pregnant women who recently emigrated from Mexico to the Salinas Valley, then tested mental and motor skills of their U.S.-born infants and toddlers. The mental tests measure the children's ability to learn and think, including

memory and problem-solving skills. For every tenfold rise in DDT exposure, children's scores on mental tests dropped 2 to 3 points and their motor skills were reduced. Ninety percent of the participants in this study were born in Mexico, where DDT was used to control malaria until its ban in 2000. In a Los Angeles Times article, the study's authors caution that "the benefit of using DDT to control malaria should be balanced carefully against the potential risk to children's neurodevelopment. Whenever possible, alternative antimalarial controls should be considered, especially in areas where pregnant women and children may be exposed." The study was published in the July issue of Pediatrics.

DDT and its breakdown products, DDE and DDD, persist for a long time in the environment and accumulate in the food chain. Banned in the United States 33 years ago, DDT is still detected in five to 10% of people and DDE is found in almost everyone.

The Berkeley researchers also found that babies who were breastfed longer scored better on developmental tests, despite their exposure to DDT in breast milk.

Sources: Pesticide Action Network News Update, July 6, 2006, www.panna.org. "DDT 'Link' to Slow Child Progress, July 5, 2006, BBC News; "Pesticides Linked to 70% Increased Risks for Parkinson's Disease," by Alan Mozes, www.precaution.org/lib/06/prn_parkinsons_and_pesticides.060701.htm

Winter 2006-2007

Bees

The Latest Buzz on Russian Bees

According to recent studies done at the ARS Honey Bee Breeding, Genetics and Physiology Research Unit in Baton Rouge, La., Russian bees can deflect three of the honey bee's worst assailants: varroa mites (which have been present in Russia for 150 years), tracheal mites and cold temperatures. Tracheal mites kill honey bees by invading and clogging their airways.

The Russian bees are fastidious and agile groomers, capable of using their middle pair of legs to brush mites away. They are also less likely than other bees to lose hive members during harsh, cold weather. Russian bees appear to be more frugal with their winter food stores.

Baton Rouge researchers are still striving for the ultimate Russian bee, with mite resistance and good honey production.

Source: Agricultural Research Service News Service, USDA, August 9, 2006, www.ars.usda.gov/is/pr

Biofuels

New Barley Enzymes Boost Alcohol Production

Researchers have designed three heat-loving barley enzymes that perform exceptionally well at temperatures hovering above 70 degrees C., or about 160 degrees F. Thanks to their heat tolerance, these enzymes can yield up to 30% more sugar than enzymes in conventional barley lines. More sugar means more fermentable product for brewing beer--and more sugar for converting into ethanol-based fuels. Barley growers earn up to \$1 more per bushel for top barley varieties suited for ethanol and beer production.

Today's barley enzymes become severely sluggish at superheated temperatures, but heat is necessary to prepare the starches in barley for conversion to sugar. These new enzymes were developed not to breed into current barley plants, but to be used as a search tool to scan vast collections of barley plants for accessions already possessing the desirable enzymes.

Source: Agricultural Research Service News Service, USDA, Agricultural Research, Sept. 2006,
www.ars.usda.gov/is/AR/archive/sep06/barley0906.htm

Botulism

Botulism Linked to Carrot Juice

This fall, two Canadian residents became paralyzed from botulism after drinking carrot juice. Four U.S. citizens were on ventilators, their botulism linked to Bolthouse Farms 100% Carrot Juice, Earthbound Farm Organic Carrot Juice and President's Choice Organics 100% Pure Carrot Juice. The brands were voluntarily recalled, and consumers were urged to throw out stocks.

Botulism can cause blurred vision, slurred speech, difficulty swallowing, paralysis and death. It must be treated quickly.

Source: "Officials urge Canadians to throw out carrot juice," CBC News, Oct. 10, 2006,
www.cbc.ca/consumer/story/2006/10/10/health-warning.html

Community Supported Agriculture

By Melissa White

GROWERS! Do you grow Community Supported Agriculture (CSA) shares? Are you interested in growing for a CSA market or expanding your current CSA operation? CSA is a fast-growing market niche that needs more growers like YOU.

CONSUMERS! Do you want to buy more local food? Do you know others who do, too? Would you like to receive a bundle of fresh, in-season produce every week during the growing season?

More and more CSA farms are popping up every season, but available shares fill fast. Community Supported Agriculture (CSA) is a concept that provides farmers with a reliable source of income and consumers with a weekly supply of fresh food. Here's how it works: A farmer offers a number of shares of next season's anticipated harvest for sale during the winter

preceding the growing season. A share represents a weekly bundle of food that is in-season each week during the growing season. Usually, consumers pay for their shares up front, but a variety of payment and delivery options exist, depending on the farmer. Some offer a pre-paid debit system in which consumers get to choose from available produce, rather than receiving a predetermined bundle of goods each week. The debit system can provide more flexibility to the consumer and works best with farmers who already go to farmers' markets or have a farm stand where consumers can come and make their choices. Either way, the farmer gets a reliable source of income and the consumer gets a great deal on quality, healthful, local farm products.

As a promising tool for reaching out to an ever-growing pool of health and environmentally conscious folks who see the value in buying food locally, MOFGA wants to reach out to both the supply and demand sides of the CSA movement in Maine and help it expand into a reliable, long-term option for both small farmers wanting to run an economically viable farming operation and Mainers wanting to eat healthful food, eat with the seasons, and support local farms. As part of a project funded by Northeast SARE (USDA's Sustainable Agriculture Research and Education program), MOFGA is working with the Maine Council of Churches to increase the number of CSA farms in the state and to find more consumers interested in being part of a CSA. If you'd like more information or want to get involved, please contact Melissa White, MOFGA's organic marketing coordinator, at melissa@mofga.org or (207) 568-4142. A list of CSAs known to MOFGA is at www.mofga.org.

Compost

Compost Bin Orders By Beedy Parker

Towns around Maine, and the rest of northern New England, have been taking part in group orders of plastic compost bins for the last couple of years. The solid-design bins are made in Canada from recycled black plastic and are cylindrical, 33" by 35", with animal-proof lids. They are very useful for helping people in town, and those who might not otherwise feel comfortable composting their kitchen scraps, to feel confident enough to do so. They have to be ordered in pallettes of 20 bins, at \$36.50 per bin, for an \$80-\$90 retail value per bin. Most towns have been ordering through their transfer stations, with the Maine Resource Recovery Association organizing the order.

If your town or region has not participated in these orders, you might suggest doing so to your town transfer station or dump, because having these bins at a low price really increases composting and starts people toward an understanding of how organic matter breaks down and recycles itself, without bad smells and the general "yuck" factor. In fact, novices tend to get very excited about the process and go on to bigger and better endeavors. And the enormous environmental advantages to having more people composting, on any scale, are obvious.

We've been ordering compost bin on our own in the Camden area for many years, along with holding annual compost classes, using a short video from Cooperative Extension followed by a Q&A session. (We also encourage people to build other kinds of bins that are not made of plastic.) Lately we've been using the order to raise funds for the Garden Institute, getting a cut

on profits from each bin. But the usual town ordering system is through transfer stations and the MRRA (942-6772, www.mrra.net) in Bangor, with all the forms and publicity in a simple packet. Watch the Web site and call early in the winter to get ordering information. To make this a fundraiser, call the regional organizer, Northeast Resource Recovery Association, in New Hampshire (603-798-5777, www.recyclewithus.org). Orders usually are made in early May, and bins are delivered in late June. For more details on how this works in Camden, call me at 236-8732.

Energy

Deer Isle Group Proposing Windmill

Farmers and commercial windmills are an ideal combination. Farmers can make \$10,000 to \$20,000 a year from leasing land to a windmill, but lose access to only ½ to 1 acre. They can continue to use the land under the windmill for grazing, crops or hay. The windmill company will benefit from having a windmill site away from built-up areas.

The town and the environment also benefit. Each windmill increases the town's tax base by \$3.5 million and provides enough clean power for 600 homes. (See www.energymaine.com.)

If you own high land and would like to find out more about siting a commercial windmill on your land, call Jane McCloskey, administrator of the East Penobscot Bay Environmental Alliance (EPBEA), at 207-348-6075.

The EPBEA believes that global warming is the most serious issue facing our planet and Penobscot Bay. It is working to reduce global warming with a three-prong strategy:

- teaching Alliance members and neighbors about ways to reduce energy use;
- working to promote government policies to reduce global warming; and
- facilitating the siting of windmills in Maine.

The EPBEA believes that small, decentralized wind projects with one, two or three windmills are the way to go in Maine. It is working with Portland energy broker Competitive Energy Services (CES), which provides energy to Hannaford, LL Bean, the Bucksport paper mill, Colby, Bates, Bowdoin and others. CES is also building three windmills in Freedom, Maine. In addition, CES partners with Maine Green Power and Maine Interfaith Power and Light. People can sign up with these groups, and their power will be provided by such renewable energy as wind, hydro or solar. To find out more about CES, the Freedom Wind Project or Maine Green Power, see www.energymaine.com or Google Competitive Energy Services.

In October 2006, CES put up a commercial anemometer (wind speed indicator) on north Deer Isle, where it will measure wind velocity on the site for the next year. If the wind is strong enough to make a commercial windmill viable, CES will apply to the town of Deer Isle for a permit to build a windmill. If the town agrees, a windmill should go up the next summer.

Neither CES nor EPBEA wants to put up a windmill if people in the town don't want

one. However, EPBEA hopes (and seems to be hearing) that Deer Isle people have begun to take global warming seriously enough that most will be proud to take the lead in promoting renewable energy and windmills.

These are LARGE windmills, with towers 260 feet tall and blades 130 feet long, for a total height of almost 400 feet. They are about 10 times the height of our spruce trees. They are beautiful, but they will be visible.

The blades on these modern windmills move more slowly than those on older windmills, and studies show that they do not cause appreciable harm to birds.

Genetic Engineering

U.S. Rice Supply Contaminated by Unapproved GE Rice

After testing commissioned by Greenpeace and then by various European government agencies found rice contaminated with an unapproved, genetically-engineered (GE) rice, Agriculture secretary Mike Johanns announced in August that domestic and export stocks of long grain rice were contaminated. Johanns said Bayer CropScience admitted its contamination problem to USDA. Johanns added that the biotech rice--LLRICE 601, containing bacterial DNA making the plants resistant to Liberty Link herbicide made by Aventis-- poses no health risks, but could damage the U.S. \$1 billion rice export market, since many nations refuse to import GE rice.

As a result of the contamination, Japan banned long grain rice imports from the United States; Germany found the illegal rice in products on shelves in its major supermarket chain Aldi Nord; the European Union required that all rice imports from the United States be tested for contamination; and the world's largest rice processing company, Ebro Puleva, stopped all imports of U.S. rice, resulting in a loss of at least \$33 million to the U.S. long grain rice market. German supermarket chain Edeka said it would cease selling all U.S. long grain rice, as did other European retailers, millers and processors.

U.S. rice farmers filed at least three multi-million-dollar class action lawsuits against Bayer CropScience, and Ebro Puleva expects to bring legal actions against Bayer as well.

The USDA admits it has no idea how extensive the contamination is. Rice farmers say they don't feel the USDA is adequately monitoring the biotech industry. "They can't tell you where anything is even though they get permits for it," said Arkansas Rice Growers Association executive director Greg Yielding.

"The US government should be doing all it can to protect our farmers and food processors from the costly economic impact of GE contamination of U.S. export crops," said Doreen Stabinsky, Greenpeace GE Campaigner. "Unfortunately, the government has done as little as possible to regulate the genetic engineering industry, and the high cost of that policy choice is now clear to all in the U.S. rice industry."

“We know from experience in the Starlink [contaminated corn] case that the initial contamination finding is just the tip of the iceberg,” said Jeremy Tager, GE rice campaigner with Greenpeace International. “Once illegal GE crops are in the food chain, removing them takes enormous effort and cost. It is easier to prevent contamination in the first place and stop any plans to commercialize GE rice.”

Bayer stopped field testing the variety in 2001, but contamination occurred in the 2005 harvest. The company hopes to alleviate the contamination issue by getting its rice approved after-the-fact.

Greenpeace International also said in September that a different, illegal GE rice variety from China has contaminated food products in France, Germany and the United Kingdom.

Sources: Organic Bytes, Aug. 24, 2006, www.organicconsumers.org/2006/article_1584.cfm; and www.organicconsumers.org/2006/article_1865.cfm; “U.S. Rice Supply Contaminated, Genetically Altered Variety Is Found in Long-Grain Rice,” by Rick Weiss, The Washington Post, Aug. 19, 2006, www.washingtonpost.com/wp-dyn/content/article/2006/08/18/AR2006081801043.html; “Bayer’s Illegal Genetically Engineered Rice Found in Major German Supermarket,” Sept. 11, 2006, Greenpeace press release, www.greenpeace.org/international/press/reports/IllegalChinaGERice; “World’s Largest Rice Company Halts All Imports from U.S.,” Greenpeace press release, Sept. 29, 2006.

Genetically Engineered Grass Escapes

An experimental variety of genetically engineered (GE) bentgrass developed by Scotts Miracle-Gro Company and Monsanto to resist the herbicide Roundup has escaped from its test plot in Oregon and has been found growing in the wild as far as 3 miles away, according to scientists from the U.S. EPA. The biotech plant, designed for golf courses, has not been approved by the USDA, but has already been found dispersing among native grasses in six locations.

Scientists don't know how the engineered grass will behave in the wild but admit it may have a strong advantage over native grasses and could irreversibly damage the ecosystem as it spreads. According to Tom Stohlgren, an ecologist at the U.S. Geological Survey's National Institute of Invasive Species Science, the experimental bentgrass "can tend to outcompete other species...It doesn't need to sexually reproduce - it's like The Blob. It could potentially hit rare species or national parks."

The USDA is doing a full environmental impact assessment—its first on a GE crop--on the grass before determining whether to permit it, because of the potential for spread to the wild. Previous EPA testing found the grass pollen 13 miles from a test plot.

Sources: Organic Bytes, Aug. 24, 2006, www.organicconsumers.org/2006/article_1575.cfm; “Grass Created in Lab is Found in the Wild,” by Andrew Pollack, The New York Times, Aug. 16, 2006.

USDA Violates Law with GMO Field Tests

According to federal judge J. Michael Seabright, the USDA violated the Endangered Species Act and the National Environmental Policy Act when it failed to conduct even preliminary impact studies before issuing permits to ProdiGene, Monsanto, Garst Seed and the Hawaii Agriculture Research Center that allowed them to grow genetically modified, drug-producing corn and sugarcane in Hawaii. The plaintiffs in the case-- Center for Food Safety, Pesticide Action Network North America, Friends of the Earth, and the Hawaiian-Environmental Alliance KAHEA--sued USDA in November 2003, represented by Earthjustice and the Center for Food Safety. Plaintiffs also challenged USDA's practice of concealing locations of trials from the public, and in most cases not disclosing the substances being grown in the plants. The Aug. 10 ruling is the first federal court decision involving 'bio-pharm' crops, and an important step toward prohibiting hazards and irresponsible field testing of these crops.

"This decision shows that regulatory oversight of this out-of-control industry has been woefully inadequate. The agency entrusted with protecting human health and the environment from the impacts of genetic engineering experiments has been asleep at the wheel," said Paul Achitoff, attorney with Earthjustice.

Sources: Pesticide Action News Updates Service, Aug. 24, 2006, www.panna.org; "Court Rules Federal Government Acted Illegally in Permitting Field Trials of Biopharm Experiments in Hawai'i," Center for Food Safety press release, Aug. 14, 2006. The ruling is available at www.earthjustice.org/library/legal_docs/hawaii-biopharm-order-81096pdf

For background on biopharming, see:

www.foe.org/camps/comm/safefood/biopharm/index.html.

Chinese GE Cotton Farmers Losing Profits

Profits that Chinese farmers once realized through planting genetically engineered (GE) Bt cotton have disappeared, according to a study by the Center for Chinese Agricultural Policy, Chinese Academy of Science, and Cornell University. The reason, say the researchers, is that while bollworms are controlled by the Bt toxin, secondary pests are not, so farmers are spraying their crops up to 20 times per growing season. Up to 35% of the cotton grown worldwide is Bt cotton. The researchers suggest introducing natural predators to kill the secondary pests, developing Bt cotton that resists the secondary pests or planting refuge areas where broad-spectrum pesticides are used to control the secondary pests.

Meanwhile, in Arkansas, bollworms are feeding on GE Bollgard cotton, which contains a single Bt protein, so farmers are spraying the crop with a pyrethroid insecticide. A more expensive variety engineered with two Bt proteins, Bollgard II, is not showing Bollworm damage. Genetically engineered cotton has been growing in the area for a decade.

Sources: "Seven-year glitch: Cornell warns that Chinese GM cotton farmers are losing money due to 'secondary' pests," by Susan Lang, Cornell Chronicle Online, July 25, 2006

www.news.cornell.edu/stories/July06/Bt.cotton.China.ssl.html; "Bollworms Feeding on Bt Cotton in Arkansas," by Lamar James, Arkansas Extension Communications Specialist, Delta Farm Press, July 28, 2006,

<http://deltafarmpress.com/news/060728-cotton-bollworms/>

New Technology May Make Genetically Modified Crops Obsolete

A new agricultural technology, Marker Assisted Selection (MAS), may dramatically improve traditional plant breeding and make genetically engineered crops obsolete.

“Instead of using molecular splicing techniques to transfer a gene from an unrelated species into the genome of a food crop to increase yield, resist pests, or improve nutrition, scientists are now using MAS to locate desired traits in other varieties or, wild relatives of a particular food crop, then cross-breeding those plants with the existing commercial varieties to improve the crop,” writes Jeremy Rifkin.

Rifkin notes that using MAS may reduce by 50% or more the time needed to develop new plant varieties while greatly reducing environmental risks and potential adverse health effects associated with GE crops.

Source: The Cultivator, Aug. 6, 2006, The Cornucopia Institute, www.cornucopia.org.

Two GE Resources

The Genetic Engineering Action Network has published the "The Local Organizing Toolkit" to help individuals organize local grassroots groups to carry out winnable, strategic campaigns. Download the kit free at www.geaction.org/new.html.

A quick, easy-to-understand, valuable "Q&A" on GE foods and their potential problems appears at www.organicconsumers.org/2006/article_1860.cfm.

New Toolkit Covers Risks of Genetically Modified Alfalfa

The Western Organization of Resource Councils (WORC) has released a guide for alfalfa producers and consumers on environmental, agricultural and economic risks that Roundup Ready® alfalfa poses to U.S. conventional and organic farmers, ranchers and consumers. Produced by WORC, A Guide to Genetically Modified Alfalfa presents information on:

- Potential problems with genetically modified (GM) alfalfa;
- Spread of glyphosate-resistant weeds;
- Contamination of organic and conventional crops by GM crops;
- Action steps for farmers and consumers;
- Strategies to minimize risks of crop contamination;
- Monsanto's Technology Use Agreement for Roundup Ready® alfalfa and other GM seeds.

"We hope alfalfa growers will review the information in this guide and think twice about the risks of planting Roundup Ready alfalfa," said Donny Nelson, WORC Chair and an alfalfa grower. "We're asking extension agents and crop advisors not to recommend genetically modified alfalfa to alfalfa growers until the open questions about contamination, liability, and the spread of glyphosate resistant weeds are answered."

WORC, five other farm and consumer groups, and two alfalfa producers sued the USDA in February, challenging the federal government's approval of Roundup Ready® alfalfa. Federal District Judge Charles Breyer has ordered a briefing schedule this fall, and will hear oral arguments in the case on January 17, 2007. A decision in the case is expected in early winter.

The free guide is available from www.worc.org or 406-252-9672 .

Source: Press release, Oct. 3, 2006, John Smillie, Campaign Director, and Kevin Dowling , Communications Director, WORC, Billings, Montana; 406-252-9672

Livestock

E. Coli O157:H7 Wrap-up...For Now

On Oct. 12, 2006, the FDA and the State of California announced that samples of cattle feces on a ranch had the same E. coli O157:H7 genetic fingerprint as the strain that sickened 204 people and killed three. Later, a wild pig with the same strain was found, suggesting that the pig had may have transferred the organism from infected cattle manure or in its own manure. Testing was continuing on this and three other ranches in Monterey and San Benito counties. Among people infected with E. coli O157:H7 from spinach. 31 suffered Hemolytic Uremic Syndrome (HUS).

“While the focus of this outbreak has narrowed to these four fields, the history of E. coli O157:H7 outbreaks linked to leafy greens indicates an ongoing problem,” says the FDA. “As FDA stated in its letter to the lettuce industry in November of 2005, FDA continues to be concerned due to the history of outbreaks and the on-going risk for product contamination of leafy greens.” Some 74% of U.S. fresh-market spinach is grown in California.

FDA announced on September 29, 2006, that all spinach implicated in the current outbreak was traced back to Natural Selection Foods LLC of San Juan Bautista, California. Thirteen product samples were confirmed to contain the E. coli O157:H7 outbreak strain—12 in bags of Dole spinach or Dole baby spinach and one in an unnamed bag.

According to Michael Pollan, the CDC estimates that U.S. food sickens 76 million Americans annually, hospitalizing more than 300,000 and killing 5,000. The potentially lethal E. coli O157:H7 was first found in 1982, after apparently evolving in the gut of feedlot cattle, which stand in manure all day and eat grain instead of grass, creating the ideal habitat for E. coli O157:H7 in their rumen. Some manure from these animals is stored in taxpayer-funded manure pits.

On Oct. 3, a California food safety official claimed positive tests for O157:H7 in eight fecal samples from cattle pastures near the affected spinach fields. Over the past 11 years, 20 E. coli outbreaks have been linked to leafy products from the region, which is also home to many CAFOs (Concentrated Animal Feeding Operations) managing thousands of dairy cows each. E. coli O157:H7 and other potent pathogens can migrate to neighboring farms by contamination of

surface water and groundwater and/or in airborne dust from feedlots or farm fields where manure has been spread. It can also be spread by unsanitary working conditions. Most animal manure and municipal sewage sludge in the United States is spread on conventional crops, often with little regulatory oversight.

Also in October, Federal investigators opened a criminal investigation into measures that Natural Selection Foods and Growers Express had (or had not) taken regarding the safety of their spinach.

In 2004, the world's largest public health association, the American Public Health Association (APHA--www.apha.org), issued a resolution calling for a moratorium on new Concentrated Animal Feed Operations (CAFOs), or "factory farms." The APHA cited problems with CAFOs, including the contamination of drinking water with pathogens from animal waste runoff; growing antibiotic resistance resulting from the millions of pounds of antibiotics routinely fed to animals; severe respiratory problems in CAFO workers; and illnesses among people living near CAFO operations. These factory farms are also notoriously inhumane to animals.

An estimated 54% of livestock in the United States are confined to just 5% of livestock farms, said APHA. These CAFOs generate an estimated 575 billion pounds of animal waste each year. This animal waste contains pathogenic bacteria, including Salmonella, Campylobacter, Cryptosporidium and E. coli O157:H7; heavy metals; nitrogen and phosphorus, which seriously degrade rivers and estuaries; and an estimated 13 million pounds of antibiotics.

Sources: FDA weekly news, www.FDA.gov; "The Vegetable-Industrial Complex," by Michael Pollan, The New York Times, Oct. 15, 2006; "U.S. Opens Criminal Inquiry in Spinach Scare," by Gardiner Harris and Libby Sander, The New York Times, Oct. 5, 2006; "Company: organic spinach not to blame," by Justin M. Norton, AP, Sept. 18, 2006; "The E. coli Spinach Contamination Issue," by Mark Kastel, Sept. 17, 2006, www.cornucopia.org. "Public Health Association Calls for Moratorium on Factory Farms," The Maine Organic Farmer & Gardener, March-May 2004; "E. Coli on Calif. Ranch Matches Outbreak Strain," by Annys Shin, www.washingtonpost.com, Oct. 27, 2006

Sidebar

The E. Coli O157:H7 Story

One reason pasture-fed animals--and their products--are healthier is that the animals eat more on pasture because they like it. This is their natural behavior. On the other hand, confined, grain-fed animals are subject to unnatural, stressful environments, such as overcrowding and excessive ammonia in chicken houses. Likewise, when feedlot cattle are taken to slaughter, their hides are often caked with dried manure that is difficult to remove and may contaminate the meat with E. coli O157:H7, the bacteria that can harm people.

Grain-fed beef animals have a much higher concentration of acid-resistant than of non-acid-resistant E. coli O157:H7. The acid-resistant bacteria are a greater concern for people, because

they survive more easily in the acidic contents of the human stomach, where they can cause disease. This research was done first at Cornell University (Diez, Bonzalez, T.R. Callaway, M.G. Kizoulis, J. Russell, "Grain Feeding and the Dissemination of Acid-Resistant Eschericia coli from Cattle," Science,1998, vol. 281, pgs. 1666-1668), then repeated at the USDA Meat and Animal Research Center in Nebraska (Scott, T., T. Klopfenstein et al., 2000 Nebraska Beef Report, pgs. 39-41, published by USDA).^{[1][2][3][4][5][6][7][8][9][10][11][12][13][14][15][16][17][18][19][20][21][22][23][24][25][26][27][28][29][30][31][32][33][34][35][36][37][38][39][40][41][42][43][44][45][46][47][48][49][50][51][52][53][54][55][56][57][58][59][60][61][62][63][64][65][66][67][68][69][70][71][72][73][74][75][76][77][78][79][80][81][82][83][84][85][86][87][88][89][90][91][92][93][94][95][96][97][98][99][100]}When animals are fed a diet that is heavy in grain, undigested starch accumulates in the colon, ferments and increases the acidity of the colon contents. E. coli bacteria growing in this acidic environment develop a high level of acid resistance, then become more infectious to humans. If the animals are fed hay or pasture, even for just five days prior to processing, the E. coli population is greatly reduced. This research was repeated at the USDA station because feedlot owners were concerned about what the first study said about their meat. In Nebraska researchers tried many diets to reduce the acid level in the cows' colons; the hay diet worked best.

Source: The Benefits of Raising Animals on Pasture,by Diane Schivera, The MOF&G, Sept.-Nov. 2003

Raw Milk Dairies Targeted

In Michigan, farmer Richard Hebron and the Family Farms Co-op, through which he and others distribute raw milk and raw milk products in a CSA-style plan (with customers owning the cows), have had their operations jeopardized as state police confiscated dairy products, a computer and financial records. Retailing raw milk is illegal in Michigan, but the Co-op believed it circumvented that law, since the consumers owned the cows and farmers were paid to board the animals. The actions occurred after Michigan's Agriculture Department learned of children who reportedly became ill after drinking unpasteurized milk. The children's illness was never traced back to any specific food, however. Nevertheless, the department is conducting a weeks-long investigation that is crippling the farmers and the co-op financially.

In a similar case, California authorities shut down raw milk producer Organic Pastures Dairy for over two weeks after four children became ill from E. coli 0157:H7 last summer. No harmful E. coli 0157:H7 bacteria were found at the dairy during the investigation, however.

Business Week writer David Gumpert writes, "In comparison, even though 200 people were sickened by E.coli from California spinach, none of the California spinach farms were shut down." He suggests that as raw and organic milk become increasingly popular, large dairies are pressuring agriculture officials to investigate raw milk producers.

Gumpert updates the raw milk issue at thecompletepatient.com. As we went to press, he had noted that some of the milk being handled by Family Farms Co-op came from Indiana, which, says the FDA, violates interstate commerce law. (The interstate sale of unpasteurized milk is prohibited by law.) When the FDA made the same complaint to Organic Pastures in 2004, that dairy labeled its product being sold outside of California as pet food, making the commerce legal.

Sources: "Getting a Raw Deal?" BusinessWeek.com, 9/28/06, www.businessweek.com/smallbiz/content/sep2006/sb20060928_865207.htm. "States Target Raw-Milk Farmers," by David E. Gumpert, Business Week, Oct. 19, 2006, www.businessweek.com/smallbiz/content/oct2006/sb20061019_952010.htm?chan=smallbiz_smallbiz+index+page_policy

Floating Plant Mats Help Clean Manure Lagoons, Produce Biomass

Studies have shown that plants growing on floating mats can remove excess nutrients from manure lagoons. Scientists in Georgia have been studying how to most efficiently use this method to extract excess nitrogen and phosphorus from wastewater so that it won't become an environmental problem.

Lagoons are commonly used to store wastewater from confined-feeding dairy and swine operations. The nutrient-laden water is generally applied to land as fertilizer, but applied improperly, excess nitrogen and phosphorus may contaminate drinking water, impair soil quality and cause "dead zones" in surface waters.

The Georgia scientists floated mats in small tanks of full-strength wastewater, half-strength wastewater, or an inorganic solution. Vegetation was grown atop floating rafts constructed of PVC pipe and chicken wire that was covered with jute erosion-control matting. Cattail grew best on full-strength wastewater, produced the most biomass, and removed the most nutrients. Harvesting cattail from floating rafts could remove an average of 493 grams of nitrogen and 73 grams of phosphorus per square meter per year.

A new type of floating mat, consisting of plastic foam covered with braided coir (coconut shell fibers) and various plants species that could be used for biofuel, is now being tested.

Source: Agricultural Research Service News Service, USDA, August 2006, Agricultural Research, <http://www.ars.usda.gov/is/AR/archive/aug06/lagoon0806.htm>

Nutrition

Walnuts and Heart Health

English walnuts (the walnuts sold in supermarkets) reduce "bad" (LDL) cholesterol and may have yet another way of enhancing cardiovascular health. Laboratory hamsters that ate feed containing walnuts had significantly lower levels of the natural chemical endothelin, which causes inflammation of arteries and growth of sticky deposits (plaque) on blood vessels. These conditions contribute to heart disease, the leading cause of death in the United States.

All tested levels were effective; they were the equivalent of a human eating three to eight handfuls of walnuts a day. Other research has shown that eating walnuts may affect blood vessels directly. The present study is the first to demonstrate this by showing that walnuts suppress artery endothelin in lab animals.

Source: Agricultural Research Service, USDA, July 31, 2006, www.ars.usda.gov/is/pr

Nutrient Data on Mushrooms Updated

Mushrooms contain several key nutrients, including copper, potassium, folate and niacin, according to recently analyzed data. Seven varieties of mushrooms--white button, oyster, shiitake, enoki, portabella, crimini and maitake--were collected from retail outlets around the country and were analyzed for fat, fiber, protein, carbohydrate, vitamins and minerals, and for ergosterol, a precursor to vitamin D. Most were analyzed raw, but white button mushrooms, commonly used in recipes, were also analyzed after stir-frying and microwaving. Portabella mushrooms were analyzed after grilling, and shiitake after stir-frying. Most nutrients were fully retained when mushrooms were cooked, while others were retained at 80 to 95% of their levels in raw mushrooms.

All of the mushrooms provide a significant amount of copper. Each cup of stir-fried white button mushrooms provides 0.3 milligram of copper--about one-third of the recommended daily intake for adults. Copper helps the body produce red blood cells and drives a variety of chemical reactions that are key to human health.

The mushrooms also provide a significant amount of potassium, which helps the body maintain normal heart rhythm, fluid balance, and muscle and nerve function. Two-thirds of a cup of sliced, grilled portabella mushrooms contains the same amount of potassium as a medium-sized banana.

The new nutrient values for mushrooms will appear at www.ars.usda.gov/nutrientdata.

Source: Agricultural Research Service news Service, USDA, Aug. 18, 2006, www.ars.usda.gov/is/pr

Berries Boost Brain Power

Laboratory animals that were fed berry extracts and then treated to accelerate the aging process were protected from damage to brain function, according to research at Tufts University in Boston and the University of Maryland-Baltimore County. Three groups of 20 rats each were studied for about three months. The control group was fed a standard diet of grain-based chow. A second group was fed chow with blueberry extract equal to one cup daily in humans. A third group was fed chow with strawberry extract equal to one pint daily in humans. After two months, half of the rats in each group were treated to induce the normal losses in learning and motor skills that often come with aging.

Compared with the aged control rats, the aged-but-supplemented rats were much better able to find--and in some cases remember--the location of an underwater platform. Also, aged control rats had less dopamine release than nonaged control rats. But these decreases in dopamine release were not seen in the strawberry- and blueberry-supplemented groups, whether aged or not.

Many studies published during the past eight years showing reduced, or in some cases reversed, declines in brain function among rats whose diets were supplemented with blueberry, cranberry or strawberry extracts or Concord grape juice.

Source: Agricultural Research Service News Service, USDA, August 23, 2006,
www.ars.usda.gov/is/pr

Organic

Study Finds Organic Milk Higher in Omega 3 Fatty Acids

A three-year study, sponsored by Britain's Organic Milk Suppliers' Co-operative (OMSCo), found organic milk contained 68% more omega-3 fatty acids on average than conventional milk. The study, conducted independently by the Universities of Liverpool and Glasgow from 2002-2005 and published in the Journal of Dairy Science, involved a cross section of United Kingdom farms over a 12-month production cycle. Omega-3s are believed to reduce risk of heart disease and have been linked to better concentration in children.

Fourteen scientists involved in the research have written to England's Food Standards Agency (FSA) asking the agency to recognize the health benefits of organic milk. The FSA has repeatedly refused to recognize that any organic food products are healthier than their conventional counterparts. "Over the last few years there has been mounting research confirming the higher levels of omega-3 fatty acids in organic milk. This latest study clearly shows that the higher levels of these essential fatty acids are a result of the whole organic farming system," said Nicholas Saphir, OMSCo Chairman. "We believe that the consumer should have access to this information through the FSA."

Another study, at the University of Aberdeen in 2004, found that organic milk contained on average 71% more omega-3 fatty acids than non-organic.

Source: Agriculture Today, Maine Dept. of Ag., Oct. 5, 2006,
www.maine.gov/tools/whatsnew/index.php?topic=AgTODAYNewsletter&id=24393&v=ArticleNational

Organic Victory: Oil Pipeline to be Re-routed Around Minnesota Organic Farms

In September 2006, The Gardens of Eagan, represented by Paula Maccabee, Esq., of Just Change Consulting in St. Paul Minn., reached an agreement with the Minnesota Pipe Line Company to prevent a proposed 300-mile crude oil pipeline from crossing its certified organic farm. The pipeline is planned to bring crude oil from Canada to the Twin Cities.

This may be the first legal agreement of its type in the country. Minnesota Pipe Line Company also agreed to take specific precautions during construction to mitigate damage to organic farms, protect organic soils and reduce the risk of organic decertification.

The community of organic consumers, farmers and businesses (Organic Consumers Association, Wedge Co-op, Mississippi Market, MOSES, Land Stewardship Project) helped spread the word, resulting in more than 3,000 letters to the administrative law judge and other officials. The Minnesota Department of Agriculture and the Organic Advisory Task Force helped define differences between organic and conventional agriculture. Expert witnesses Dr. Deborah Allan, Jim Riddle and Craig Minowa submitted vital testimony, and both Allan and Riddle served as advisors as well.

Ronnie Cummins of the Organic Consumers Association says the case may set a legal precedent for U.S. organic farms threatened by development.

Sources: Paula Maccabee, Esq., Just Change Consulting, 1961 Selby Ave., St. Paul MN 55104; www.justchangeconsulting.com (via Jon Hinck); "Pipeline to circumvent organic farm," by Frederick Melo, St. Paul Pioneer Press, Sept. 6, 2006, www.twincities.com/mld/twincities/news/local/15447; Organic Bytes, Sept. 8, 2006, Organic Consumers Association, www.organicconsumers.org/2006/article_1972.cfm

Organic Seed List Online

The Organic Materials Review Institute (OMRI) Organic Seed Database at <http://seeds.omri.org/> provides accurate information on the availability and supply of hundreds of certified organic seed varieties, to help growers and certifiers find supplies of organic seed. OMRI provides independent verification of organic certification for listed seeds, so seed suppliers are charged a fee for each seed variety listed per year.

Growers Can Make More Money by Going Organic

Minnesota grain farmers could make more money by switching to organic grain crops, says a four-year study conducted at the Swan Lake Research Farm near Morris, Minnesota. The study analyzed economic risks and transition effects of switching to organic farming.

Researchers David W. Archer and Hillarius Kludze compared an organic corn-soybean rotation with an organic corn-soybean-spring wheat/alfalfa rotation--half grown with conventional tillage and half with strip tillage--with a corn-soybean rotation using conventional tillage. Strip tillage involves tilling only the middle of the seedbed. The scientists found that when strip tillage is used with organic farming, one transition risk is an increase in weeds until farmers learn to manage the system.

Computer simulations projected costs, yields and risks over a 20-year period, using yield and economic data from the four-year study, as well as crop price records of recent years.

Records showed that organic crops fetched much more than conventional: soybeans, up to \$14 more per bushel; corn, up to \$3 more; and wheat, up to \$5 more. Organic alfalfa hay is too new to have a track record, so researchers recorded it as selling for the same price as conventionally grown hay.

Another computer model projected that farmers would net an average \$50 to \$60 more per acre per year by going organic, even with the highest transition costs. The premium price advantage would outweigh the initial higher costs and possibly lower yields, even if organic prices were to drop by half.

Source: Agricultural Research Service News Service, USDA, July 25, 2006, www.ars.usda.gov/is/pr

Canada Closer to Organic Regulation

Canada has pre-published its organic regulation in the Canada Gazette (Vol. 140, No. 35, Sept. 2, 2006, <http://canadagazette.gc.ca/partI/2006/20060902/html/regle2-e.html>). This is a milestone toward putting a national organic regulatory system in place. After a 75-day comment period, the government will review comments and make any necessary revisions before final publication and enactment.

Although Canada has had an organic standard since 1999, it has not been codified into law. Certification of organic producers and handlers as well as accreditation of certifiers have been voluntary except in the province of Québec, which requires certification to the Québec organic standards by certifying bodies accredited by the Conseil des appellations agroalimentaires du Québec (CAAQ).

A national regulation will pave the way for Agriculture and Agri-Food Canada to secure equivalency agreements with other countries, thus facilitating markets for Canadian-produced organic products. When the regulation is finalized, the Canadian Food Inspection Agency (CFIA) will establish a Canada Organic Office (Bureau canadien du biologique).

Source: Organic Trade Assoc., Sept. 1, 2006, www.ota.com.
<http://www.upi.com/NewsTrack/view.php?StoryID=20060830-124124-1358r>

Wal-Mart Organics?

A report released this fall by The Cornucopia Institute, an organic farming watchdog, accuses Wal-Mart of cheapening the value of the organic label by sourcing products from industrial-scale factory farms and Third World countries, such as China. Wal-Mart announced earlier this year that it would greatly increase the number of organic products it offered and price them at a target of 10% above the cost for conventional food.

Mark Kastel, Senior Farm Policy Analyst for the Wisconsin-based Cornucopia, remarked: "If Wal-Mart lends their logistical prowess to organic food, both farmers and consumers will be big winners by virtue of a more competitive marketplace. However, if Wal-Mart applies their standard business model, and in essence Wal-Mart's organics, then everyone will lose."

The Institute's white paper, [Wal-Mart Rolls Out Organic Products—Market Expansion or Market Delusion?](#), argues that Wal-Mart is poised to drive down the price of organic food in the

marketplace by inventing a "new" organic—food from corporate agribusiness, factory farms, and cheap imports of questionable quality.

Wal-Mart, already the nation's largest organic milk retailer, partnering with the giant milk processor Dean Foods (Horizon Organic), recently introduced its own private-label organic milk packaged by Aurora Organic Dairy. Aurora, based in Boulder, Colorado, has faced organic industry criticism and negative press for operating industrial-scale dairies with thousands of cows confined in feedlot-like conditions. The dairy is also the subject of two current USDA investigations into its organic management practices.

When the Cornucopia Institute released a rating of the nation's approximately 70 organic name-brand and private-label organic dairy products (www.cornucopia.org), Horizon and Aurora refused to participate and received the Institute's lowest score.

"Even if it were not for many serious concerns about the propriety of the certification process in China—and the fact that the USDA has provided little if any regulatory oversight there—food shipped around the world, burning fossil fuels and undercutting our domestic farmers, does not meet the consumer's traditional definition of what is truly organic," Kastel stated.

Wal-Mart also depends on Natural Selection Foods, Earthbound Farms, a giant industrial enterprise farming tens of thousands of acres in California, Arizona, Mexico and Chile as its prime vendor for organic vegetables.

The Cornucopia Institute sent a letter to Wal-Mart CEO Lee Scott suggesting that Wal-Mart's approach to organics would likely undermine the corporation's campaigns to attract upscale shoppers to its stores and to help cleanse the reputation of the world's largest retailer in terms of the widespread criticism that it has endured due to its labor and environmental practices.

Source: Press release, The Cornucopia Institute. The Institute's White Paper, Wal-Mart Rolls Out Organic Products. Market Expansion or Market Delusion?, is available at www.cornucopia.org

Pesticides

Board of Pesticides Control Addresses Aerial Spraying
By Russell Libby

Drift and aerial spraying are high priority items for the Maine Board of Pesticides Control (BPC), largely in response to last winter's petitions on aerial spraying and a proposed ban on organophosphates. Much of the September 2006 BPC meeting focused on how to move forward on this issue.

Based partly on staff recommendations, the board moved to establish two committees: one to focus on technical issues regarding drift, a second to bring together people, including farmers, to address some of the challenging issues regarding pesticides applications, ranging from drift to neighbor notification.

The BPC originally was focusing the technical discussion on aerial spraying, but the committee's mandate quickly broadened to related issues. If aerial spraying is restricted, will more ground spraying occur? What are the ramifications of that change? Will growers stop farming some land where ground spray equipment doesn't work due to topography?

A lot of interest exists in considering at least first level alternatives—the “what happens if” questions. The committee will start by examining whether new developments in spray equipment could minimize drift, and whether current regulations are up-to-date. Addressing aerial spraying becomes even more complex when considering such issues as spraying forests or coastal spraying for browntail moths.

Board staff observed that the basic alternatives to aerial spraying are airblast and boom sprayers. Unlike orchards, where the goal is to direct the spray into the foliage, the goal for a crop such as blueberries may be targeted to take advantage of air movement across the field. Henry Jennings, acting director of the board, observed that many more calls are received about aerial spraying than any other uses, and that many of the issues may have as much to do with the equipment being used and the noise as with the spraying itself.

Board member Clyde Walton observed that many different systems, commodities and locations are involved. This committee needs to assess available technologies and the economics of alternatives. Board member Lee Humphries suggested that the stakeholders' committee should include someone who has been sprayed, as well as women: “Women provide the environment for the first nine months.”

The stakeholders committee will evaluate information conveyed by the technical committee and figure out what to do with that knowledge. The board picked possible members of the technical committee and decided to delay starting the stakeholders committee until later in the fall so that they can get some information from the technical committee.

Eric Sideman from MOFGA will be on the technical committee. We are working to make sure representatives of the organic blueberry sector and people affected by spraying are part of the stakeholders' committee.

Draft Language on Unauthorized Pesticide Applications

Staff developed changes to Chapter 20, regarding unauthorized application of pesticides, to clarify that applicators need to defer to consumers' wishes if they decide to stop having pesticides applied to their properties. A long discussion occurred about contract law versus the board's ability to do anything that provides proper protection to the general public. The board voted to send proposed changes forward for public hearing.

Waiver Provisions for Notification

The board approved rulemaking at a future date that would make it easier for people who can't pay the \$20 fee for notification of pesticide applications to apply for a fee waiver, with the staff making determinations.

Hexazinone (Velpar) Monitoring

The board reviewed a draft water monitoring report for hexazinone (Velpar), an herbicide that has been widely used in the blueberry industry. As board member John Jemison observed, despite changes in application rates, timing and form, major decreases in concentrations of hexazinone in the water do not seem to be occurring over time. The concentrations seem to be similar to the last round of monitoring four years ago.

Debate continued over whether low concentrations of hexazinone even matter. Lebel Hicks, BPC toxicologist, said no evidence links the herbicide with any human health problem. Even though it's a triazine, like atrazine, the herbicide lacks a chemical bond that would put it in the same high-risk group. "From risk assessment perspective, is less than 5 ppb an issue? If we keep doing it, then we should change sampling to better assess this."

David Bell from the Maine Wild Blueberry Commission emphasized that research on alternatives has been happening for over a decade. Materials are rotated somewhat, but so far options are limited.

Hicks said that from a risk perspective, energy should probably focus on Guthion. Bell agreed that the industry should be moving forward and said that University of Maine blueberry specialist David Yarborough is always looking for alternative materials but hasn't found much yet. Because blueberries are a minor crop, not many materials are being developed.

Board Planning Priorities

The staff is working through a few other issues from the BPC's priority list, including how to deal with baits in food handling operations. They agreed to work on making Material Safety Data Sheets more available to the public.

The only major priority the BPC hasn't addressed directly is organophosphate use. It will wait to see what the EPA decides to do before returning to this issue.

Public Comment

A letter from a member of the public to the BPC raised concerns about the lack of monitoring, publicity and radio advertising regarding spraying Down East. Henry Jennings responded that this has always been a part of the BPC's activity, but they are not monitoring on salmon streams, partly because no aerial spraying occurs there, and salmon streams are posted.

BPC Reviews Browntail Moth Report

The BPC has monitored browntail moth spraying closely, because the lobster industry has pushed hard for tight standards to prevent contamination of lobster fisheries in the shorefront. At its Oct. 13, 2006, meeting, the BPC discussed the draft report of the Environmental Risk Advisory Committee's (ERAC) browntail moth report to the Legislature (available at www.thinkfirstspraylast.org). The study examined Maine state law requiring a 50-foot buffer from water resources when spraying for the moths. The ERAC study concluded "that the 50-foot buffer appears to be adequate for protection of the water resources provided the wind is off the ocean and the spray is directed away from the water."

The consensus of the ERAC and the invited guests was to ask the Legislature to take two actions:

- To extend the current law 22 MRSA § 1445 for another year with the following modifications:
 - §2--add "mist blowers" to list of equipment between 50 and 250 feet;
 - §2.D--add "and wind speed is greater than or equal to 3 mph";
 - §4--add an exemption for "non-powered equipment used by appropriately certified and licensed applicators."
- To sunset the amended statute on March 31, 2008, in order to allow time for the BPC to incorporate the above protections for marine resources in regulation.

Board members suggested that the report and information for the Legislature include: an appropriate buffer for aerial spraying in the rulemaking process; the monitoring summary with the conclusions section moved to the beginning of the report; monitoring results and report data as supporting documents; and a cover letter clarifying that the BPC has done what the Legislature asked of them and reached virtually the same conclusion as the previous, similar study; indicate that the BPC intends to educate homeowners in the protection area to prevent irresponsible pesticide use and to emphasize alternatives.

Exception to School IPM 5-day Advance Notice for Pesticide Application Rule

During the fall of 2005, two horses and one bird tested positive for Eastern Equine Encephalitis, which prompted a couple of southern Maine schools to immediately treat for mosquitoes adjacent to athletic fields. Because Chapter 27 of the BPC rules (School IPM) requires a five-day advance notice for pesticide applications when school is in session, responding quickly to a public health concern may contradict the rule. Accordingly, the board adopted an interim policy on January 20, 2006, that would exempt powered applications for mosquito control when the Maine CDC has identified arbovirus (arthropod-borne virus) positive animals (including mosquitoes and ticks) in the area. Since arboviruses likely will continue to be a concern, amending Chapter 27 to account for this need would be prudent, the board believes.

The approved amendment would add a new subsection 3C: "When the Maine Center for Disease Control has identified arbovirus positive animals (including mosquitoes and ticks) in the area, powered applications for mosquito control are exempt from Section 4 and 5 (B). Applicators should post the treated area as soon as practical, in a manner consistent with section 4 C (3) (a)."

Stakeholders' Committee on Aerial Applications

The BPC staff proposed a committee of four members from each of three groups of stakeholders:

government, users and those impacted by drift. Board members agreed on the importance of equal representation from all sides of the issue and on having committee members who can listen to opposing viewpoints. The objective of the committee is to find a middle ground that everyone can live with. A point was raised that it is more difficult for members of the public at large to attend than for employees of organizations, companies, agencies, etc., who are coming as part of their jobs. Those public members would most likely be part of those impacted by drift, so care must be taken to maintain balance in the committee with that in mind. Efforts will also be made not to include groups already represented on the technical committee. The meetings will be open to the public, and non-committee members will have opportunities to provide input. Meetings will be held in Bangor and will be posted publicly beforehand (see www.thinkfirstspraylast.org). The BPC staff will begin composing the committee and plan the first meeting for December or January. Given the time frame, rule changes regarding aerial spraying are not likely to be in place before the next growing season.

Best Management Practices for Turf Pesticides and Fertilizers

The BPC staff has produced a draft document outlining best management practices (BMPs) for applying turf pesticides and fertilizers (see www.thinkfirstspraylast.org). The BPC plans to seek feedback on the document from the regulated community, hopefully leading to increased participation in the BMPs as well as increased education of the public by that industry.

BPC board and staff disagreed about whether they should promote alternatives to chemicals (slow-growing grass, yards without lawns, management using organic methods) along with this document. Some argued that promoting alternatives to chemicals could hurt the lawn care industry, and this perception would cause the industry to ignore the BMP document. Others argued that promoting alternatives to chemicals would not hurt the industry and could help shift its practices.

The BPC plans to create a supplemental document outlining the most commonly used pesticides and fertilizers and their associated environmental risks for homeowners and industry professionals to use as a guideline when deciding which products to use.

Yardscaping

The BPC recently launched its Yardscaping demonstration site on Portland's Back Cove Trail with a press conference and signage on the trail showing the design of the site, including low input grasses, and native plants donated by Skillins and O'Donal's greenhouses. Groundbreaking will occur this spring; donations and volunteers are being sought. For more information, see www.yardscaping.org.

The next BPC meetings will take place on Dec. 15 (no snow date) and Jan. 19 (Jan. 26 snow date). Check www.thinkfirstspraylast.org for locations.

[end of BPC reports]

Aerial Spraying Addressed

The environmental group CROPS (Citizens for Reform of Pesticide Spraying) is asking three Hancock County blueberry processors--Merrill Blueberry Farm, G.M. Allen's and Allen's Blueberry Freezer--to stop aerial spraying of pesticides on fields they manage. The citizens are concerned about drift and its health effects, and about reportedly diminished populations of pollinators and birds.

Two Washington County blueberry processors, Cherryfield Foods and Jasper Wyman & Son, no longer use aerial spraying, and the Maine Board of Pesticides Control is addressing aerial spraying as a top priority.

Source: "Group pushes to stop aerial pesticide spraying," Aug. 17, 2006, Bangor Daily News, www.bangordailynews.com; BPC news in this MOF&G.

States Want EPA to Label "Inerts" in Pesticides

Fourteen states, including Maine, petitioned the Bush administration in August to require that pesticide manufacturers disclose "inert" ingredients in their products that can cause health problems. Currently only "active" toxic ingredients that kill pests must be listed, although inerts may comprise up to 99% of a product. Some of these inerts are known or suspected carcinogens or may damage the nervous system, liver and kidneys or cause birth defects and environmental damage.

Inert ingredients must to be listed on nonprescription drugs, foods and cosmetics, by EPA rule.

Source: "States to EPA: Label All Ingredients in Pesticides," by Michael Gormley, Associated Press, Aug. 1, 2006, The New York Times.

Western States Must Post "Salmon Hazard" Warnings by Pesticide Products

As part of a legal settlement with the Northwest Coalition Against Pesticides (NCAP) and its allies, the EPA now requires stores in California, Washington and Oregon to post "Salmon Hazard" signs by hundreds of products that contain any of seven pesticides that contaminate urban streams and can harm salmon or salmon habitat. All pesticides with the ingredients malathion, carbaryl, 2,4-D, diazinon, diuron, triclopyr or trifluralin must carry the warning, according to court order.

The warning reads: "SALMON HAZARD. This product contains pesticides that may harm salmon or steelhead. Use of this product in urban areas can pollute salmon streams."

Source: NCAP Press Release, July 25, 2006. See also www.registerguard.com/news/2006/07/14/c1.bz.warning.0714.p1.php?section=business

Lindane for Seed Treatment Withdrawn

Linane, already banned in 52 countries, was halted for use as a seed treatment by U.S. EPA in August but is still allowed for pharmaceutical use. "It's about time we stopped using this long-lasting, neurotoxic pesticide," says Kristin Schafer, Program Coordinator for Pesticide Action Network North America. "We're pleased EPA has finally done the right thing -- but this chemical linked to brain tumors and hormone disruption is still allowed in lotions and shampoos."

Source: Pesticide Action Network News Update, Aug. 2, 2006, www.panna.org.

Pesticide Exposure May Be Linked to Brain Disease

After the first year of a four-year study, researchers at the University of North Dakota say preliminary findings link pesticide exposure with such neurological diseases as Parkinson's and Alzheimer's. Brain cells were affected even at relatively low doses of pesticides. Some areas lost neurons; in other areas, neurochemicals were expressed in different amounts. Cells that make myelin, for example, were damaged or destroyed, which could lead to diseases such as multiple sclerosis, which occurs when the myelin sheath around nerves is damaged.

The researchers exposed rats to six common pesticides, sometimes as a single, large dose; other times with small doses over nine months.

One of the researchers thinks that the most efficient transport mechanism for these pesticides to humans is airborne pollen, which has been shown to carry pesticides.

Source: "Research suggests link between pesticides and brain disease," by Dan Gunderson, Minnesota Public Radio, July 28, 2006.

minnesota.publicradio.org/display/web/2006/07/27/pesticidestudy/

EPA Bans Carbofuran, Approves 32 Organophosphates

In August, the EPA banned carbofuran after 21 years of review, citing risks to birds and pesticide applicators. But in a controversial ruling, the Agency also approved the use of 32 organophosphate pesticides over the objections of EPA staff scientists and many other public health advocates, who are concerned about the neurotoxicity of these pesticides.

Source: Pesticide Action Network News Updates Service, Aug. 10, 2006, www.panna.org.

Soft Drink Woes, at Home and Abroad

Three years after India's Center for Science and Environment (CSE; www.cseindia.org/) revealed that soft drinks made by Coca-Cola and PepsiCo in India contained pesticides, new studies in 12 Indian states found that every sample tested still contained a mixture of pesticides averaging 24 times the level considered safe by the Bureau of Indian Standards. Levels in some samples exceeded standards by 140 times for the deadly pesticide lindane. Another contained the neurotoxin chlorpyrifos at 200 times the standard. 'This is clearly unacceptable,' declared CSE Director Sunita Narain. The study looked for 15 organochlorine and 13 organophosphate pesticides.

Some schools and states in India banned soft drinks as a result. Frank Lavin, U.S. Under Secretary of Commerce for International Trade, warned that such bans could "blight [India's] hopes of attracting American investment." The state of Karnataka has sued Pepsi over the contamination.

In the U.S., consumers charge that Coca Cola's Vault Zero energy drink, Pepsi's Diet Wild Cherry soda, Kraft Foods' Crystal Light Sunrise and other drinks contain benzene, a chemical linked to leukemia. Lawsuits have been filed in some states, arguing that amounts of benzene exceeded FDA and EPA "acceptable" levels. The chemical may form when ascorbic acid (vitamin C) combines with sodium benzoate or potassium benzoate. The reaction is enhanced by heat or light.

The FDA denies any safety concern, saying levels are relatively low compared with other benzene exposures. The soft drink industry says tap water contains more benzene than these soft drinks.

A check of supermarket shelves shows that many drinks and juices, including lemon juice used in baking, contain benzoate salts and ascorbic acid together.

Sources: Pesticide Action Network News Updates Service, Aug. 10 and 18, 2006, www.panna.org; "Coca-Cola sued, others settle cases over cancer-causing benzene," Associated Press, Aug. 25, 2006, www.usatoday.com/money/industries/food/2006-08-25-coke-benzene_x.htm; supermarket check by The MOF&G editor, fall 2006.

U.S. Court Rejects Weakening of Pesticide Rules by EPA

On August 24, U.S. District Judge John C. Coughenour struck down a Bush administration decision that weakened protections from pesticides. The ruling states that U.S. EPA changes in licensing pesticides for sale lacked scientific justification and violated the Endangered Species Act. The decision nullifies a Bush administration rule enabling EPA to disregard scientific study from other federal agencies regarding endangered salmon when approving pesticide registrations. Environmental groups sued the Administration in 2001, charging the EPA with failure to consult with the National Marine Fisheries Service or the U.S. Fish and Wildlife Service as part of the decision making process for pesticide registration. The groups won, but in 2004, the Administration's response to that ruling was to make a new rule allowing EPA to completely ignore the requirement to consult with the other federal agencies.

Source: Pesticide Action Network Updates Service, Aug. 31, 2006. www.panna.org

U.S. Court Rules for Methyl Bromide Industry

A decision in the U.S. 9th circuit appellate court in Washington, D.C., claims that EPA did not violate clean air laws when it allowed corporations to increase supplies of methyl bromide. This highly toxic fumigant pesticide, linked to severe respiratory illness and Parkinson's Disease, is being phased out worldwide under the Montreal Protocol due to its destructive effects on the

ozone layer. The Natural Resource Defense Council filed the suit against EPA. Karen Lecraft Henderson, one of the Republican-appointed judges who heard the case, is from South Carolina where tobacco growers use large quantities of methyl bromide.

Source: Pesticide Action Network Updates Service, Aug. 31, 2006. www.panna.org

Experts Demand that WHO Stop Promoting DDT

Health and toxics experts worldwide have called on the World Health Organization to reverse its aggressive promotion of DDT for malaria control and expressed outrage at the agency for a statement giving DDT spraying inside homes a “clean bill of health.”

“It is criminal that WHO should make a politically-motivated announcement like this under the guise of protecting the health of children in Africa,” said Dr. Paul Saoko, Director of Physicians for Social Responsibility in Kenya. “We need real solutions to malaria in Africa, not a return to widespread reliance on a failed silver bullet that risks the health of communities already battling this deadly disease.”

WHO's September 15 press statement described a “new” and aggressive approach to malaria control centered on DDT. Sources inside the agency, however, report no reassessment of DDT risk and no official revision of WHO's policy, which already allowed minimal use of DDT in accordance with the global Stockholm Convention. One WHO malaria expert, Dr. Allan Schapira, resigned abruptly prior to the announcement promoting DDT use by the controversial new head of WHO's global malaria program, Dr. Arata Kochi. Roughly half of the Roll Back Malaria staff has reportedly resigned since Kochi took over the program.

“DDT harms human health and is not the best way to control malaria,” says Henry Diouf of Pesticide Action Network Africa. “Malaria is a disease of poverty, and addressing poverty is the long term solution. In the short term, safer and more effective approaches, such as bed nets, rapid identification and treatment of malaria cases and local education about mosquito control are needed in Africa – not more DDT.”

The Stockholm Convention's approach to DDT, adopted by 129 countries, calls for a phase-out of DDT but allows short-term use in some countries while safer and more effective alternatives are put in place.

Kochi's announcement had strong support from the Bush Administration, which recently changed the policy of the U.S. Agency for International Development to increase reliance on DDT in its malaria programs. “The recent shift in US policy reflects a well organized DDT promotion campaign by a handful of aggressive advocates,” says Kristin Schafer, program coordinator for Pesticide Action Network North America. “This effort is supported by conservative organizations and think tanks with funding from the U.S. pesticide industry, including Monsanto.”

Decades of scientific evidence counter the claims of the DDT promoters that its use for malaria control is harmless. Human reproductive disorders associated with DDT are well documented,

including undescended testes and poor sperm quality, premature delivery and reduced infant birth weights and reduced breast milk production. One recent study found clear neurological effects—including developmental delays—among babies and toddlers exposed to DDT in the womb. Researchers in Mexico and South Africa found elevated levels of DDT in the blood of people living where DDT was used to control malaria, and breastfed children in those areas received more DDT than the amount considered “safe” by WHO and FAO. Studies have also linked exposure to increased risk of breast cancer, and the International Agency for Research on Cancer lists DDT as a possible human carcinogen.

More-effective and safer approaches to malaria control are being used in many countries. For example, Vietnam reduced malaria deaths by 97% and malaria cases by 59% when it switched in 1991 from trying to eradicate malaria using DDT to a DDT-free malaria control program involving distribution of drugs and mosquito nets and widespread health education organized with village leaders. Mexico phased out DDT use in 2000 and implemented a successful integrated and community-based approach.

In the wake of the WHO announcement, residents living near the Hindustan Insecticides Ltd. DDT manufacturing plant in Kerala, India, declared that their communities and livelihoods had been destroyed by DDT and other persistent organic pollutants. More than 500 people from Eloor and Edayar, India, presented community demands to the Indian government and WHO, stating, in part: "There is a growing political understanding that a paradigm where the present and future generations are denied clean air and water cannot be seen as development. Scientists all over the world are working towards a dream of a hazardous pesticides- and chemical-free world by 2020. This vision statement is being put forward with a lot of hope by the people of Eloor and Edayar villages with the intention of achieving this dream."

Sources: Press Release, Pesticide Action Network North America, Sept. 26, 2006; Pesticide Action Network News Update, Sept. 29, 2006. www.panna.org.

Scientists Link Farms, Breast Cancer

Researchers studying all 564 Windsor, Ontario, women who developed breast cancer between 2000 to 2002 found that they were 2.8 times more likely than a random control group without breast cancer to have worked on farms. Working on farms and then moving to auto industry jobs increased the likelihood of breast cancer by four times, although working just in the auto industry was not associated with an elevated risk. The research was published in the Oct. 12, 2006, *Annals of the New York Academy of Sciences*.

The Windsor area is a major producer of fruits and vegetables.

Previous research has associated breast cancer with socioeconomic status, diet, age at first pregnancy, and other factors. In the current study, little difference occurred between women with and without breast cancer with respect to hormone replacement therapy, breast-feeding history, smoking, oral contraceptive use, having a mother with breast cancer, and previous pregnancies. The study's statistical methods have been questioned; the researchers plan to study a larger group and try to distinguish among types of farming.

Source: "Breast Cancer More Common in Farm Workers: Study," CBC News, Oct. 12, 2006, www.cbc.ca/health/story/2006/10/12/breastcancer-farm.html?ref=rss.

Free Guide Ranks Pesticide Contamination of Produce

If you can't always buy organic, you can still dramatically lower your family's exposure to chemical pesticides by choosing the least pesticide-contaminated fruits and vegetables. The Shopper's Guide, a wallet-size card, lists the "Dirty Dozen" most contaminated fruits and vegetables, as well as the 12 most "Consistently Clean" items. It's available free at www.foodnews.org in English and Spanish.

The guide was developed by Environmental Working Group (EWG), based on results of nearly 43,000 tests for pesticides on produce by the Department of Agriculture and the Food and Drug Administration between 2000 and 2004. The EWG's computer analysis found that consumers could cut their pesticide exposure by almost 90% by avoiding the most contaminated produce and eating the least contaminated instead.

Eating the 12 most contaminated fruits and vegetables will expose a person to about 15 pesticides a day, on average. Eating the 12 least contaminated will expose a person to fewer than two pesticides a day.

"Federal produce tests tell us that some fruits and vegetables are so likely to be contaminated with pesticides that you should always buy them organic," said Richard Wiles, EWG's senior vice president. "Others are so consistently clean that you can eat them with less concern."

EWG's analysis of federal testing data found:

* Peaches and apples topped the Dirty Dozen list. Almost 97% of peaches tested positive for pesticides, and almost 87% had two or more pesticide residues. About 92% of apples tested positive, and 79% had two or more pesticides. The rest of the Dirty Dozen include sweet bell peppers, celery, nectarines, strawberries, cherries, pears, imported grapes, spinach, lettuce and potatoes.

* Onions, avocados and sweet corn headed the Consistently Clean list. For all three foods, more than 90% of the samples tested had no detectable pesticide residues. Others on the Consistently Clean list include pineapples, mango, asparagus, sweet peas, kiwi, bananas, cabbage, broccoli and papaya.

There is growing scientific consensus that small doses of pesticides can adversely affect people, especially during vulnerable periods of fetal development and childhood when exposures can have long lasting effects. Because the toxic effects of pesticides are worrisome, not well understood, or in some cases completely unstudied, shoppers are wise to minimize exposure to pesticides whenever possible.

While washing and rinsing fresh produce can reduce levels of some pesticides, it does not eliminate them. Peeling also reduces exposures, but also removes valuable nutrients. The best

option is to eat a varied diet, wash all produce, and choose organic when possible to reduce exposure to potentially harmful chemicals.

Although the Shopper's Guide measures only pesticide residues on produce, buying organic also makes sense if you're concerned about bacterial contamination. Organic farmers meet all the sanitation standards required of conventional growers and, on top of that, meet tight restrictions on the use of compost and other organic material that do not apply to conventional fruit and vegetable growers.

Source: Environmental Working Group press release, Oct. 3, 2006

Recycling

Recycle Old Meds Safely

Doctors' advice to flush unwanted medications no longer applies if the public wants to restore or maintain clean drinking water. The Northeast Recycling Council, Inc. (NERC), has published three guides to help prevent medications and bulk compounds used by pharmacies from polluting water systems. In 2000, the U.S. Geological Survey found medications in 80% of 139 water supply streams sampled in 30 states. NERC's new guides show municipal and regional officials how to organize and host safe and legal collections of people's unwanted medications and pharmacy's bulk compounds (e.g., coal tar, phenol, sulfur).

These guides are the result of the USDA and the Environmental Protection Agency supporting nine pilot collections in Maine, New Hampshire, Vermont, Massachusetts and Connecticut. The guides detail best management practices for hosting unwanted medication collections. They are: Operating Unwanted Medication Collections – A Legal and Safe Approach

<http://www.nerc.org/adobe/setting.up.draftFINAL.pdf>

Holding an Unwanted Medication Collection as Part of a Household Hazardous Waste Event - A Legal & Safe Approach

<http://www.nerc.org/adobe/hhw.setting.upFINAL.pdf>

Cleaning Out Bulk Compounding Chemicals From Pharmacies: Developing Partnerships With Household Hazardous Waste Programs – Guidance

http://www.nerc.org/adobe/collecting_bulk_compounding_chemicalsFINAL.pdf.

The Northeast Recycling Council advances an environmentally sustainable economy by promoting recycling, source and toxicity reduction, and purchase of environmentally preferable products and services.

Source: Press release, Northeast Recycling Council, Inc., Oct. 6, 2006, Brattleboro, Vermont; Lynn Rubinstein, 802-254-3636 or Lynn@nerc.org

Spring 2007

Camping

Tanglewood 4-H Camp Receives ACA Accreditation

University of Maine Cooperative Extension's Tanglewood 4-H Camp and Learning Center in Lincolnville has been accredited by the American Camp Association. Accredited camps meet more than 300 ACA standards and safety guidelines, going beyond local and state requirements. Staff qualifications, training, emergency management, building conditions, and hundreds of other aspects of Tanglewood passed an extensive inspection last August.

Tanglewood, a 4-H youth development program of University of Maine Cooperative Extension, is one of the most affordable camps in Maine and has been teaching youth and adults to live harmoniously with the earth for 25 years.

“This accreditation made us take stock of what we do and how we do it,” said camp director and Tanglewood co-founder Cindy Dunham. “These kids mean the world to us. Knowing that what we have been doing for the last 25 years is worthy of this accreditation makes it that much better, both for us and the kids who come here.”

Tanglewood offers day and residential camps for younger children, and discovery trips and leadership training for older children and teens. Adults over age 55 may participate in Elderhostel college-level courses on topics such as natural history and discovering the Maine woods and coast.

For more information, visit www.tanglewood4h.org.

Climate

Farms and Forests Can Reduce Global Warming

America’s farms and forests have a major role to play in reducing the threat of climate change, according to two reports released by the Pew Center on Global Climate Change. Changes in agricultural practices coupled with foresting marginal agricultural lands could offset up to one-fifth of current U.S. greenhouse gas emissions, while creating potential new sources of farming income. In addition, the nation could reduce emissions by 10 to 25% by replacing fossil fuels with biofuels made from agricultural crops.

The two reports are: “Agriculture’s Role in Greenhouse Gas Mitigation,” by Keith Paustian, John M. Antle, John Sheehan and Eldor A. Paul; and “Agricultural and Forestlands: U.S. Carbon Policy Strategies,” by Kenneth R. Richards, R. Neil Sampson and Sandra Brown.

The reports cover agriculture and forestry as sources of greenhouse gases (including carbon dioxide, methane and nitrous oxide) and as “sinks” that can remove carbon dioxide from the atmosphere. They also stress the need to bolster existing programs and develop new ones to capitalize on the opportunity to contribute to climate solutions in these two sectors.

The authors suggest “suitable payments” to encourage farmers to adopt management practices to store carbon in agricultural soils and reduce agricultural emissions of methane and nitrous oxide.

Policy incentives also are needed, they say, to reduce costs of producing biofuels and accelerate key technologies. The report notes that climate mitigation could become a source of new income and cost reductions for farmers. However, access to financing, changes in economic conditions and technologies, and policies will be key factors affecting farmers' willingness to play a part in climate solutions.

The second report, "Agricultural and Forestlands: U.S. Carbon Policy Strategies," considers policies that would ensure a prominent role for U.S. agriculture and forests in national climate mitigation plans. Among potential policies: changing practices on public lands; land use regulations for privately owned forests; and incentives promoting climate-friendly practices on agricultural lands.

For more information, visit www.pewclimate.org.

Commercial Kitchen

Pen Bay Commercial Kitchen Planned

The Down East Business Alliance and the town of Bucksport are creating the Penobscot Bay Commercial Kitchen (PBCK), a 12,000-square-foot facility that will provide a commercial kitchen, as well as dry, cold and freezer space for food processing entrepreneurs. This project is still in the planning and development stages and is seeking input from potential users. To learn more, contact Joe Perkins, Enterprise Development Specialist, jperkins@whcacap.org, or visit www.whcacap.org and click on "Small Business Assistance" on the left.

Food Packaging

Consumers Want Healthful Packaging

The Glass Packaging Institute (www.gpi.org) and Keep It Organic (www.keepitorganic.org) have information about packaging that helps packaging professionals, food manufacturers, retailers and consumers understand the potentially adverse health effects of long-term use of such materials as polyethylene terephthalate (PET) plastic packaging. An overwhelming majority of organic consumers say they prefer that their organic foods be packaged in glass.

Source: Glass Packaging Institute press release, Oct. 26, 2006, www.gpi.org

Genetic Engineering

Bill Seeks to Protect All Maine Farmers from Genetic Trespass

Protect Maine Farmers, a campaign of Food For Maine's Future, has introduced legislation this session aimed at protecting all Maine farmers from negative effects of genetic trespass. Genetic trespass occurs when a patent-protected Genetically Modified Organism (GMO) pollinates or

otherwise contaminates a non-GMO. Farmers whose non-GM crops are contaminated with GM traits may lose markets and consumer confidence; and their herd and soil health may be harmed, as may beneficial insects. As GM lines contaminate more seed varieties, farmers have fewer varieties from which to select.

LR 1873, An Act to Ensure the Longterm Viability of Traditional Farming in Maine, would help protect all Maine farmers from this contamination by placing liability for contamination with the patent-holder of the technology. With GM seeds, the patent-holder of the GM technology in the seeds leases the right to use that technology to a farmer for one growing season. Farmers are not allowed to save or reuse that seed. This bill says that the patent-holder who retains ownership over that technology should also retain liability for negative impacts caused by the spread of that technology. This provision would prevent one farmer from suing another.

The bill would also require legal disputes involving GM technology to be heard in Maine courts, under Maine law--thus protecting farmers who face or file lawsuits from or against a seed company from having to travel to distant courts.

Seed companies testing for use of GM crops without a contract would, under this bill, need to obtain a court order before entering a farmer's property to take samples. The seed company would have to notify the farmer five days before sampling, and the farmer could request that split samples be taken to ensure accurate results.

The bill would require all GM seeds sold in Maine to be clearly labeled and to indicate what traits are patented and who holds that patent. It also would require the seed company to provide separate written instructions, in at least size 12 font, telling purchasers how to reduce contamination.

Seed companies with patents on GM technologies should be responsible for damages caused by the technology, and farmers' basic property rights and fair trial rights should be ensured when dealing with these technologies.

The MOFGA board voted to support the proposed legislation at its February meeting. The bill expands on many issues that have been raised by MOFGA in legislative and regulatory hearings on genetically engineered foods over the past decade.

For more information, contact Logan Perkins through www.protectmainefarmers.org or at 207-615-5158 or logan@protectmainefarmers.org.

'Anti-Freeze' Protein Engineered into Ice Cream

Breyers Ice Cream is beginning to use "anti-freeze" technology, derived from genetically engineered proteins from the blood of the ocean pout. The experimental biotech substance is supposed to help ice cream recrystallize if it warms above freezing. It has undergone little, if any, safety testing. The "anti-freeze" is currently used in Breyer's Light Double-Churned, Extra Creamy Creamy Chocolate ice cream and in a Good Humor ice cream novelty bar. It is called "ice structuring protein" (ISP) on the products' ingredient panels.

Source: www.organicconsumers.org/2006/article_3637.cfm

FDA Moves to Allow Products from Cloned Animals

The FDA has announced that milk, eggs and meat from cloned animals will soon be allowed on the market. Consumer, food safety, and animal welfare groups have condemned the announcement, saying that animal cloning is unpredictable and hazardous and has led to cruel and painful deformities in experimental animals' offspring. The FDA said that foods containing ingredients from cloned animals probably will not have to be labeled as such. The FDA is taking public comments. See www.organicconsumers.org/rd/clones.htm and <http://www.fda.gov/cvm/CloneRiskAssessment.htm>

UN Questions Biotech

Secretary General Kofi Annan of the United Nations warned in November of the potential from accidental or intentional harm relating to the biotechnology industry. He urged more safeguards. "Even novices working in small laboratories will be able to carry out gene manipulation," he noted.

He previously called for a global forum on biological terrorism, to help compensate for weak governmental and commercial initiatives.

Source: "U.N. Leader Urges Biotech Safeguards," Reuters, The New York Times, Nov.19, 2006

Farm Design

SPIN: Small Plot Intensive Farming

Wally Satzewich operates Wally's Urban Market Garden, a multi-locational, sub-acre, urban farm dispersed over 25 residential backyard plots in Saskatoon, Saskatchewan, that are rented from homeowners. Sites range from 500 to 3000 sq. ft., and total half an acre. Produce is sold at The Saskatoon Farmers Market.

Satzewich and Gail Vandersteen were growing vegetables on some 20 acres of excellent, rural, irrigated land, but pests, deer and wind made the job difficult. The couple still lived in the city, where they grew small plots of 10 to 15 crops, such as radishes, scallions, carrots and salad mix. After six years of farming their rural site, the couple realized they could make more money growing multiple crops intensively in the city, so they sold the farm and became urban growers. They grow three crops a year in Saskatoon with much less work than mechanized, large-scale farming. They use a rototiller, a push-type seeder and a few hand tools. They sell quality organic produce at high-end prices.

Satzewich says the city provides a more controlled environment, with fewer pests, better wind protection and a longer growing season. The SPIN (Small Plot Intensive) method is based on their successful downsizing, which emphasizes minimal mechanization and maximum fiscal

discipline and planning.

Roxanne Christensen is co-founder and president of the Institute for Innovations in Local Farming. In partnership with the Philadelphia Water Department, the Institute operates Somerton Tanks Farm, a prototype sub-acre urban farm in northeast Philadelphia that serves as the U.S. test bed for SPIN-FARMING. Christensen contends that the separation of country and city is a bankrupt concept. "As development erodes the rural way of life, agriculture is creeping closer and closer to metropolitan areas. SPIN-FARMING leverages this trend in a positive way – by capitalizing on limited resources and space. Creating Somerton Tanks Farm using the SPIN method required minimal upfront investment, and it keeps operating overhead low.

"For aspiring farmers, SPIN eliminates the two big barriers to entry – sizeable acreage and substantial startup capital. At the same time, its intensive relay growing techniques and precise revenue targeting formulas push yields to unprecedented levels and result in highly profitable income."

In 2003, its first year of operation, Somerton Tanks Farm grossed \$26,100 from a half-acre during a nine-month growing season. In 2005, gross sales were \$52,200.

The first SPIN-Farming workshop is coming to Michael Fields Agricultural Institute in East Troy, Wisc., on March 22-24, 2007. SPIN Cities: Farming Where We Live will equip a new generation of farmers with the know-how to farm commercially without having to own much, if any, land, and without making a large financial investment. Satzewich will show how to replicate his success. For more information about the workshop, contact Janet Gamble at Michael Fields Institute, 262-642-3303 or jgamble@michaelfieldsagainst.org. For more information on SPIN Farming, visit www.spinfarming.com, www.somertontanksfarm.org, www.marketgardening.com/wallysmarketgarden/ or www.michaelfieldsagainst.org/news/events.html.

Source: Farm & Food News, Nov. 2006

Green Roofs

Green Roof Center

Green roofs are common in Germany, have been installed in the United States (notably on Chicago City Hall), and more are planned. Among their benefits, they are aesthetically pleasing, reduce the city "heat island" effect, reduce carbon dioxide impact, reduce air conditioning and heating demands, double or triple roof life, remove nitrogen pollution in rain, neutralize acid rain, reduce noise and storm water runoff and provide songbird habitat. Their design and plant selection depend on the depth of the growing medium and the local climate, but plants are almost always drought tolerant. Low growing plants such as grasses, sedums and other cactus-like plants are used where the medium is only a few inches deep. Where it is several feet deep, shrubs and small trees can be used. Although most easily used on flat roofs, a low pitch roof can also be

“greened.” Green roofs are a significant niche market for horticulturists, especially plant propagators. For more information, see <http://hortweb.cas.psu.edu/research/greenroofcenter/index.html>

Livestock

Probiotics Boost Immunity in Pigs

Trillions of friendly bacteria normally live in the intestinal tracts of humans where they change the intestinal environment and keep harmful bacteria from gaining a foothold that could lead to disease. Scientists are now using the pig as an experimental model to study potential benefits of adding helpful bacteria, or probiotics, to the diet.

Microbiologist Gloria Solano-Aguilar, with the Agricultural Research Service Nutrient Requirements and Functions Laboratory in Beltsville, Maryland, tested the effect of the probiotic strain *Bifidobacterium lactis* (Bb 12; from Chr. Hansen, Denmark) on maturation and stimulation of the immune systems of piglets. Bb 12 is common in probiotic products.

A treatment containing Bb 12 was first fed to three pregnant sows, and a placebo was fed to three controls. The same treatments were then fed to half of each sow’s litters, resulting in four experimental groups.

Tissue samples showed that the probiotic induced innate immune activity in the colon, where it was most concentrated. Animals that received Bb 12 through their mother and directly had the best immune response.

In a separate study, Bb 12 was administered to pigs that had a worm-induced infection. Preliminary results show a better response to the infection because of improved nutrient absorption in piglets that were fed Bb 12.

Source: “Boosting Immunity Using Beneficial Bacteria,” by Rosalie Marion Bliss, Agricultural Research Service Information Staff. For more information, see the Nov./Dec. 2006 Agricultural Research magazine at www.nps.ars.usda.gov.

National Animal ID: No for Now

The USDA, with the publication of the "NAIS User Guide" (<http://ct.pbnews.com/rd/cts?d=244-7485-10-280-33931-343084-0-0-0-1>), is now emphasizing its National Animal Identification System as a voluntary rather than mandatory program and is letting states determine their own rules. To date, only Michigan requires that all cattle have Radio Frequency ID tags. However, in January 2007, Rep. Collin Peterson (D-Minn.), chair of the House Agriculture Committee, said that he may renew the push for a mandatory program of tracking livestock from birth through slaughter.

Sources: Beef Stocker Trends, Nov. 30, 2006; <http://beef-mag.com>;
“Farmers Fear Livestock ID Mandate,” by Marc L. Songini, Computerworld, Jan. 15, 2007,

http://computerworld.com/action/article.do?command=viewArticleBasic&articleId=279030&intsrc=news_list

Livestock Generating Greenhouse Gases

The United Nations says the world's rapidly growing cattle herds are the greatest threat to the climate, forests and wildlife. They also contribute to acid rain, poisoned waters, dead zones in oceans and introduce alien species. A report by the U.N. Food and Agricultural Organization, entitled 'Livestock's Long Shadow,' notes damage by other farm animals but blames the world's 1.5 billion cattle for 18% of the greenhouse gases that cause global warming. Half of that 18% is from clearing vegetation for grazing, and from fuel used to produce fertilizer to grow feed, to produce meat and to transport it. Cattle's gases and manure emit more than one-third of the methane in the world; methane warms the world 20 times faster than carbon dioxide.

Source: "Livestock's Long Shadow," by Geoffrey Lean, London Independent, Dec. 10, 2006

FDA Warns About Fumonisin in Horse Feed

Each year, a number of horses die from eating corn or corn byproducts containing fumonisins--toxins produced by an endophytic mold within some corn kernels. Typically, fumonisins are produced while corn plants grow in the field, but levels can also increase with improper storage after harvest.

More than 10 types of fumonisins have been isolated and characterized, but the most prevalent in contaminated corn is fumonisin B1 (FB1), which is believed to be the most toxic. The dangers from fumonisins are dose-related, and horses and rabbits are the most susceptible of the domestic species.

Fumonisin can produce the serious neurological disease known as leukoencephalomalacia in horses. Most of the investigated cases of fumonisin poisoning in horses have involved corn screenings. For this reason, FDA recommends that corn screenings NOT be used in horse feed. Corn and feed containing corn also must be kept dry and protected from moisture when stored to prevent levels of fumonisins and other mold toxins from increasing. FDA recommends that corn and corn by-products used in horse feed should contain less than 5 parts per million of fumonisins and comprise no more than 20% of the dry weight of the total ration.

For more information, see www.cfsan.fda.gov/~dms/fumongu2.html and <http://www.fda.gov/cvm/fumonisin.htm>.

Source: CVM Update, U.S. FDA, Nov. 29, 2006, www.fda.gov/cvm/Horsefumonisin.htm

Genetics Research Helps Scuttle Scrapie

New genetic tests for diagnosing scrapie disease in sheep have been developed by Agricultural Research Service (ARS) scientists. Contagious, incurable and fatal, scrapie is the sheep industry's chief disease priority, costing U.S. producers some \$20 million per year. Scrapie's

name reflects its most distinctive symptom: uncontrollable itching that makes afflicted sheep compulsively scrape their bodies against nearby objects.

In a diseased animal, abnormally folded prions--proteins that occur in all mammals--cause naturally produced prions to fold abnormally as well. Misfolded prions cause neurological problems and death. Most sheep die one to six months after symptoms appear, although they may be infected but asymptomatic for years.

Geneticist Michael P. Heaton and his colleagues have identified and stored DNA from 15 common sheep breeds. This information is free to researchers and testing labs to quickly and accurately diagnose susceptibility to scrapie, enabling breeders to breed more scrapie-resistant flocks.

Source: Agricultural Research Service News Service, USDA
Laura McGinnis, (301) 504-1654, laura.mcginis@ars.usda.gov,
Nov. 7, 2006. For more information, see the Nov./Dec. 2006 Agricultural Research magazine at www.ars.usda.gov/is/AR/archive/nov06/scrapie1106.htm

Organic

New Potato Makes Organic Growing Easier

Wood Prairie Farm, a family-run, organic farm in Bridgewater, Maine, known for its potatoes, grains and other crops, has been awarded The Mailorder Gardening Association's Green Thumb Award for offering a potato variety suited for organic growing.

Developed by Cornell University and field tested by Wood Prairie Farm's owners Jim and Megan Gerritsen, the new 'King Harry' is resistant to Colorado potato beetles and potato leafhoppers, which dislike its hairy leaves. 'King Harry' is a robust, upright plant with pale purple blossoms that yields a heavy crop of bright-skinned tubers with pearly white flesh. The variety stores well.

For more information, contact Wood Prairie Farm at 1-800-829-9765 or www.woodprairie.com.

Source: Press release, Jan. 30, 2007, Kim Huard, Huard Marketing; 207-347-5264; Don Flannery, Maine Potato Board, 207-769-5061

Maine Highlands Community Organic Forest-Garden Forming

The Social Justice Committee of the Unitarian-Universalist Church of Sangerville and Dover-Foxcroft is organizing a multi-faceted volunteer organization based on the principles of social justice, deep ecology and sustainable living for the benefit of all our citizenry.

We are establishing on one site:

--a community garden following the tenets of organic gardening;

- a demonstration garden that teaches the practices of permaculture, vegan farming and natural farming;
- a public park amid these gardens;
- extensive nature trails in surrounding meadows, woods and wetlands for self-guided tours and nature-study classes on paths (for non-motorized travel) that eventually will lead into the center of town.

We are asking for ideas, expertise, labor, enthusiasm, donations or simply your curiosity. For more information, visit mainehighlandsforestgarden.blogspot.com or contact Sidney Mitchell, 207-564-8687 or blackflybait@gmail.com.

National Campaign for Natural Lawn Care

Organic gardening pioneer Shepherd Ogden has been named executive director for SafeLawns.org, a new national effort to help Americans learn to grow lawns using natural products and techniques.

Ogden founded The Cooks Garden, a premier seed and supply companies, in 1983. He has been an author, lecturer, consultant and organic market gardener for 30 years.

At SafeLawns.org, Ogden will champion the health, social and economic advantages of organic lawn care. “The chemical solutions that have been sold to homeowners over the last 50 years are clearly antithetical to the health needs of Americans and are no longer the best way to achieve a beautiful green lawn... we want to let American families know they have been sold a poisoned bill of goods. Even more importantly, we want to show them a better solution. The newest science-based generation of products and techniques will allow them to have the lawn of their dreams without endangering their families and pets, without poisoning the environment and without further contributing to global warming.”

SafeLawns.org founder Paul Tukey, creator of People, Places & Plants magazine and TV show, says, “Our goals are huge and revolutionary. We are small and grassroots and taking on a multi-billion dollar industry. Having Shep Ogden, who is known and trusted around the world, is an enormous boost to the campaign.”

Lawns cover 40 to 50 million acres in the United States, and most are grown with synthetic fertilizers and pesticides, which can pollute soil and water and cause health problems for humans and animals. The resources and short informational videos available at www.safelawns.org will promote natural alternatives.

Ogden and Tukey also plan to work with the landscaping industry, which still relies primarily on chemicals. Not only are those workers particularly at risk, but the consumer market is moving quickly toward a more natural approach. In the gardening industry, natural products now make up 10% of products sold but are growing by 25% per year.

Canada releases final Organic Products Regulations

In December 2006, Canada released its final publication of the Organic Products Regulations to protect consumers against false organic claims and govern the use of a new Canada Organic logo.

Phased in over the next two years, the Canada Organic logo will be permitted for use only on food products certified as meeting the revised Canadian standard for organic production and containing at least 95% organic ingredients. Following the phase-in, all organic products must be certified for interprovincial and international trade. Canada now joins more than 40 other countries with organic regulations.

Source: January ACORN Organic E-News, Atlantic Canadian Organic Regional Network, www.acornorganic.org

Counties Spur Conversion to Organic

The Cherokee County Board of Supervisors in Cherokee, Iowa, has voted to provide up to 100% county tax relief per year for up to five years for growers who convert from conventional to certified-organic farming. Woodbury County, Iowa, has a similar policy.

Source: What's News in Organic, Dec. 2006, The Organic Trade Assoc., www.ota.com

Energy Efficiency of Organic

Organic farms use about 30% less energy to produce a bushel of corn than conventional farms.

Source: "Impacts of Organic Farming on the Efficiency of Energy Use in Agriculture," The Organic Center, www.organic-center.org

More Cancer Protection from Organic Strawberries

Researchers at the Swedish University of Agricultural Sciences in Alnarp and Lund University found that extracts from organically grown strawberries inhibited the proliferation of human colon and breast cancer cells more effectively than extracts from conventionally grown strawberries.

Source: What's News in Organic, Dec. 2006, The Organic Trade Assoc., www.ota.org; citing an article by Prof. Joe Cummins and Dr. Mae-Wan Ho on the member site of the Institute of Science in Society, www.i-sis.org.uk/osscc/php

Better Tools Needed to Build Organic Soils

Building better soils is one of the most important benefits of organic farming systems. A report by The Organic Center proposes a new method to quickly and cost-effectively track changes in soil quality brought about by the transition to organic farming.

Alan Franzluebbbers, Ph.D. and Richard Haney, Ph.D., two leading USDA Agricultural Research Service soil scientists, wrote The Organic Center's Critical Issue Report (CIR 2006.2),

"Assessing Soil Quality in Organic Agriculture," available free at www.organic-center.org/science.environment.php. The report explains why better tools are needed to manage the transition of soils when farming methods change from chemical-based to organic.

"How we manage soil and how the soil responds to this management are critical issues facing the long-term success of our society," says Alan Franzluebbers, ecologist with the USDA-Agricultural Research Service in Watkinsville, Georgia and co-author of the report. The proposed minimum-data-set (MDS) approach for assessing soil quality is composed of routine chemical and biological assays that can be carried out in most soil testing laboratories for a collective cost of less than \$100 per sample.

In 2007, The Organic Center plans to begin a national survey of soil quality on conventional, transitional and organic acreage. The Center's project will apply, test and refine the MDS approach, and integrate the measures into an index of soil quality.

Soil microbial activity, for example, can be a benchmark for transitioning from conventional to organic farming systems.

For example, microorganisms are very sensitive to changes in the soil, so farmers might track the impact of management practices on soil microbes.

The nonprofit Organic Center was founded in 2002 to present and provide peer-reviewed scientific evidence on how organic products benefit human and environmental health.

Source: Agriculture Today, Dec 6, 2006, Maine Dept. of Ag, www.maine.gov/tools/whatsnew/index.php?topic=AgTODAYNewsletter&id=26009&v=ArticleNational. For information about The Organic Center, see www.organic-center.org.

The Butz Stops Here

In 1971, U.S. Secretary of Agriculture Earl Butz said that if the U.S. adopted organic farming methods, "someone must decide which 50 million of our people will starve!" The U.S. population at the time was a little over 200 million. (Butz later resigned after allegedly making racist statements; and even later was found guilty of tax evasion.)

Recent reports show how wrong Butz was. University of Michigan researchers looked at 293 studies comparing yields on organic vs. non-organic farms and found that yields of major crops in the developed world were lower on organic than conventional farms, but were higher in developing countries. Using a conservative model, they found that the world's current production of 2,786 kilocalories per person per day would be reduced to 2,641 if crops were grown organically worldwide; under an optimistic model, organic yielded 4,381 kcal per person per day. Healthy people require an average of 2,200 to 2,500 kcal/day.

A Danish study also found that models predicted lower total food production in Europe and North America under organic systems but increased yields in Africa, Asia and Latin America.

Unfortunately, the complexity of the world food system causes hunger, not the amount of food produced. Knowing, however, that organic agriculture can feed all, its other benefits should prompt further conversion: Soil erosion, chemical pollution and harm to wildlife are estimated to be one-third those of conventional farming. Organic foods carry much lower concentrations of pesticide residues than non-organic; and some studies show more health promoting antioxidants in organic foods. The increased labor requirements on organic farms may help redistribute resources where unemployment is high, helping stabilize rural areas, according to the International Fund for Agricultural Development.

Source: "Can organic farming feed us all?" by Brian Halwell, What's News in Organic, Dec. 2006, The Organic Trade Association, www.ota.com. Originally published in WorldWatch Magazine, May-June 2006.

Who Owns Organics?

The latest iteration of the Who Owns Organics graphic is posted at www.cornucopia.org, thanks to Phil Howard of Michigan State University. The graphic illustrates the major organic name-brands and which corporations own and control them.

Howard has also prepared a chart highlighting the major independent companies still operating in the organic industry and a chart showing who owns the private-labels in the marketplace.

USDA Stacks Organic Panel with Industry Reps

The USDA has appointed four new representatives with ties to corporate agribusiness to the National Organic Standards Board (NOSB)--the organic community's traditional watchdog over organic standards. Two representatives come from General Mills and Campbell's, companies whose profits are almost entirely based on non-organic crops grown with synthetic pesticides and fertilizers. For more information, see www.organicconsumers.org/rd/nosb.cfm.

Wal-Mart Charged with Selling Non-organic Food as Organic

The Cornucopia Institute, an organic farming watchdog, has filed a formal legal complaint asking the USDA to investigate allegations of illegal "organic" food distribution by Wal-Mart Stores, Inc. Cornucopia has documented cases of non-organic food products being sold as organic in Wal-Mart's grocery departments.

"We first noticed that Wal-Mart was using in-store signage to misidentify conventional, nonorganic food as organic in their upscale-market test store in Plano, Texas," said Mark Kastel of The Cornucopia Institute. Cornucopia staff visited other Wal-Mart stores in the Midwest and documented similar improprieties in the produce and dairy sections.

Cornucopia notified Wal-Mart's CEO Lee Scott about the problem in a letter on September 13, 2006, but the same misrepresentations were observed weeks later at Wal-Mart stores in multiple states; and Cornucopia noted in January 2007 that two months after filing its formal legal

complaint with the USDA, many of the deceptive signs at Wal-Mart stores were still in place.

Fines of up to \$10,000 per violation for proven incidents of organic food misrepresentation are provided for in federal organic regulations.

The Cornucopia Institute has also accused Wal-Mart of cheapening the value of the organic label by sourcing products from industrial-scale factory-farms and Third World countries, such as China.

For more information, see “Wal-Mart Rolls Out Organic Products—Market Expansion or Market Delusion? at www.cornucopia.org.

Pesticides

Board of Pesticides Control Public Hearing

By Melissa White

Maine’s Board of Pesticides Control (BPC) held a public hearing on November 17 on several proposed rule changes.

- A proposed change to Chapter 20 (Special Provisions) requiring a written agreement in order for a commercial pesticide application to take place met with a lot of opposition from the pesticide industry during the public comment period. The board has been working on a modification of the rule change that would still require some form of ‘positive verification’ before an application, but not necessarily in the form of a written contract.
- A proposed change to Chapter 27 (Standards for Pesticide Applications and Public Notification in Schools) will allow schools to spray immediately when the Maine Center for Disease Control has identified arbovirus-positive animals (including mosquitoes and ticks) in the area, waiving the otherwise required five-day notification period for pesticides applications.
- A proposed change to Chapter 31 would have consolidated several categories of commercial pesticide applicators, simplifying the examination process. Several members of the blueberry industry objected to elimination of a blueberry category on the grounds that it would make the examination process more difficult for licensed applicators. The board agreed to maintain the blueberry license category and keep the blueberry exam.
- Proposed changes to Chapters 40 (Maine Restricted and Limited Use Pesticides) and 41 (Special Restrictions on Pesticide Use) would change the classification of Trichlorfon (Dylox, Proxol) from limited use to restricted use, thereby eliminating the special provisions and procedures previously associated with its application. This rule change was in response to a request from the lawn care industry in order to have a more effective tool against grubs. The proposed change was opposed by MOFGA at the November public hearing, and the board reviewed the rule at its December meeting, where a straw

poll showed the proposal, as written, did not have sufficient support to be adopted. There was some indication that a revised proposal with additional precautions to minimize the potential for exposure may get more support. At the January meeting, a revision of the rule change was brought to the board that included several special restrictions associated with the use of trichlorfon. The board voted to proceed with rulemaking with the language as presented.

- Two proposed changes to Chapter 28 (Notification Provisions for Outdoor Pesticide Applications) would increase access to information:
 1. If requested, outdoor pest control applicators shall make ‘reasonable efforts’ to supply a copy of the Material Safety Data Sheet and/or pesticide label;
 2. A mechanism would waive the fee for pesticide notification.

On the Horizon

Possible topics for future rulemaking include:

- pond dyes (making certain ones available to private pond owners as a solution to algal growth);
- indoor notification registry (pending outcome of current proposed legislation);
- development of buffer zones to protect surface water.

Standards for Indoor Pesticide Applications and Notification Requirements (Chapter 26)

This law, requiring applicators to establish procedures and standards for pesticides applications inside specified occupied buildings, including notification about pending pesticide applications, went into effect on January 1. According to board member Richard Stevenson Jr., this new law is proving difficult for the pesticide industry to implement; he estimates about 1% compliance now. Visit the BPC Web site at www.thinkfirstspraylast.org for more information about this rule.

Bedbugs

Chapter 26 of the board’s rules requires indoor applicators to identify pests specifically and evaluate the infestation and the associated damage before treating, except with a history of pest infestation or when treating for public health pests designated by board policy. During the development of Chapter 26, much testimony addressed the need to aggressively treat for bedbugs, an emerging indoor pest problem. At the November meeting, the board voted to designate bedbugs as a public health pest.

Aerial Spray Update

The Aerial Spray Stakeholder Committee members have been chosen and include Heather Spalding, MOFGA’s associate director. Board member John Jemison will co-chair with staff member Henry Jennings, with meetings beginning this spring. The Aerial Spray Technical Committee has met several times. Contact Eric Sideman (esideman@mofga.org) for an update on the committee’s progress.

Given the timing of the work of these two committees, no rule changes on aerial spraying will be made this legislative session.

Bt Corn

At the December meeting, staff toxicologist Lebel Hicks told the board that Dow AgroScience had contacted her about applying for registration of genetically-engineered Bt corn. When the board received registration requests for plant-incorporated pesticides in 1994, 1995 and 1998, it convened a Medical Advisory Committee (MAC) to review the health effects and an Ad Hoc Resistance Committee to discuss the potential development of insect resistance.

The board agreed to reconvene the Ad Hoc Resistance Committee and to create a mechanism to evaluate the issue of pollen drift, if it receives an application to register a plant-incorporated insecticide. Most board members thought that the MAC review would not be necessary, as evidence of human health risks associated with the use of plant-incorporated pesticide products does not seem to have emerged with the use of such products over the last decade. However, board member Lee Humphreys noted that studies done in other countries have shown risk to human health; staff toxicologist Hicks will investigate the topic.

As of February 2007, the BPC had not received an application for the use of Bt corn, and no discussion of the issue occurred at the January meeting.

Better Brush Management at Guardrails?

Robert Moosmann of the Maine Department of Transportation told the board about a new mowing system the department may trial to more effectively manage brush adjacent to guardrails. The mower, manufactured by Diamond Mowers of South Dakota, holds herbicide on the bottom of the cutting blade (without spraying or dripping); as the blade cuts the plant, the herbicide is wiped on the cut stem. Moosmann hopes that this will reduce overall pesticide use and eliminate drift and safety issues of backpack applications.

Legislative Update

The following bills relating to pesticides have been submitted:

LD 1798 An Act To Provide for Public Notification of Indoor Pesticide Applications

LD 329 An Act To Prohibit the Use of Deltamethrin or "DECA"

LD 728 An Act to Require a Commercial Pesticide Applicator's License in Food-handling Establishments

LD 955 An Act To Prohibit Aerial Spraying of Pesticides Near Buildings, Roads and Bodies of Water

Another bill, "An Act to Fund Pesticide Education in the State," is awaiting legislative approval. It proposes a 15 cent charge on pesticide containers to fund homeowner education.

[end BPC news]

Maine Ag Dept. Surveys Exotic Pests

The Maine Department of Agriculture surveyed 12 farms in eight Maine counties for eight exotic pests last year. Fortunately, none are known to be established in Maine yet. Because many exotic pests are easily transported on vehicles (for example, the brown marmorated stink bug was found on four RVs in Maine this fall), the department continues to watch for these pests, which include the Swede midge, leek moth, two species of wireworms, two species of root knot nematodes, Old World bollworm and the brown marmorated stink bug. If you are interested in participating in the 2007 survey (which includes free visits from friendly entomologists during the growing season), contact Kathy Murray at 287-7616 or Karen Coluzzi at 287-7551.

Historic Chemical Regulation Policy in Europe

The European Union took historic action in December 2006 by adopting REACH (Registration, Evaluation, and Authorization of Chemicals) — the world's toughest policy for dealing with dangerous chemicals. Under REACH, companies that produce or import some 1500 chemicals in Europe must provide health and safety data and substitute safer alternatives for the worst toxics. Special authorization will be required to continue use of some of the most dangerous chemicals. REACH is not comprehensive; for example, pesticides are not addressed; and European public health and environment groups protested a change just before the final vote that they claim weakens the key "substitution principle." Still, REACH has put the global chemical industry on notice that nations are insisting on more health-protective regulation, and U.S. chemical industry representatives worked hard to defeat the legislation. The views of many U.S. advocates were reflected by Daryl Ditz of the U.S. Center for International Environmental Law, who told the Los Angeles Times, "To protect the health of Americans and the competitiveness of U.S. companies, we must now overhaul our own laws on toxic chemicals."

Source: Pesticide Action Network News Update, Dec. 21, 2006; www.panna.org

EPA to Phase Out Guthion...Slowly

The Environmental Protection Agency (EPA) will phase out the use of azinphos-methyl (AZM or guthion), a deadly pesticide, developed from World War II-era nerve toxins, that poisons farmworkers and injures their children. The phase-out will take six years for the most widespread uses of the pesticide.

Erik Nicholson of the United Farm Workers of America says that the phase out is welcome, "but it is inexcusable for EPA to allow this pesticide to continue poisoning workers for 6 more years."

Azinphos-methyl is a highly neurotoxic organophosphate insecticide. Organophosphate insecticides attack the human brain and nervous system. Exposure can cause dizziness, vomiting, convulsions, numbness in the limbs, loss of intellectual function, and death. Farmworker families and communities are exposed to organophosphates through exposures on clothing, contamination of cars, and drift onto outdoor play areas.

Under federal law, EPA decides which pesticides may be used throughout the United States. In 2001, EPA found that AZM poses unacceptable risks to workers, but it allowed the pesticide to continue to be used for four more years because less toxic alternatives might cost a bit more to use. Farmworker advocates challenged that decision in federal court in Seattle, because EPA failed to account for the costs of poisoning workers, exposing children, and polluting rivers and streams. In the lawsuit, EPA committed to reconsider whether to ban AZM, which led to the phase-out decision.

EPA will phase out all uses of AZM by 2012 with some uses phased out by 2007. The decision would also eliminate aerial spraying, require 100-foot buffers around water bodies, reduce application rates, require buffers around buildings and occupied dwellings, and require medical monitoring of workers entering fields sprayed by AZM.

AZM is used primarily to kill insects on orchard crops such as apples, cherries, pears, peaches and nectarines. Greatest uses occur in Washington, Oregon, California, Michigan, Georgia, New York, New Jersey and Pennsylvania

Source: Earth Justice press release, Nov. 16, 2006; for more information, see www.epa.gov/oppsrrd1/op/azm/phaseout_fs.htm, www.earthjustice.org/campaign/display.html?ID=9, and www.fwjjustice.org/

Music Video about Bhopal

Terry Allan, a MOFGA member who recently returned from spending three years creating a medicinal herb garden in Bhopal, India, has written, directed and produced a five-minute music video about the human costs of the disastrous pesticide plant explosion in Bhopal 20 years ago. *Flames Not Flowers* is posted at www.youtube.com/watch?v=ewe4CJJRvY. The beautiful spirit of those who are helping survivors (including many survivors themselves) is contrasted with the horror of the results of the explosion, in graphic images.

Michigan Pesticide Activist's Lawn Dosed with Pesticides

Tess Karwoski, nurse and health policy director for the Michigan Environmental Council, was at home, talking on the phone with a colleague about pesticides in schools last September, when a truck pulled up in front of her home. She looked out to see the Tru-Green Chem-Lawn truck with a long hose winding its way through her yard and organic garden. By the time she got outside and demanded that the pesticide applicator stop, her lawn and garden had been sprayed with MCPA, methyl prop and dicamba pesticides—applications she hadn't requested.

In fact, a prominent "pesticide-free lawn" sign was posted on her lawn—just feet away from a newly placed Chem Lawn flag warning people to stay off the lawn. Karwoski was devastated to have her organic garden and lawn ruined by the pesticide, but was much more worried about the health and safety of the applicator, who wore no mask. She talked with him about the risks of his

job, including impacts on sperm count, reproductive capacity and increased likelihood of nerve-system disorders and cancers. She commented, “If anything, I want to get him out of that line of work. He shouldn’t set himself or his children up for problems in the future. He’s young; he can find a safer job.”

Source: “Michigan Nurse and Activist Lawn Receives an Unwelcome Dosing of Pesticides,” by Kathryn Gile, Pesticide Action Network News Update, Sept. 22, 2006, www.panna.org/resources/documents/activistReceivesDose20060920.dv.html

Plant Diseases

Common Weed Hosts Potato Blight

Scientists with the Agricultural Research Service (ARS) in Orono, Maine, discovered that *Phytophthora infestans*--the microorganism that causes late blight of potatoes—finds refuge in an alternate host plant: hairy nightshade.

Best known as one cause of widespread hunger, illness, death and emigration in 1840s Ireland, *P. infestans* still threatens global potato and tomato production. Worldwide, growers spend more than \$3 billion each year for fungicides and other control measures.

Modesto Olanya, a plant pathologist at the ARS New England Plant, Soil and Water Research Laboratory in Orono, learned of the possible alternate host in 2004 from colleagues at the University of Maine Cooperative Extension in Presque Isle. Extension agents there discovered hairy nightshade plants speckled with dark, oily spots. Olanya analyzed the microorganisms on the plants and verified that hairy nightshade is an alternate host of *P. infestans* in Maine. Olanya and University of Maine collaborators found that 55% of fields assessed in the state contained the plant. *P. infestans* has also been reported on hairy nightshade in California, Michigan and Washington, and in controlled experiments in North Dakota.

Consequently, growers are learning the importance of controlling hairy nightshade as part of their late blight management program.

Source: Agricultural Research Service News Service, USDA, Erin Peabody, (301) 504-1624, erin.peabody@ars.usda.gov, Dec. 12, 2006; www.ars.usda.gov/is/pr

Soil Fertility

Adjusting Fertilizer to Create Low-Phytate Crops

Giving too much phosphorus to wheat and barley plants increases the amount stored as phytate, rather than as more digestible forms of phosphorus. Livestock that are fed high-phytate grains excrete more phosphorus in their manure, which can pollute water. Also, phosphorus is a finite resource that could be thoroughly mined within the next 25 years.

Agricultural Research Service (ARS) geneticist Edward J. Souza and colleagues found that soil phosphorus levels may affect grain phytate levels as much as plant breeding can, offering complementary solutions to the nutritional and environmental problems caused by high phytate levels in grains. Besides being more environmentally sound, getting the application rate for phosphorus fertilizers just right might improve the nutrients delivered by grain crops such as wheat and barley.

Not only is the phosphorus in low-phytate grain crops more digestible by people, but low-phytate grains free up minerals essential to human nutrition: zinc, manganese and iron.

Source: Agricultural Research Service News Service, USDA
Don Comis, (301) 504-1625, donald.comis@ars.usda.gov
Nov. 29, 2006. For more information, see www.ars.usda.gov/is/pr
or <http://crop.scijournals.org/cgi/content/full/46/6/2403>

New Soybean Pulls Nitrogen from Soil, Not Air

Growers may soon be able to plant a non-transgenically modified soybean variety that improves recovery of nitrogen from land-applied animal waste, thanks to a newly released soybean germplasm that removes large amounts of nitrogen applied to soil. If developed into a new cultivar, it could help animal producers manage waste generated by their operations.

The Agricultural Research Service (ARS) released the soybean germplasm, called Nitrasoy, in conjunction with the North Carolina Agricultural Research Service at North Carolina State University in Raleigh. Agronomist Joseph Burton, physiologist Daniel Israel and microbiologist Paul Bishop developed the germplasm. They are with the ARS Soybean and Nitrogen Fixation Research Unit in Raleigh.

Today's commercial soybean varieties live symbiotically with rhizobial bacteria that thrive in the plants' root nodules in soil. The bacteria turn nitrogen gas--which makes up about 80% of the atmosphere--into nitrogen fertilizer that the plant can use to make proteins.

Nitrasoy is a unique, non-nodulating soybean that requires a large amount of soil-applied nitrogen to obtain excellent seed yield. Its capacity to recover applied nitrogen from soil reduces the risk of nitrate pollution of groundwater.

In field tests, Nitrasoy accumulated up to 17% more soil-applied nitrogen in its seed than did its parent, D68-0099. In other tests, Nitrasoy had greater seed yield than three other genotypes after each had been fertilized with swine-lagoon effluent.

Nitrasoy seed has been deposited in the National Center for Genetic Resources Preservation and the National Plant Germplasm System. Nitrasoy seeds are available for research purposes from the ARS lab in Raleigh.

Source: Agricultural Research Service News Service, USDA
Rosalie Marion Bliss, (301) 504-4318, rosalie.bliss@ars.usda.gov

Dec. 4, 2006; www.ars.usda.gov/is/pr

Variance from Winter Manure Spreading Ban Possible

Maine's Nutrient Management Act of 1997 prohibits spreading manure on fields between Dec. 1 and March 15 of the following year except by variance from the Commissioner of the Maine Department of Agriculture, Food & Rural Resources. The variance provision was included to accommodate economic hardship and/or circumstances beyond a farmer's control, such as excessive rainfall preventing access to fields.

The Department evaluates requests on a site-specific basis. Variances are not approved until the applicant has clearly demonstrated that winter spreading is necessary and has outlined steps to minimize the need for winter spreading in the future. Certain farms operating under Comprehensive Nutrient Management Plans (CNMP) may not be allowed to spread on snow-covered or frozen ground even with a variance; these farmers should contact appropriate agency personnel for guidance.

A variance request application and a guideline sheet, "Variance Criteria for Winter Spreading of Manure on Frozen and/or Snow-Covered Soil," are available from Mark F. Hedrich, Nutrient Management Coordinator, Maine Dept. of Agriculture, Division of Animal Health & Industry, State House Station # 28, Augusta, Maine 04333-0028; (207) 287-7608; mark.hedrich@maine.gov.

Source: Maine Agriculture Today, Dec. 6, 2006, Maine Dept. of Ag, www.maine.gov/tools/whatsnew/index.php?topic=AgTODAYNewsletter&id=26003&v=Article
Maine

Trees

Maine Tree Club Offers Outings and Education

Maine citizens and visitors can learn more about one of our state's greatest resources by joining the Maine Tree Club, an educational project designed for people of all ages to learn about trees, offered by University of Maine Cooperative Extension, the Maine Forest Service and the Pine Tree State Arboretum.

The annual registration fee for the Club is \$20 per person, \$30 per couple, \$35 per family and \$65 per group of up to 15. A limited number of Maine Tree Club scholarships are available for those in need. There is no deadline for registration. Request a free brochure from University of Maine Cooperative Extension, 800-287-1471, treeclub@umext.maine.edu, or www.umaine.edu/umext/mainetreeclub.

The Club is planning at least three outings around Maine in 2007 to get people into the woods for hands-on learning and enjoyment. Through outings and twice-monthly fact sheets featuring Maine tree species, members will learn to recognize 50 types of trees over two years and gain skills that can be applied in their own yards and communities.

Participants receive a 10X hand lens for viewing tree parts, an attractive notebook for fact sheets, a pocket guide to Maine trees, and several practical guides related to tree growth and care.

Summer 2007

E. coli

FDA Finalizes Report on 2006 E. Coli Outbreak in Spinach

The Food and Drug Administration (FDA) and California's Department of Health Services (CDHS) released a joint report in March on an extensive investigation into the causes of an E.coli O157:H7 outbreak last fall that was associated with contaminated Dole Baby Spinach and resulted in 205 confirmed illnesses and three deaths. The inquiry was conducted by the California Food Emergency Response Team (CalFERT), a team of experts from FDA's district office in San Francisco and CDHS. They were assisted by experts from the Centers for Disease Control and Prevention (CDC) and Animal and Plant Health Inspection Service of the U.S. Department of Agriculture.

The investigators identified environmental risk factors and areas that were most likely involved in the outbreak, but were unable to determine definitely how the contamination originated.

The report describes the work of investigators following the first reports from CDC in September 2006 of an apparent outbreak of E.coli O157:H7 linked to consumption of bagged spinach. The probe initially focused on the processing and packaging plant of Natural Selection Foods, LLC in San Juan Bautista, Calif., where the contaminated products had been processed.

The next focus was the source of the spinach in 13 bags containing E.coli O157:H7 isolates that had been collected nationwide from sick customers. Using the product codes on the bags, and employing DNA fingerprinting on the bacteria from the bags, the investigators matched environmental samples of E.coli O157:H7 from one field to the strain that had caused the outbreak. Potential environmental risk factors for E.coli O157:H7 contamination at or near the field included the presence of wild pigs, the proximity of irrigation wells used to grow produce for ready-to-eat packaging, and surface waterways exposed to feces from cattle and wildlife.

Because the contamination occurred before the start of the investigation, and because of the many ways that E.coli O157:H7 can be transferred -- including animals, humans and water -- the precise means by which the bacteria spread to the spinach remain unknown.

In August 2006, the FDA announced a "Leafy Greens" initiative that focuses attention on the produce, contamination agents and other areas of potential public health concern associated with such products. FDA's draft final "Guide to Minimize Microbial Food Safety Hazards of Fresh-cut Fruits and Vegetables" recommends measures to prevent microbial contamination when processing fresh-cut produce.

Although washing produce would not have prevented the 2006 E. coli outbreak involving spinach, washing can reduce the risk of some other contaminants.

The report on the probe of the Dole spinach contamination, "Investigation of an Escherichia coli O157:H7 Outbreak Associated with Dole Pre-Packaged Spinach," is posted at <http://www.DHS.ca.gov>.

Source: Press Release, Steven Heim, Boston Common Asset Management, 617-720-5557 or 617-785-9527; Daniel Stranahan, The Needmor Fund, 206-794-3656; Mark Kastel, The Cornucopia Institute, 608-625-2042; March 23, 2007

Farm Design

Rethinking Agriculture—Farming As If Your Life Depended On It

"Weeds, insects and diseases are not due to a lack of pesticides, they are the messengers" of poor soil, says Mark Fulford of Monroe, Maine. Recovering soil can rebuild real health and original wealth while developing skills and resources for local food independence, he adds, and his classes teach those skills. This summer Fulford will teach the following:

June 9	Inoculants, Vermiculture and Compost Teas
June 2	Small Grains and Cover Crops
July 14	Foraging and Plant Identification
July 21	Basic Dowsing--History, Theory and Practice
July 28	Non-Electric Water
Date Pending	Foliar Formulas for Quality Crop Production
Date Pending	Building the Wood Fired Cobb Oven
Date Pending	Building the Larissa Solar Food Dryer

For more information, including costs, see www.lookfar.org/agriculture.html.

Food Packaging

Toxic Chemical Leaching into Canned Foods

The Environmental Working Group analyzed samples of canned fruit, vegetables, soda and baby formula sold in U.S. supermarkets and found that more than 50% were tainted with a chemical linked to birth defects, ADHD and cancer. The chemical, bisphenol A (BPA), is in plastics that line food cans. According to the study, the chemical has been leaching into foods at levels up to 200 times the government's recommended "safe" level of exposure. Dr. Frederick vom Saal, professor of biology at the University of Missouri-Columbia and an expert on BPA, says 94 studies indicate deleterious health effects from BPA. "If BPA was treated as a drug, it would have been pulled immediately. This chemical can be replaced right now by safer materials, and the public would never notice the difference."

Avoiding BPA

- Metal canned beverages appear to contain lower BPA residues, while metal canned pasta and soups contain the highest levels.
- Canned foods in glass containers are not a BPA risk.
- Plastics with the recycling labels #1, #2 and #4 on the bottom are safer choices and do not contain BPA.
- One-third of liquid baby formulas have high levels of BPA. Powdered formula packaging is generally considered safer.
- Avoid heating foods in plastic containers and do not wash plastic containers in a dishwasher.
- When possible, opt for glass, porcelain and stainless steel containers, particularly for hot food or liquids.
- Do not let plastic wrap touch food in the microwave, or avoid microwave ovens altogether.
- Many metal water bottles, such as those sold by the brand Sigg, are lined with a plastic coating that contains BPA. Look for stainless steel bottles, such as those sold by Real Wear and Kleen Kanteen that do not have a plastic liner.

Source: Organic Bytes, March 8, 2007, Organic Consumers Assoc., www.organicconsumers.org/articles/article_4414.cfm

Gardens

Business Idea: Backyard Vegetable Garden Installation

Oregon horticulturists Donna Smith and Robyn Streeter have domesticated the concept of Community Supported Agriculture. Their small company, "Your Backyard Farmer," creates small, personalized vegetable gardens in others' back yards -- complete with natural fertilizers, organic seeds and bio-intensive, pesticide-free beds. The entrepreneurs have found that a 400-square-foot plot can feed a family of four. "Our clients don't have to do anything," Smith says. With the "kitchen garden" making a comeback, Smith and Streeter are now getting queries from Eugene to Europe.

Source: Pesticide Action Network News Update, April 12, 2007, www.panna.org; for more information, see www.yourbackyardfarmer.com.

MAINE GARDENS: Nature and Design
A Four-Day Symposium
July 12-15

Maine Gardens: Nature and Design is a four-day symposium presented by The Garden Conservancy, The Farnsworth Art Museum and The Maine Olmsted Alliance for Parks and Landscapes. It will be held on July 12-15, 2007, in Midcoast Maine to engage people in exploring the history and beauty of Maine's landscapes.

Speakers will include: Patrick Chasse, ASLA, curator of landscape at the Isabella Stewart Gardner Museum, Boston; Page Dickey, garden writer, lecturer and cofounder of The Garden Conservancy's Open Garden Days; Kerry Hardy of Merryspring Nature Center, Camden, Maine; Maureen Heffernan of Coastal Maine Botanical Gardens; Erica Hirschler, senior curator, Museum of Fine Arts, Boston; Nancy Harmon Jenkins, food author and editor; Leslie Land, garden writer, The New York Times; Tovah Martin, garden writer, photographer, author; Theresa Mattor, author, landscape architect; Sandra Oliver, food historian, Islesboro; Pauline Runkel, flower designer, Boston; Lora Urbanelli, director of the Farnsworth Museum, Rockland.

Participants will explore the fruitful mingling of the natural and the carefully planned. They will discover writers and artists who imagined this American Paradise, hear from those who continue to do so, become acquainted with the works of the designers, ordinary people and eminent landscape architects who have shaped and softened the wild terrain.

Lectures and discussions will take place at the Strand Theatre in Rockland on July 12-14. Kids' Flower Hour will be at the Farnsworth Museum. Gardens and grounds from Belfast and Islesboro to Rockland, Camden, Lincolnville, Boothbay Harbor and North Haven will be open to participants, who will receive information on and directions to each site; the gardens will be listed in the Conservancy's Open Days Directory. Flower centered art will be displayed at galleries in Camden and Rockland. A land conservation exhibit is planned for Aldermere Farm involving the Coastal Mountains Land Trust, the Maine Coast Heritage Trust and the Georges River Land Trust. Noted food writer Nancy Harmon Jenkins is organizing a feast in the Camden Amphitheatre for the evening of July 13 to highlight the sustainable landscape; the Belfast Maskers will perform one act of a Shakespeare play in the Amphitheatre after the feast.

Cosponsors of Maine Gardens include: Center for Maine Contemporary Art, Rockport; The Cultural Landscape Foundation, Washington, D.C.; The Garden Club of America, New York, N.Y.; Coastal Maine Botanical Gardens, Boothbay; The Strand Theatre, Rockland; Maine Preservation, Portland; Merryspring Nature Park, Camden; Maine Photographic Workshops, Rockport; and others.

Maine Garden Coordinator is Peggy Watson, landscape gardener and historian. For more information, contact lysmcl@aol.com or visit www.mainegardenssymposium.com.

Coastal Maine Botanical Gardens: Maine's First

Coastal Maine Botanical Gardens' 248 acres in Boothbay make up Maine's first, and New England's largest, botanical garden. Visitors discover masterfully designed ornamental gardens,

sparkling waterfront, stonework and sculpture, as well as miles of trails that highlight the best of coastal Maine's natural beauty.

Beginning May 1, the Visitor Center will provide services including a gift shop and café. Programs, events and exhibits year-round offer opportunities for all ages to learn about plants, gardening and nature; experience fine art; and simply have fun.

Coastal Maine Botanical Gardens is off Barters Island Road, about 10 miles south of Route 1 and just over a mile from the Boothbay common.

For more information please visit www.mainegardens.org.

Genetic Engineering

Genetic Engineering Bills in Maine

On April 23, 2007, the Maine Legislature's Joint Standing Committee on Agriculture, Conservation and Forestry heard testimony from citizens, farmers, industry representatives and nonprofit leaders on LD1650, "An Act To Amend the Laws Concerning Genetically Engineered Plants and Seeds," sponsored by Rep. James Schatz (D-Blue Hill).

The most active proponent – Protect Maine Farmers (www.protectmainefarmers.org), a campaign of Food for Maine's Future (www.foodformainesfuture.org) – contends that the bill preserves basic rights for farmers. It would do this by keeping disputes about genetically engineered (GE) crops in Maine courts and requiring seed companies to get a court order before entering a farmer's property to investigate claims of intellectual property theft. It would also ask the Maine Department of Agriculture to keep records about the amount of GE crops grown in the state; and the bill would assign liability to the patent holder (rather than the farmer growing the GE crop) for damages suffered when non-GE crops are contaminated.

Opponents of the bill claim that, given Maine's already limited market share in the GE industry, anything that might restrict biotechnology companies' business in Maine might make those companies think twice about doing business here, thus limiting farmers' access to the latest agricultural technologies.

Maine Department of Agriculture Commissioner Seth Bradstreet opposed the bill and voiced many concerns shared by the bill's detractors. He discussed the Department's current policy of "coexistence," whereby farmers are encouraged to "talk over the fencerow" with each other to resolve problems relating to these crops. He also said that he and the department believe that these technologies are "safe and effective" and that farmers won't sue farmers over GE contamination.

Another opponent, Vernon DeLong of the Agricultural Bargaining Council, suggested that the bill was a step toward banning GE crops in Maine; and that GE canola was needed because weeds would otherwise be too problematic for the crop.

Shep Ogden, founder of the Cook's Garden seed company and a recent transplant to Maine, supported the bill and disagreed that these crops are "safe and effective" but are, instead, still "novel technologies."

Organic grower Seth Kroeck of Crystal Spring Community Farm in Brunswick agreed, adding that as more land is devoted to both organic farming and to GE crops, problems are imminent. Currently, Roundup Ready corn is the most common GE crop grown in Maine, mainly as feed for dairy cows. GE soy and canola are also grown here.

Joel Glatz said that his Frontier Energy biofuels business would be hurt by contamination; his customers often ask if the fuel comes from GE crops.

Nancy Smith, an organic dairy farmer and state representative from Monmouth, is concerned that GE contamination of organic products will eliminate price premiums for organic foods.

As we went to press, LD 1650 was to be scheduled for a work session by the Agriculture Committee.

In other news relating to GE crops in Maine, on March 26, the Agriculture Committee voted "Ought Not to Pass" on LD 1157, a bill sponsored by Rep. Dean Cary (R-Palmyra), which would have directed Maine's Department of Agriculture to establish rules to verify that all certified organic seed planted by Maine farmers, and potentially all seeds planted by organic farmers, was free from contamination by GE crops. This would have been done through testing paid for by the seed companies and/or farmers. Testimony opposing the bill by MOFGA's Russell Libby is posted at www.mofga.org.

Sources: Reporting by MOFGA's Farmer in Residence Clayton Carter; additional information from "Liability over gene-altered crops debated," by Kevin Miller, Bangor Daily News, April 24, 2007, <http://www.bangordailynews.com>; "Farmers take sides in organic-modified battle," by Ann S. Kim, Kennebec Journal, April 24, 2007; <http://kennebecjournal.maintoday.com/news/local/3840552.html>

Judge Orders Moratorium on GE Alfalfa

A Federal judge in California ruled on May 4, 2007, that the USDA 2005 approval of Monsanto's genetically engineered (GE) Roundup Ready alfalfa was illegal. The Judge called on USDA to ban further planting of the GE seed until it conducts a complete Environmental Impact Statement (EIS) on the crop. The ruling followed a hearing brought by the Center for Food Safety (CFS) against the USDA for approving GE alfalfa without the required Environmental Impact Statement. Monsanto and Forage Genetics developed the seed. Judges in earlier rulings said that the USDA failed to address concerns that Roundup Ready alfalfa will contaminate conventional and organic alfalfa. For more information, see www.centerforfoodsafety.org.

In other recent decisions, a federal judge in Washington said in March that the USDA had not done adequate assessments before approving field trials of GE grass; and in August a federal judge in Hawaii ruled that the USDA had not adequately assessed the potential impact of GE pharmaceutical crops on endangered species.

Sources: Center for Food Safety, www.centerforfoodsafety.org; and Pesticide Action Network Updates Service, March 8, 2007; www.panna.org; Press Release, The Cornucopia Institute, May 4, 2007, www.cornucopia.org

USDA: No Undue Risk from Rice with Human Genes

The USDA has given preliminary approval for the first commercial GE food crop to contain human genes. The rice, which produces human immune system proteins that can fight diarrhea, is slated to grow in Kansas. The seed was developed by Ventria Bioscience of Sacramento. Opponents fear that the pharmaceutical genes will migrate to other rice crops and foods, so that people could get irregular doses of the medicine; and some people may be allergic to the protein; but USDA's draft environmental assessment concludes no undue risk is present.

Ventria has three varieties of rice, each with a different human gene to make human proteins. Two of the proteins, which fight bacteria, occur in breast milk and saliva. A third protein makes serum albumin for medical therapies.

Meanwhile, rice seed in Arkansas was found to be a GE variety called LL62, which was never released for marketing; and U.S., Mexican and other rice has been widely contaminated by yet another GE rice, LL601, as well. The LL601 variety, developed by Bayer CropScience, has not been grown since 2001. Neither Bayer nor USDA has been able to explain the contamination. In March, Mexico began requiring certification showing that rice imports from the United States are not contaminated with LL601.

Sources: "USDA Backs Production of Rice with Human Genes," by Rick Weiss, Washington Post, March 2, 2007; "Greenpeace Investigation Reveals U.S. Source of Genetic Contamination in Mexican Rice," Greenpeace Press Releases, March 9 and 15, 2007; Steve Smith, Greenpeace USA, Washington, (202) 465-5352; Doreen Stabinsky, Greenpeace, (202) 285-7398.

Berkeley Says Yes to Biotech Biofuel Crops

British Petroleum has donated \$500 million in research funds to UC Berkeley, Lawrence Berkeley National Laboratory and the University of Illinois, primarily for biotech research into biofuels. Miguel A. Altieri and Eric Holt-Gimenez of UC Berkeley argue, "This partnership reflects the rapid, unchecked and unprecedented global corporate alignment of the world's largest agribusiness (ADM, Cargill and Bunge), biotech (Monsanto, Syngenta, Bayer, Dupont), petroleum (BP, TOTAL, Shell), and automotive industries (Volkswagen, Peugeot, Citroen, Renault, SAAB). With what for them is a relatively small investment, these industries will appropriate academic expertise built over decades of public support, translating into billions in revenues for these global partners." They add that using all U.S.-produced corn and soybean for biofuels would meet only 12% of our gasoline demand and 6% of diesel demand. Total U.S. cropland reaches 625,000 square miles. "Biofuels are expected to turn Iowa and South Dakota into corn-importers by 2008," they note.

The scientists also believe that widespread cultivation of GE biofuel crops may irreversibly

convert agriculture to GE crops (GMOs); and they worry that fuel crops will be grown in the developing world at the expense of small farmers, and of tropical forests that help cleanse the atmosphere of carbon dioxide.

“The only way to stop global warming is to promote small-scale organic agriculture and decrease the use of all fuels, which requires major reductions in consumption patterns and development of massive public transportation systems, areas that the University of California should be actively researching and that BP and the other biofuel partners will never invest one penny towards,” say Altieri and Holt-Gimenez.

Source: “UC's Biotech Benefactors: The Power of Big Finance and Bad Ideas,” by Miguel A. Altieri and Eric Holt-Gimenez, The Berkeley Daily Planet, www.berkeleydailyplanet.com; and at www.foodfirst.org; Feb. 6, 2007.

Suppressed Monsanto Study of GE Potato Released

A Monsanto-funded study showing that the company’s NewLeaf GE potatoes (which were never a commercial success) damaged rats’ organs was suppressed for eight years. The small study (of only 10 rats in each feeding group) was done in 1998 by the Institute of Nutrition of the Russian Academy of Medical Sciences, which refused to release all of its findings when the potato was being considered by Russian regulators in 2000. The potatoes were engineered to express the gene produced by *Bacillus thuringiensis* to control potato beetles; it also contained an antibiotic resistance marker gene.

Under pressure from Greenpeace and others, the Nikulinski District Court in Russia ruled in 2004 that the public should be able to access information about to the safety of GE foods. Over a year later, Greenpeace was given the report.

Source: Organic Consumers Assoc., www.organicconsumers.org/articles/article_4167.cfm, Feb. 16, 2007.

Monsanto Wants to Make rBGH Labeling Illegal

In early April, Monsanto filed a formal complaint with the FDA and Federal Trade Commission, demanding that labeling of rBGH-free dairy products be made illegal. Due to escalating consumer demand, an increasing number of large U.S. dairies have declared themselves rBGH-free in the last couple of years. Monsanto, sole producer of the synthetic, genetically engineered hormone, has lost substantial sales as a result. The synthesized hormone is banned in most industrialized nations, including Europe and Canada. For more information and to sign a "Millions Against Monsanto" petition, see http://www.organicconsumers.org/articles/article_4698.cfm.

Source: Organic Bytes, April 6, 2007; Organic Consumers Assoc., www.organicconsumers.org.

No Cloned Animal Products in Organic

In April, after being flooded with complaints from consumers, the USDA's National Organic Standards Board voted 12-0 (with one abstention) to ban foods from cloned animals and their progeny from the organic market. For more information, see http://www.organicconsumers.org/articles/article_4699.cfm.

Jim Riddle, former chair of the NOSB and author of a cloning report for the Organic Center (see next news item), was pleased with the recommendation. "Cloning," added Riddle, "has no place in organic agriculture. As the FDA's own report shows, cloning is still very experimental with a high failure rate, it's inhumane and totally unnatural."

The action by the NOSB will likely add further support to a bill introduced in the U.S. Senate by Patrick Leahy (D-VT) and Herb Kohl (D-WI) that would outlaw the use of cloned animals and their offspring in organic food production. When we went to press, the bill, S536, was in the Senate Committee on Agriculture, Nutrition, and Forestry.

Source: Organic Bytes, April 6, 2007; Organic Consumers Assoc.; press release, The Cornucopia Institute, April 17, 2007, www.cornucopia.org.

Organic Center Critiques FDA Approval of Cloned Animal Products^{[1][2]}

A Critical Issue Report released by the Organic Center questions the Food and Drug Administration's decision to allow meat and milk from cloned animals to enter the food supply. One argument made by the FDA is that clones are "virtually indistinguishable" from normal progeny and therefore may enter the food supply. "Virtually indistinguishable is not a scientific standard," says Jim Riddle, organic outreach coordinator at the University of Minnesota, and author of the report. "The FDA report shows that subtle changes occur in four to seven percent of animals."

After the FDA released its proposed plan to allow (unlabeled) food from cloned animals into the food supply, it received 130,000 comments from consumers opposing the plan. According to a Pew Initiative poll, two-thirds of Americans are uncomfortable with animal cloning. The FDA should make a decision about food from cloned animals by the end of 2007.

Sources: "FDA receives 130,000 comments opposing food from clone," www.organicconsumers.org/articles/article_5062.cfm, May 3, 2007. The report is posted at www.organic-center.org/science.safety.php?action=view&report_id=81.

Source: Scientific Congress on Organic Agriculture Research, SCOAR Bulletin #16, March 19, 2007; www.ofrf.org

Green Roofs

Green Roof Certification Program

In January, Broccolo Tree & Lawn Care of Rochester, N.Y., became certified to install "green roofs" and "living walls." Green roofs, or plant coverings on existing roofs, and vertical living

wall systems, made of plantings, help conserve energy, improve air quality, assist in drainage and regulate temperature. Living walls, which can be used indoors and out, help control storm water runoff from roofs and blacktop driveways, filtering pollutants. This additional habitat also benefits migratory birds and butterflies.

Broccolo is certified by Elevated Landscape Technologies, a Canadian company that provides products that integrate living environmental technologies such as green roofs and living walls into homes and workspaces. The five-day training course sponsored by Green Living Roofs, LLC (the U.S distributor for Easy Green™) took place in Brantford, Ontario.

Internships

Summer Internship with Stipend

Barking Frogs Permaculture offers one summer internship with a \$500 stipend for summer 2007. The internship will be for at least six weeks, ending no earlier than Sept. 15, at Barking Frogs Permaculture Center in North-Central Florida. The intern selected will need to find housing locally or tent in his/her own camping equipment. For more information, see www.BarkingFrogsPermaculture.org email to Dan Hemenway at BarkingFrogsPC@aol.com . Deadline for applications is June 15, but the internship will be filled when an ideal candidate is found.

Livestock

Maine Alpaca Association to Produce Maine Fiber Frolic

The Maine Alpaca Association has become the producer of the annual Maine Fiber Frolic. In its seventh year, the Fiber Frolic is a family-oriented animal and arts festival for fiber enthusiasts of all skill levels.

The 2007 Fiber Frolic will be held on Saturday and Sunday, June 9 and 10, from 10 a.m. to 4 p.m. at the Windsor Fairgrounds in Windsor, Maine, rain or shine. Over 75 farms and retailers will showcase their livestock, fiber and products for 1,500 visitors. Instructional fiber arts workshops and free educational presentations will be held throughout the weekend. The event is organized by members of the Maine Llama Association, Maine Sheep Breeders Association, the Maine Alpaca Association, and dozens of volunteers.

Hundreds of llamas, alpacas, rabbits, sheep and goats will be displayed, and retail vendors will feature raw and value-added fibers, specialty products, supplies and equipment for sale. Special events include the Maine Llama Drill Team Parade, herding dog demonstrations, and youth goat, llama and sheep shows. Talks will address topics such as packing with llamas, and raising and breeding specialty livestock. Fiber-related activities will be available for children and adults.

The Maine Alpaca Association formed in 2003 to provide its members with education and support on all aspects of alpaca ownership, from husbandry to business planning and marketing,

and to promote the benefits of the alpaca lifestyle to Maine's public. The Fiber Frolic was founded in 2000 by the Maine Llama Association to celebrate all things fiber.

For complete information about the 7th Annual Maine Fiber Frolic, please visit www.fiberfrolic.com.

New Food Seal for Humanely Raised Farm Animals

The nonprofit Animal Welfare Institute (AWI) has launched Animal Welfare Approved, a seal for meat, poultry, dairy and eggs that features the highest standards for humane treatment of farm animals. More than 500 farms comply with AWI standards, which take into account all aspects of an animal's life, from opportunities to socialize and behave naturally to assurances of comfort and freedom from intensive confinement. Animal Welfare Approved is the first seal to guarantee that humanely-labeled products do not come from agribusinesses that raise the majority of their animals under cruel and unnatural conditions while also rearing some according to so-called humane standards. Only independent family farms can earn the Animal Welfare Approved seal, since AWI's program is designed to revitalize a culture of family-owned and managed farms.

Requirements for acceptance into the program are at www.AnimalWelfareApproved.org.

Source: Animal Welfare Approved, www.awionline.org/, Jan. 31, 2007

Faith in Hens

According to the Sunday Times (London, April 15, 2007), keeping hens is one of the fastest growing pastimes in Britain, with 2% (up to 500,000) of homes involved. Francine Raymond, chair of the Henkeepers' Association, credits loss of faith in supermarket eggs because of labeling scams, and people's desire to produce their own food.

More Mad Cow in Canada

Members of the Western Organization of Resource Councils (WORC) are again demanding country-of-origin labeling of beef.

On Feb. 9, 2007, Canadian officials confirmed the ninth case of mad cow disease in Canada. Less than one month later, on March 1, officials quarantined two dairy farms and five cattle ranches in Saskatchewan, involving about 8,000 animals, for tainted feed. The feed contained ruminant meat and bone meal, which Canada banned from cattle feed in 1997 to protect against the spread of mad cow disease.

In early May, a tenth case of Mad Cow was found, in Delta, British Columbia.

Earlier this year, the USDA published a proposed rule to allow Canadian cattle over 30 months of age to enter this country. Currently, live cattle under 30 months of age and boxed beef move freely from Canada into the United States.

The USDA, says WORC, should close the Canadian border to all Canadian meat and live cattle until the Canadian Food Inspection Agency has a policy that ensures no mix-up or cross contamination of feed sources for cattle; and should, with Congress, immediately implement country-of-origin labeling of all meat.

Sources: WORC press release, March 7, 2007, Kevin Dowling, WORC Communications Director, 406-252-9672. Based in Billings, Mont., WORC represents farmers, ranchers and consumers in Colorado, Idaho, Montana, North Dakota, Oregon, South Dakota and Wyoming; “Canada’s Tenth Mad Cow Rouses Concern South of the Border,” Environmental News Service, May 3, 2007, at http://www.organicconsumers.org/articles/article_5043.cfm

Creekstone Farms Wins ‘Right’ to Test for Mad Cow

After the discovery of another case of Mad Cow Disease in the United States last year, foreign markets tightened their ban on U.S. beef based on the fact that the USDA requires such a small percentage of meat to be tested for this fatal disease. In an attempt to maintain sales with customers overseas, Kansas-based Creekstone Farms announced it would voluntarily test all of its meat for Mad Cow Disease. The USDA responded that it was illegal for Creekstone to have such quality food safety testing. When Creekstone took the USDA to court, a federal judge ruled against the agency. The results of the case will likely create a domino effect in the industry where more meatpackers will voluntarily increase testing for Mad Cow Disease in order to gain customers. For more information, see

http://www.organicconsumers.org/articles/article_4655.cfm

Predator Friendly® Certification

From its origins on a single ranch in Montana, 15 U.S. farms and ranches are now Predator Friendly® certified, and a Predator Friendly® certified Web site, www.predatorfriendly.com, is available to Predator Friendly® producers as a marketing tool.

Predator Friendly® shares lessons on conflict avoidance techniques. For example, Seth Wilson, a grizzly bear researcher working with ranchers in Montana’s Blackfoot Valley, has helped organize a carcass removal service during the calving period. As a result of the service—in which 75% of area ranchers now participate—scavenging bears do not find food rewards near human activities. In southwest Montana, wolf presence and the potential for depredation are concerns. In response, the Keystone Conservation (Predator Friendly’s parent organization) Range Riders program is testing increased human presence and herd monitoring as a way for small-scale producers to keep livestock out of harm’s way, and taking advantage of Federal funds to do so.

“Interestingly, we now have certified producers successfully raising bees in bear country, raising pastured poultry near coyotes and eagles, and raising sheep and cattle in areas where wolves are expanding,” says Abigail Breuer of Predator Friendly®. “The producers we work with and affiliated researchers are poised to become an important information source for others looking to produce using proactive, non-lethal techniques.”

For example, as bobcats, black bears, coyotes and mountain lions expand across the nation, Predator Friendly® will make best management practices available to participating producers. Shutting small livestock in at night (especially during lambing or birthing), increasing human presence at random intervals, using innovative fencing, deterring prey species from barnyards and homestead areas (through nighttime lighting and/or removing attractant plantings) and keeping pets, chickens or other small animals in at night are some successful techniques. Disposing of food wastes away from sites where carnivores roam is also key. “We will soon have a listserv for information-sharing about non-lethal deterrent methods among producers and researchers,” adds Breuer.

Keystone Conservation focuses on coexistence, networking with researchers and practitioners worldwide to spread information. This spring Predator Friendly hosted a Summit on Wildlife Friendly Enterprise, bringing together programs similar to Predator Friendly from around the world, including Tiger Friendly in the Russian Far East (under the auspices of the N.Y.-based Wildlife Conservation Society), Snow Leopard Enterprises of Central Asia (run by Seattle-based Snow Leopard Trust) and Cheetah Country Beef (run by the Cheetah Conservation Fund-Namibia), among others, to discuss opportunities for networking and support, including opportunities that could lead to greater market access.

For more information, contact Abigail Breuer, Program Manager, Predator Friendly®, abreuer@3rivers.net, 406-581-1307.

Nutrition

Many Benefits of Cider Vinegar

Apple cider vinegar has been known traditionally as a healthful source of vitamins and minerals. A regular dose of apple cider vinegar, honey and water can help the body pass acid crystals, thus preventing and/or reducing muscle and joint stiffness, including pains due to arthritis. That same mixture thins the blood, thereby reducing blood pressure. Apple cider vinegar can also aid digestion and kill harmful bacteria in the digestive tract. Pure apple cider vinegar can also be used to wash pesticides, bacteria or fungi off fresh produce. Most commercial apple cider vinegars have been pasteurized and filtered, which destroys much of the inherent beneficial elements. Look for cold-pressed, unpasteurized and organic apple cider vinegar.

Source: Organic Bytes, Feb. 8, 2007, Organic Consumers Assoc., www.organicconsumers.org/articles/article_4028.cfm

Gluten-Free Pancake Really Stacks Up

In their search for a light, fluffy pancake for those who've banished wheat from their diets, Agricultural Research Service chemists Fred Shih and Kim Daigle found that flour made from rice and sweet potatoes is a superior substitute. Both scientists work at the ARS Southern Regional Research Center in New Orleans.

Individuals diagnosed with celiac disease, which may be as prevalent as one in 200 globally,

cannot digest gluten. For them, gluten proteins in wheat, rye and barley trigger an autoimmune response that can lead to serious health problems.

Shih's rice- and sweet potato-based pancakes are suitable not only for those suffering from celiac disease and wheat allergies; they also stand out for their antioxidant content, with 56% more beta carotene than traditional wheat-based pancakes. The body uses beta carotene to make vitamin A, an important immune booster and possible cancer preventer.

In the world of gluten-free foods, textural qualities are especially important. Since gluten proteins give dough and batter an essential visco-elasticity, baked goods made without them can be flat, brittle and dense. Shih and Daigle found that the ideal pancake contained 20 to 40% sweet potato flour.

Source: USDA Agricultural Research Service News Service, Erin Peabody, (301) 504-1624, erin.peabody@ars.usda.gov, Jan. 16, 2007

Organic

Organic Corn Yields Surpass Conventional in 27-Year Study

New data from The Rodale Institute's 27-year Farming Systems Trial (FST) shows that over time, corn yields from organically managed fields can equal and even surpass yields from conventionally farmed fields. Organic practices also improve soil quality and result in fewer greenhouse gases in the air and less pollution in the water.

The 13-acre FST began in 1981, making it the United States' longest-running scientifically controlled comparison of organic and conventional crop production systems. During the first few years, while the organically farmed plots were going through the transition process and building up biological activity in the soil, yields from conventional corn fields were superior. But the organic plots soon entered a long phase, from 1985 until 1993, when their mean yields equalled those of the conventionally farmed plots.

From 1995 to 2006, mean yields from organic plots surpassed those of conventional plots; this period included both severe drought years and a record wet summer. During drought years, organic corn yields were 28 to 34% higher. During the rainy summer of 2004, organic yields were 13% higher and contained 15% more protein than corn grown in conventional plots.

These increased yields are the end result of more than two decades of continuous soil improvements through organic farming techniques. Tests show that from 1981 to today, soil quality has greatly increased in the plots under organic management, but has not increased in conventional plots. The organic soil now contains 30% more carbon, 15% more total nitrogen and 225% more biological activity than it did at the beginning of the project.

"This transformation of the organic fields is like the race of the tortoise and the hare," says Dr. Paul Hepperly, The Rodale Institute's research and training manager. "Our research has shown

that the organic systems are now pulling ahead on four fronts: namely, soil quality, drought tolerance, crop quality and overall yield. While it takes time to change worn-out soil into rich, healthy soil, it is well worth the effort and wait.”

The Rodale Institute's long-term commitment to research has demonstrated that agricultural chemical fertilizers and pesticides are not prerequisites for high, consistent field crop yields and quality. By patiently improving base soil fertility, organic farmers can make big changes. Over a period of years they can achieve yields that are competitive with conventional agriculture while cutting costs and energy consumption. Further, they can eliminate the negative environmental impact of agri-chemicals used in conventional food production.

Source: Rodale Institute Press Release, April 12, 2007. FMI: Kerry Boderman, 610-683-1456, kerry.boderman@rodaleinst.org

USDA Begins Organic Price Reporting

In response to producer demand, USDA is increasingly reporting organic prices for various crops and livestock products in the Agricultural Marketing Service's (AMS) Livestock and Grain Market News

(http://marketnews.usda.gov/portal/lg?paf_dm=full&paf_gear_id=4300008&startIndex=1&dr=1&rowDisplayMax=25&commodity=GRAINS&sub_commodity=&sub_commodity2=any&publication=STATE&state=any). You can sign up to receive biweekly updates via email (<http://usda.mannlib.cornell.edu/MannUsda/aboutEmailService.do>).

Gigi DiGiacomo with the Univ. of Minnesota School of Agriculture Endowed Chair Program is working with AMS to gather the data for these reports. DiGiacomo is soliciting price information from organic buyers and sellers. Please contact her for more information: rgdigiacomo@earthlink.net, 612-710-1188.

For more information about the subscription process, contact James Bernau, Market Reporter with the AMS Livestock & Grain News, jim.berna@usda.gov, 515-284-4460.

Source: Scientific Congress on Organic Agriculture Research, SCOAR Bulletin #16, March 19, 2007; www.ofrf.org

Wood Prairie Farm's Potato Wins Award

Wood Prairie Farm, a MOFGA-certified organic farm in Bridgewater, Maine, offers seed potato of a new hybrid called King Harry, developed by Cornell University. King Harry's hairy leaves repel Colorado potato beetles, leaf hoppers and flea beetles. Wood Prairie won the Mailorder Gardening Association's Green Thumb Award—given for the five best new plant varieties each year—for the introduction. Wood Prairie trialed the round, white, early variety for Cornell. Although early, King Harry also stores well.

For more information, see www.woodprairie.com or call 1-800-829-9765.

Source: "Award-winning potato resists destructive bugs," by Tom Atwell, Maine Sunday Telegram, March 18, 2007

Nearly 31 Million Certified Organic Hectares Worldwide

The International Federation of Organic Agriculture Movements (IFOAM), the Research Institute for Organic Agriculture and the Foundation for Ecology and Farming presented the latest statistics about organic agriculture worldwide at BioFach 2007. The study, *The World of Organic Agriculture: Statistics and Emerging Trends 2007*, shows that nearly 31 million hectares are currently certified according to organic standards. Australia accounts for 11.8 million hectares, followed by Argentina (3.1 million hectares), China (2.3 million hectares) and the United States (1.6 million hectares). Germany is in seventh position worldwide. Oceania (39%) is followed by Europe (23%) and Latin America (19%). In terms of certified organic agriculture as a proportion of arable agricultural land, the Alpine countries, such as Austria with more than 14%, top the statistics. In addition to the certified organic arable land, nearly 62 million hectares are certified to organic standards for collecting wild product, according to research by the International Trade Center (ITC).

The global market for organic products reached 25.5 billion Euros in 2005, with the vast majority of products being consumed in North America and Europe, according to the market research experts of Organic Monitor. For 2006, the value of global markets is estimated to be more than 30 billion Euros. Healthy growth rates are expected to continue in the coming years.

The *World of Organic Agriculture--Statistics and Emerging Trends 2007* ^[L]_[SEP] Completely revised edition, February 2007, can be ordered from IFOAM or purchased as a pdf document via Internet from ^[L]_[SEP] www.ifoam.org ^[L]_[SEP] www.fibl.org/shop/index.php

Source: IFOAM Press Release, headoffice@ifoam.org ^[L]_[SEP] <http://www.ifoam.org>

Sustainable Farming Boosts Poorest Farmers

Farming techniques such as crop rotation and organic methods can help eliminate poverty among the world's poorest farmers. Research conducted over four years and published in *Environmental Science and Technology* found an average 79% higher crop yields, reduced pesticide and water use, and greater profits among 280 projects in 57 developing nations.

Professor Jules Pretty of the University of Essex, co-author of the report, says, "In many ways farmers in developing countries are leading the way" in sustainable farming methods, working with local biodiversity and developing healthy soil.

Most methods were applied with no official policy mandates. "If there was more central support then we would expect to see these sorts of techniques and ideas spread more rapidly," says Pretty.

Sources: "Sustainable Farming Boosts World's Poorest Farmers, Study Says," by Ken Roseboro, *The Organic and Non-GMO Report*, Feb. 2007, at www.organicconsumers.org/articles/article_4036.cfm. Original report: "Resource-Conserving

Agriculture Increases Yields in Developing Countries,” by J. N. Pretty, A. D. Noble, D. Bossio, J. Dixon, R. E. Hine, F. W. T. Penning de Vries, and J. I. L. Morison . Environ. Sci. Technol.; 2006; 40(4) pp 1114 - 1119; (Policy Analysis) DOI: 10.1021/es051670d. To subscribe to the Organic and Non-GMO Report, call 1-800-854-0586 or visit <http://www.non-gmoreport.com/>

Harvey Wins Lawsuit

As of June 8, 2007, federal law will require that organic foods be better defined, thanks to a lawsuit brought against USDA by Maine blueberry grower Arthur Harvey. The appeal was heard in the First Circuit Court of Appeals in Boston after being dismissed in 2002 in U.S. District Court in Portland. The Boston court agreed with Harvey that:

- cows producing milk labeled as organic may not receive conventional grain for a year before the product is so labeled. (Current rules used a three-month period for feeding organic grains.)
- the 5% of ingredients that need not be organic in processed foods labeled as organic must come from the national list of permitted ingredients, not from any agricultural product;
- producers must adhere to federal law requiring that after harvest, organic produce must not be treated with any artificial substances. (The USDA had developed a list of synthetics allowed in processing.) Intensive lobbying by manufacturers, however, got an amendment to the 2006 federal budget that allows synthetics after harvest. Harvey is attempting to get that amendment repealed.

Harvey’s contributions were responsible for his recognition as the Organic Inspector of the Year and Inspector Asset of the Year by the Independent Organic Inspectors Association in Encinitas, Calif., in March.

Source: “Organic farmer's efforts to change labels honored,” by Mary Standard , Lewiston Sun Journal, March 27, 2007, www.sunjournal.com/story/204993-3/OxfordHills/Organic_farmers_efforts_to_change_labels_honored/

Pesticides

Board of Pesticides Control News

Plant Incorporated Pesticide (Bt Corn) Registration Requests

Pioneer Hi-Bred International, Inc., Dow AgroSciences and Monsanto have applied to the Maine Board of Pesticides Control (BPC) to register genetically-engineered (GE) Bt field corn in Maine. *Bacillus thuringiensis* (Bt), a naturally occurring bacterium that can infect and kill several classes of insects, is an important tool for organic growers. In GE Bt corn, however, the gene that produces the Bt toxin is inserted into the plant's genome. Additional genetic material, such as promoter and marker genes, is also engineered into the crop. Maine is the only state in the country that does not allow the sale of these Plant Incorporated Pesticide (PIP) seeds.

In reviewing these registration requests, the BPC wants to study information on the need/benefit for the products, the risks that insects will become resistant to the Bt toxin, and the risks of gene

drift. Human health concerns are not being considered, as they have been in past requests for registering PIP products. The board believes that the topic does not merit review because of insufficient evidence of human health concerns associated with PIP products.

Board member John Jemison has assembled a committee to review these issues. Jemison, who has studied and published work on pollen transport, will chair the committee; other members include Lauchlin Titus, a certified agronomist who works with many potential users of the product; Eric Sideman, MOFGA's organic crops specialist; Andrei Alyokhin, an entomologist at the University of Maine specializing in resistance management; Jim Dill, Cooperative Extension's pest management specialist; and Lee Humphreys, an organic farmer and educator and BPC board member.

The BPC received comments from the applicants and the public at its April 2007 meeting. Proponents for registration included Doug Johnson (executive director of the Maine Biotechnology Information Center), Lauchlin Titus, and several Maine dairy farmers. The farmers cited a need for high yielding varieties that in the past were available in their pure form, but now are available only with PIP and other genetic modifications, such as Roundup Ready crops. Some 70 to 90% of top-yielding varieties are Bt varieties. While farmers used to have 10 non-Bt corn varieties to choose from, they now have two or three. One farmer also expressed his desire not to have to handle pesticides. He didn't express a dire need for Bt corn per se, but to having options that make the best economic sense for his farming operation. A few proponents claimed that using Bt corn will drastically reduce pesticide applications, and a report noted that the Western corn rootworm, which is susceptible to Bt corn, is moving eastward and will be a significant pest presence in the near future.

Opposing the registration requests were Russell Libby, executive director of MOFGA, and organic dairy farmer Spencer Aitel. Both argued against the demonstrated need of the products. Data provided by the seed companies as evidence of need is considered questionable and should be verified by a third party. Presence of the engineered Bt toxin in all plant cells will speed the development of resistance in insects, causing organic growers to lose applied Bt as an effective pest control. Contamination of non-GE crops with genetic material from PIP products is also a critical concern for organic growers and for seed producers. Questions also exist about the long-term impact of these products on human health and on invertebrate life in soil.

Speaking neither for nor against the registration was Logan Perkins of the Food for Maine's Future Protect Maine Farms campaign. She pointed out the dire need for protection not only from contamination (via pollen drift), but also liability issues resulting from that contamination. She asked the board to take measures to protect Maine farmers from the possibility of being sued if engineered genetic material drifts to their farms.

For the current status of this registration request, or to submit information that would help the board make its decision, contact acting director Henry Jennings at 207-287-2731 or henry.jennings@maine.gov. Board of Pesticides Control meeting agendas, minutes & supporting documents are available at www.thinkfirstspraylast.org.

Drift Committees

The BPC has established two stakeholder committees to examine problems associated with pesticide drift. Eric Sideman, MOFGA's organic crops specialist, sits on the Technical Drift Committee, which is evaluating technology options for minimizing drift. Heather Spalding, MOFGA's associate director, sits on the Pesticides Drift Stakeholder Committee, which consists of 16 members, including organic and conventional farmers, pesticide applicators, state employees, forest and agriculture commodity representatives, and nonprofit organizations representing environmental, public citizen and organic farming interests. The committees hope to make formal recommendations for minimizing exposure to pesticides. The BPC will consider the recommendations first and may bring them to the 2008 Legislature for consideration.

Consent Agreements

The following companies were fined for violations of pesticide application rules:

- Causeway Club Golf Course of Southwest Harbor. Violation: No person from the course was licensed as a commercial applicator at the time of application.
- JDB Inc. of Brewer. Violation: A company applicator misread the address on the work order and started applying broadleaf weed control to the wrong property.
- G.M. Allen & Son, Inc. Violation: A company applicator applied Sinbar herbicide to blueberry land without wearing chemical-resistant gloves as required by the label, and his pesticide application record was incomplete. Also, the company did not post the Restricted Entry Intervals at its Central Information Display as required under the Worker Protection Standard.
- Cherryfield Foods, Inc. Violation: Drift of an insecticide from a ground application to a blueberry field onto a lawn and garden located on the opposite side of the highway in Cherryfield. This action constituted a violation of the board's Chapter 22 regulations requiring applicators to protect sensitive areas from pesticide drift.
- Greenscapes Lawn Care, Inc. Violation: Commercial application of an herbicide to a property in Kittery that was within 250 feet of a property listed on the 2006 Pesticide Notification Registry. The company provided notice to the registrant only two hours and 10 minutes before the application, violating registry provisions in Chapter 28 requiring at least six hours advance notice.
- Lucas Tree Expert Company. Violation: Applicator failed to check the electric meter and applied pesticide to the wrong property.
- Barren View Golf Course of Jonesboro. Violation: At the time of the applications, no person from the course was licensed as a commercial applicator.

Development of Buffer Zones to Protect Surface Water

The board reviewed potential language and concepts at its January, February and March meetings and continues to work on satisfactory language to establish a 25-foot buffer around surface waters.

Approved Pesticide Registration and Variance Requests

The Division of Plant Industry in the Maine Department of Agriculture, Food & Rural Resources has again requested that the Board petition EPA for a FIFRA Section 18 specific exemption for use of coumaphos (CheckMite+) to control both varroa mites and small hive beetles in managed bee colonies. Fluvalinate has been used to control varroa mites since 1987, but in 1997 resistance started developing. In addition, small hive beetles have spread into Maine, and no product is registered to control this pest.

United Phosphorus, Inc., submitted a request for a Special Local Needs (24C) Registration to allow the use of Devrinol 50-DF (napropamide) on a pre-emergence basis to control annual grasses and broadleaf weeds infesting cranberry bogs. The product is currently registered for use on fruit, nut and vegetable crops. The EPA has established a tolerance for napropamide on cranberries, and Maine growers are currently allowed to use a 10% granular formulation. However, granulars can be difficult to apply properly in the spring. This request would allow growers greater application flexibility.

Bayer CropScience submitted a request for a Special Local Needs (24C) Registration to allow a lower rate of Provado (imidacloprid) on lowbush blueberries to control blueberry maggot. The product is currently registered for use on blueberries with a recommended rate of 6 to 8 fluid ounces per acre. This request would allow the use of 4 ounces per acre when low to moderate pest pressure exists. Board member John Jemison pointed out that the lower rate would make this product a more affordable alternative to organophosphates currently used to treat this pest.

The city of Augusta submitted a request for a variance to treat weeds growing in cracks between sidewalks and streets and in cracks adjacent to median strips. The board's drift regulations allow applicators to seek a variance from any standards felt unreasonable for their type of operation. They are seeking a variance so that they do not have to record all sensitive areas within 500 feet of the target areas. Instead, they propose using a small spray pattern, leaving a 50-foot buffer to surface water, and publishing a notice in the Kennebec Journal.

Amendments to Chapters 40 and 41 Adopted

Concerning trichlorfon (Dylox, Proxol), previous proposed rule changes would have retained the requirement that it be applied only by licensed applicators, but eliminated the need for a board-approved permit before it can be used. Concern over making an organophosphate more available led the board to rewrite the proposed change so that trichlorfon would be moved to the restricted use list (not requiring a board-approved permit) if:

1. trichlorfon be used only to control subsurface insects on turf;
2. prior to application the target pest must be identified and the severity of the infestation must be determined, including the extent of the damage;
3. only infested areas shall be treated with trichlorfon. Broadcast treatments of the entire turf area are prohibited;
4. Following application, trichlorfon must be watered into the soil with at least 1/2 inch of water and according to label directions. The applicator must assure that appropriate watering will take place before re-entry by any unprotected person.

Concerning pond dyes, the rule change will exempt purchasers of certain food-grade pond dyes

from applicator licensing requirements, in order to provide an option for controlling nuisance algal growth in private ponds. Registered herbicides containing only the active ingredients erioglaucline (Acid Blue 9 or FD&C Number 1) and/or tartrazine (Acid Yellow 23 or FD&C Yellow Number 5) are exempt from the applicator licensing requirements.

Your Voice Counts!

Following receipt of a letter from a concerned citizen, the board will discuss expanding its current posting requirements for pesticide applications that are made in public areas such as parks, playgrounds, parking lots and walkways, but are not currently covered by the board's posting requirements.

To make **your** voice heard, you can contact the Board of Pesticides Control via www.thinkfirstspraylast.org or by contacting acting director Henry Jennings at 207-287-2731 or henry.jennings@maine.gov.

[End of BPC news]

Toxic Chemicals and the Bottom Line

Pollution harms the environment and corporate coffers. The Investor Environmental Health Network's (IEHN) 52-page report, Fiduciary Guide to Toxic Chemical Risk, warns that, with increasing levels of toxic chemicals showing up in "human blood, breast milk and amniotic fluid... liability litigation and government enforcement actions may further undermine bottom lines and reputations." The Network estimates the cost of chemically triggered cancers, neurobehavioral disorders and childhood cancers in California, Connecticut and New York alone at \$15 billion a year. IEHN's 20 investment group members--managing \$22 billion in assets--are encouraging companies to adopt "safer chemical policies." Pesticide Action Network is an IEHN advisor.

Source: Pesticide Action Network News Update, April 12, 2007, www.panna.org. Original article at <http://iehn.org/?q=node/41>

More Parkinson's Links to Pesticides

On April 5, the Parkinson's Institute released new findings from a joint research effort sponsored by the National Institute of Environmental Health Sciences that named the pesticides paraquat and dieldrin as "potential risk factors for Parkinson's disease." Epidemiological and lab evidence pointed to the pesticides as "environmental factors" that damaged neurons. In the December 2000 Journal of Neuroscience, University of Rochester School of Medicine and Dentistry researchers reported that mice exposed to both paraquat and the fungicide maneb developed "the exact pattern of brain damage that doctors see in patients with Parkinson's disease." The Rochester researchers also found the two chemicals are routinely applied together in California, Florida, the Midwest and the Northeast, which are also the "areas of the country where people are more likely to die of Parkinson's disease."

Source: Pesticide Action Network News Update, April 12, 2007, www.panna.org

Lawn and Garden Pesticides and Breast Cancer

Researchers have found that residential lawn and garden pesticide use reported by women living on Long Island, New York., was associated with breast cancer risk, but no dose response was apparent. Nuisance-pest pesticides, insect repellants and products used to control lice or fleas and ticks on pets showed little or no relationship to breast cancer.

Source: "Reported Residential Pesticide Use and Breast Cancer Risk on Long Island, New York," by Susan L. Teitelbaum, Marilie D. Gammon, Julie A. Britton, Alfred I. Neugut, Bruce Levin and Steven D. Stellman, *American J. of Epidemiology* 2007 165(6):643-651; doi:10.1093/aje/kwk046; abstract at <http://aje.oxfordjournals.org/cgi/content/abstract/165/6/643>

Greens Want Ontario Ban on Pesticides on Golf Courses

Quebec is one of 127 Canadian cities that have restricted use of pesticides on lawns and in public spaces. In Ontario, four million residents in 19 communities (36% of the city's population) have banned the use of lawn chemicals. Ontario's Green Party wants to extend the ban to golf courses throughout the province. On average, golf courses apply pesticides at more than three times the average intensity used in agriculture. The pesticides include the herbicide 2,4-D (Frontline™), the fungicide chlorothalonil (both suspected human carcinogens) and the acutely toxic organophosphate insecticide, chlorpyrifos. A recent municipal study found that golf course runoff has severely contaminated Ontario's Rideau River.

Source: Pesticide Action Network Updates Service, April 19, 2007; www.panna.org.

EPA decides not to regulate certain pesticides in drinking water

On April 12, 2007, the U.S. Environmental Protection Agency announced its "preliminary determination not to regulate 11 contaminants" found in drinking water. The Safe Drinking Water Act requires EPA to update its list of regulated contaminants every five years. More than 90 contaminants are now regulated and, as of 2005, 51 more were being considered for the list. The contaminants EPA has chosen not to list include: DDE (a breakdown product of DDT), Telone (a soil fumigant), EPTC (an herbicide), Fonofos (an insecticide), Terbacil (an herbicide), and 2,6-diinitrotoluene (a chemical found in explosives, ammunition, dyes and polyurethane foams). The EPA is still considering whether to list perchlorate (a by-product of rocket fuel) and MTBE (a toxic ingredient in formulated gasoline).

Source: Pesticide Action Network Updates Service, April 19, 2007; www.panna.org.

Free Guide Ranks Pesticide Contamination of Produce

If you can't always buy organic, you can still dramatically lower your family's exposure to chemical pesticides by choosing the least pesticide-contaminated fruits and vegetables with the

Shopper's Guide to Pesticides in Produce. The Shopper's Guide is a wallet-size card that lists the "Dirty Dozen" most contaminated fruits and vegetables, as well as the 12 most "Consistently Clean" items. The newest edition is available as a free download at www.foodnews.org in both English and Spanish.

The Shopper's Guide was developed by the Environmental Working Group (EWG), based on results of nearly 43,000 tests for pesticides on produce by the USDA and the FDA between 2000 and 2004. The EWG's analysis found that consumers could cut their pesticide exposure by almost 90% by avoiding the most contaminated produce and eating the least contaminated instead.

Eating the 12 most contaminated fruits and vegetables will expose a person to about 15 pesticides a day, on average. Eating the 12 least contaminated will expose a person to fewer than two pesticides a day.

EWG's analysis of federal testing data found:

- * Peaches and apples topped the Dirty Dozen list. Almost 97% of peaches tested positive for pesticides, and almost 87% had two or more pesticide residues. About 92% of apples tested positive, and 79% had two or more pesticides. The rest of the Dirty Dozen include sweet bell peppers, celery, nectarines, strawberries, cherries, pears, imported grapes, spinach, lettuce and potatoes.

- * Onions, avocados and sweet corn headed the Consistently Clean list. For all three, more than 90% of the samples tested had no detectable pesticide residues. Others on the Consistently Clean list include pineapples, mango, asparagus, sweet peas, kiwi, bananas, cabbage, broccoli and papaya.

There is growing scientific consensus that small doses of pesticides can adversely affect people, especially during vulnerable periods of fetal development and childhood when exposures can have long lasting effects. Because the toxic effects of pesticides are worrisome, not well understood, or in some cases completely unstudied, shoppers are wise to minimize exposure to pesticides whenever possible.

While washing and rinsing fresh produce can reduce levels of some pesticides, it does not eliminate them. Peeling also reduces exposures, but valuable nutrients often go down the drain with the peel. The best option is to eat a varied diet, wash all produce, and choose organic when possible to reduce exposure to potentially harmful chemicals.

Although the Shopper's Guide measures only pesticide residues on produce, buying organic also makes sense if you're concerned about bacterial contamination. Organic farmers meet all the sanitation standards required of conventional growers and, on top of that, meet tight restrictions on the use of compost and other organic material that do not apply to conventional fruit and vegetable growers.

“When Should You Buy Organic? Free Guide Ranks Pesticide Contamination of Fruits and Vegetables,” Oct. 4, 2006,

Environmental Working Group Public Affairs: (202) 667-6982.

Bhopal Hunger Strike Wins Indian Government Concessions

After 14 days of fasting, 2000 faxes into the Indian state government, 500 phone calls from around the world, solidarity fasts in front of the Indian Embassy in Washington, and major upheaval and organizing in Bhopal, the Indian government has conceded to demands of the Bhopal survivors for clean water, economic rehabilitation, increased medical care and pay for doctors and other core demands of the Bhopal campaign.

Source: Pesticide Action Network News Update, March 22, 2007; www.panna.org; for more information, see www.bhopal.net.

Boxer Grills EPA's Johnson

In February, California Sen. Barbara Boxer, chair of the Senate Environment and Public Works Committee, accused EPA administrator Stephen Johnson of making rules changes that could limit scientific advice into agency decisions and reduce public access to information about toxic substances.

Johnson said the EPA wanted to cut regulatory costs and give companies incentives to reduce pollution. Decisions included:

- Shutting down or cutting access to seven EPA libraries. (Johnson said the information would be available online or at other libraries; but EPA librarians said that EPA reports and documents were destroyed. Johnson denied this.)
- Easing rules for industry reporting of toxic chemicals discharges.
- Proposing to reduce the role of scientific advisory boards when EPA is studying and developing new air quality standards.

Boxer said she would continue to investigate the EPA decisions.

Source: "Boxer rips EPA chief as bowing to industry," by Zachary Coile, San Francisco Chronicle Washington Bureau, Feb. 7, 2007.

<http://sfgate.com/cgi-bin/article.cgi?f=/c/a/2007/02/07/MNGR1O07N51.DTL>

France Fines Monsanto for False Advertising

Monsanto was fined 15,000 euros (\$19,000 U.S.) in a French court in January for misleading ads about its Roundup herbicide. A former chairman of Monsanto Agriculture France was found guilty for presenting Roundup as biodegradable and claiming that it left the soil clean after use. Monsanto's French distributor, Scotts France, was also fined 15,000 euros. Monsanto plans to appeal the verdict.

Glyphosate, Roundup's main ingredient, is classed as "dangerous for the environment" and "toxic for aquatic organisms" by the European Union.

Source: Organic Consumers Assoc., Organic Bytes, Feb. 22, 2007, www.organicconsumers.org/monlink.cfm; “Monsanto Sued in France for ‘False’ Herbicide Ads,” Yahoo News, Jan. 26, 2007, http://news.yahoo.com/s/afp/20070126/sc_afp/franceuscourt_070126223653

Massachusetts Residents Protest Roundup

People living in Jamaica Plain and Cambridge near Boston tried but failed to convince state authorities to refrain from using Roundup in their neighborhood. The Boston Globe reports that the Massachusetts Department of Conservation and Recreation refused to halt a Roundup application on Southwest Corridor Park despite hundreds of complaints from local residents opposed to the spraying. Community members formed the Neighborhood Pesticide Action Committee seven years ago to work toward eliminating local pesticide use.

Resources: “Differential Effects of Glyphosate and Roundup on Human Placental Cells and Aromatase,” by Sophie Richard, Safa Moslemi, Herbert Sipahutar, Nora Benachour and Gilles-Eric Seralini, *Environmental Health Perspectives*, June 2005, www.ehponline.org/members/2005/7728/7728.html; “Rethinking Roundup,” Pesticide Action Network North America, Aug. 5, 2005, www.panna.org/resources/panups/panup_20050805.dv.html; “Between a Rock and a Harsh Chemical,” by Jim Cronin, *The Boston Globe*, Feb. 4, 2007; Neighborhood Pesticide Action Committee, www.npacboston.org/action_update.html; Pesticide Action Network Updates Service, Feb. 8, 2007, www.panna.org

Pollinators

Pollinator Week--June 24-30, 2007

According to a proclamation by Secretary of Agriculture Mike Johanns and a unanimous vote by the U.S. Senate, the first International Pollinator Week will be June 24-30. The U.S. Postal Service will do a first day issue on June 26 of a booklet of 20 commemorative stamps entitled “Pollination,” featuring the art of Steve Buchanan. The intricate graphic scheme shows bees, bats, birds and butterflies pollinating.

According to a 2006 report by The National Academy of Sciences, “There is direct evidence for decline of some pollinator species in North America.” To protect pollinators and to support biodiversity and a sustainable environment, people are being asked to watch and plant for pollinators and to reduce their harmful impact.

International Pollinator Week is a project of the North American Pollinator Protection Campaign (NAPPC), a cooperative conservation partnership of more than 100 organizations and individuals who form global connections to sustain the environment. The Pollinator Partnership is managed by the non-profit CoEvolution Institute (CoE). For more information, see www.napppc.org and www.pollinator.org.

Disappearing Honeybees

This winter, according to The New York Times, beekeepers in 24 states have noticed that 30 to more than 70% of their bees have vanished, without leaving dead bodies in or around hives. Most hives contain honey, pollen and larvae—but not worker bees. The latter seem to have flown off and never returned. This “colony collapse disorder” (CCD) is a potential problem, since 90-plus North American crops and about one-third of an American’s diet depend on pollination by honeybees.

Many possible causes of the decline have been suggested, including diseases, mites, crowding in hives, nutritional problems, antibiotics, miticides, pesticide(s), stress due to a shorter off-season when they’re not pollinating (as bees are transported to crops around the country for pollination), monocultures—or some combination of these and other hazards.

A German newspaper says that growers there are questioning whether genetically-engineered Bt corn pollen may be part of the problem, while some Texas beekeepers note that most of the affected hives are near corn fields. They wonder whether the insecticide imidacloprid, a neurotoxin that disorients bees, may be responsible. Some uses of imidacloprid have been banned in France since large die-offs of bees occurred there in the mid-1990s and the insecticide was thought to be involved.

Another hypothesis, based on limited data, suggests that electromagnetic radiation from cell phones may be to blame. When mobile phones were put near beehives, bees refused to return.

The CCD working group, which is studying the problem in the United States, is not focusing on GE crops or cell phones as possible causes, since they are not found near many CCD sites, says the group.

Sources: “Honeybees Vanish, Leaving Keepers in Peril,” by Alexei Barrionuevo, The New York Times, Feb. 27, 2007. www.nytimes.com/2007/02/27/business/27bees.html; “Collapsing Colonies—Are GM Crops Killing Bees?” by Gunther Latsch, Der Spiegel, March 22, 2007, <http://www.spiegel.de/international/spiegel/0,1518,473166,00.html>; “A stinging loss for U.S. farmers as honeybees vanish,” by Amy Ellis Nutt, The Star Ledger, April 15, 2007, www.nj.com. “Are mobile phones wiping out our bees?” by Geoffrey Lean and Harriet Shawcross, The Independent, London, April 15, 2007; "Cell Phones To Blame For Deserted Bee Colonies?" Science-A-Go-Go, April 16, 2007, www.scienceagogo.com/news/20070315215055data_trunc_sys.shtml; "Colony Collapse Disorder: Frequently Asked Questions", MAAREC [Mid-Atlantic Apiculture Research and Extension Consortium), March 2007. <http://maarec.cas.psu.edu/FAQ/FAQCCD.pdf>

Seeds

Organic Seed Growers’ Conference and Producers’ Course in Oregon
February 13-15, 2008

The 5th Organic Seed Growers Conference will be held February 14-15, 2008, at the Salem Convention Center in Salem, Oregon. The Conference, co-hosted by the Organic Seed Alliance, Oregon State University and Washington State University, is the largest meeting of seed professionals engaged in organic seed production, research and plant breeding in the United States. For more information, see www.seedalliance.org.

Input and proposals for presentations and posters must be submitted by June 1, 2007, to Micaela Colley at micaela@seedalliance.org. Applicants for presentations and posters will be notified by August 1, 2007. Suggestions for speakers and presentation topics are welcome, also.

A one-day, Feb. 13 pre-conference short course, funded by Western SARE, will address fundamentals of seed production and organic production for organic professionals and farmers interested in learning how to grow specialty seed.

For more information, see www.seedalliance.org or contact Organic Seed Alliance, PO Box 772, Port Townsend, WA 98368, 360-385-7192.

Ball Seed Handling Organic Seeds

Ball Seed is the first large wholesale horticultural distributor certified to process organic seed. As of December 2006, its Organic Seed processing and distribution center has been certified by the Organic Crop Improvement Association under the USDA National Organic Program (NOP) regulations.

For more information, contact Jayson Force, Seed Product Manger, Ball Seed, jforce@ballseed.com, 630 588-3314.

Norwegians Plan Doomsday Vault for Seeds

The Norwegian government is building a "doomsday" vault for seeds of all food crops in a mountain on an island near the North Pole. The vault is to protect 3 million seed samples from nuclear war, asteroid strikes, climate change and other global catastrophes. Global Crop Diversity Trust will collect and maintain the seeds. The vault will also be able to replenish seeds to national seed banks that are harmed by local catastrophes.

Source: "Doomsday" vault design unveiled," by Mark Kinver, BBC News, Feb. 9, 2007, <http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/6335899.stm>

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Beneficial Insects

Iridodial, a compound in catnip oil, matches the chemical structure of the male lacewing's pheromone and attracts these predators—male and female--that eat aphids and mites. Researchers have developed a way to separate the oil from catnip and use it as a lure, which is being commercialized.

“Cologne’ Attracts Beneficial Lacewing Predators,” Agricultural Research Service News Service, USDA, Rosalie Marion Bliss, June 4, 2007; see the May/June 2007 Agricultural Research magazine,
www.ars.usda.gov/is/AR/archive/may07/insect0507.htm

Energy

Industrial row crop production is not helping us eat better. In the past year, the global price of corn doubled, raising many food prices. In the United States, milk prices nearly doubled. Butter prices in Europe are up 40%; pork in China is up 20%; Mexicans rioted in response to a 60% rise in tortilla prices; and U.S. food prices increased more in the first half of 2007 than in all of 2006—largely because 18% of our corn was distilled into ethanol. World grain reserves are at the lowest level in 34 years. Of the 2008 U.S. grain harvest, 30% will go to ethanol.

Sources: Organic Bytes #112, July 27, 2007; www.organicconsumers.org; “U.S. food prices spike upward,” by Patrik Jonsson and Bina Venkataraman, The Christian Science Monitor, June 13, 2007, www.csmonitor.com/2007/0613/p01s01-usec.html

Still, considering crops for biofuels, USDA scientists predict a 40% reduction of greenhouse gas emissions if ethanol and biodiesel from corn-soybean rotations are used instead of gasoline and diesel--about twice the reduction from using corn grain alone; and using switchgrass and hybrid poplar would reduce greenhouse gas emissions nearly three times as much as corn-soy rotations.

Source: “Biofuel Crops Double as Greenhouse-Gas Reducers,” Agricultural Research Service News Service, USDA, Jan Suszkiw, (301) 504-1630, jan.suszkiw@ars.usda.gov, June 8, 2007, www.ars.usda.gov/is/pr

Farmers’ Markets

Farmers’ markets can cut the cost of buying food. Between 1994 and 2006, the number of U.S. farmers’ markets more than doubled to over 3,700, and the value of U.S. agricultural products sold directly increased 37% from \$592 million to \$812 million.

USDA Agricultural Marketing Service, www.ams.usda.gov/farmersmarkets/

Genetic Engineering

Genes don’t function in simple, independent ways (as in the one-gene, one-protein theory) but instead seem to work as complex networks. The biotech industry is regulated according to the simple scenario, as the U.S. Patent and Trademark Office defines a gene as a sequence of DNA that codes for a specific function. The new view raises questions about patents and safety assurances based on the old view.

“A Challenge to Gene Theory, a Tougher Look at Biotech,” by Denise Caruso, The New York Times, July 1, 2007

These new scientific views haven’t stopped the biotech industry, yet. Rice containing human genes that produce proteins found in human breast milk is being grown in Kansas for Ventria Biosciences—even though the product is not FDA-approved. The product is intended for drinks for babies to combat severe diarrhea. Critics argue that safer cures exist—and question the

safety of growing GE “pharma” rice in open fields, after two instances of contamination of U.S. food crops by unapproved GE rice within the past year.

“Rice made with human genes: GM menace or saviour?” by Geoffrey Lean, *The Independent*, June 3, 2007. <http://environment.independent.co.uk/lifestyle/article2609301.ece>; “Farmers Worry About Genetically Modified Rice Approval, *Environmental News Service*, May 21, 2007.

Nor have the new discoveries stopped the GE treadmill. Scientists at the University of Nebraska, Lincoln, engineered a bacterial gene into broad-leaved plants so that the crops resist the herbicide dicamba. This is a response to numerous farmers reporting glyphosate-resistant weeds.

(Glyphosate is the active ingredient in the herbicide Roundup.) Most U.S. corn and soy crops are now Roundup-Ready GE crops, which have created selection pressure for Roundup-resistant weeds. Dicamba-resistance genes are in chloroplast DNA only, which spreads through maternal tissue and not through pollen.

“Scientists create new crop of genetically modified crops,” Posted by Maywa Montenegro, May 31, 2007, *Gristmill*, <http://gristmill.grist.org/story/2007/5/31/105543/48>)

Moving along the food web: Scientists who analyzed data from 42 field experiments say that organisms such as ladybird beetles, earthworms and bees tend to be more abundant in fields of GE Bt cotton and Bt maize than in fields of non-GE cotton and maize treated with insecticides—but fields of non-GE crops that were not treated with insecticides had larger numbers of certain animal groups than fields of GE crops.

“A Meta-Analysis of Effects of Bt Cotton and Maize on Nontarget Invertebrates,” by Michelle Marvier, Chanel McCreedy, James Regetz and Peter Kareiva, *Science*, June 8, 2007: *ATTRA*, *Weekly Harvest Newsletter*, June 20, 2007

Bt crops may be better than insecticides for those organisms in the narrow view, but an extensive, well-referenced report by Jeffrey Smith addresses the broader view. *Bacillus thuringiensis* (Bt) is used by organic growers as an insecticide because the naturally-occurring soil bacterium degrades quickly after application. However, reactions after widespread Bt applications, reports Smith, have included flu-like symptoms; eye, nose, throat and respiratory problems; skin irritation; seizures; and an antibody immune response. People with compromised immune systems are warned against exposure to Bt sprays..

Plants that are genetically engineered to express the Bt toxin produce about 3,000-5,000 times as much toxin as sprays—continuously and persistently in every cell. Smith notes problems that may be associated with GE Bt crops:

- illnesses among Filipinos living near Bt corn crops that were shedding pollen
- immune responses in animals exposed to Bt corn
- studies showing that the Bt toxin is not completely destroyed in the digestive system of mice.

Smith discusses these problems in *Genetic Roulette: The Documented Health Risks of Genetically Engineered Foods*. His first book was *Seeds of Deception*.

“Genetically Engineered Foods May Cause Rising Food Allergies--Part 2: Genetically Engineered Corn,” by Jeffrey M. Smith, The Institute for Responsible Technology, www.responsibletechnology.org/

You may find out about Bt toxicity yourself, since foods from engineered crops are not labeled in the United States. And now, the European Union's Agricultural Ministers, who previously required no GE contamination in organic food, say that organic food contaminated with up to 0.9% GE organisms can still be labeled "organic." Friends of the Earth, at www.naturalchoices.co.uk, accuse EU ministers of favoring the biotech industry over consumers' interests, adding, “The EU and UK must now introduce tough legislation to protect organic and conventional farmers from genetic pollution.”

PANUPS News Update, June 21, 2007, www.panna.org

Hemp

In June, two North Dakota farmers (including State Rep. David Monson) sued in federal court, trying to end the U.S. Drug Enforcement Administration's (DEA) ban on commercial hemp farming. The North Dakota Legislature recently removed the requirement that state-licensed industrial hemp farmers obtain DEA permits, and North Dakota Agriculture Commissioner Roger Johnson licensed the two farmers to grow hemp. The question now is whether federal authorities can prosecute state licensed farmers who grow non-drug hemp for oil and fiber. "The legislative action was a direct response to the DEA's refusal to waive registration requirements, including \$3,440 in non-refundable yearly application fees, and the agency's inability to respond reasonably to the farmers' federal applications in time for spring planting," says Eric Steenstra, Vote Hemp's president.

“North Dakota to DEA: Out of Our Hemp Fields,” press release, Vote Hemp, April 30, 2007, www.votehemp.com/PR/04-30-07_north_dakota_to_dea.html

Landscaping

Maine is showing how to landscape without endangering children or N fixation—or Portland waters (where yard care chemicals have been found). The Maine YardScaping Partnership broke ground on the Back Cove YardScaping Demonstration Site in June. The site will showcase low-maintenance, ecologically sound plantings. See www.yardscaping.org. And Paul Tukey's SafeLawns.org received an award from the Garden Writers Association for its video, "Making the Organic Transition in Lawn Care."

Pesticide Action Network News Update, June 14, 2007; www.panna.org

Nutrition

Buying milk directly from farms may cut food costs—and increase health. A study of thousands of children suggests that drinking “farm milk” (milk purchased from or consumed at a farm) can reduce the incidence of asthma and hay fever--whether the milk was boiled or raw (as reported by parents). The researchers warn, however, that raw milk may contain pathogens, but they add that unpasteurized milk may contain protective compounds. “Drinking Farm Milk Reduces Childhood Asthma And Allergies, But Raw Consumption Remains Unsafe, Study Finds,”

Science Daily, May 11, 2007, www.sciencedaily.com/releases/2007/05/070510093349.htm. Original study: Inverse association of farm milk consumption with asthma and allergy in rural and suburban populations across Europe. Waser et al. Clinical and Experimental Allergy, 37, 661-670. May 2007

Young children who regularly eat homegrown produce eat more than twice as much of those healthy foods as kids who seldom get garden-fresh produce, say researchers at Saint Louis University Medical Center. Interviews with some 1,600 parents of preschoolers in Missouri found that children who grow up eating homegrown produce prefer the taste of fruits and vegetables to other foods. Parents should plant a garden or encourage schools to do so, conclude the researchers.

“When Produce Is Homegrown, Kids Eat Better,” by Robert Preidt, Health Day News, MedLine, May 18, 2007.
www.nlm.nih.gov/medlineplus/news/fullstory_49418.html

Organic News

Subsidized Row Crop Ag Should Step Aside for Local, Organic

The Environmental Working Group (EWG) says taxpayer-subsidized row crop farmers flush about \$391 million worth of nitrogen fertilizer down the Mississippi River each spring, the source of more than 70% of the total nitrate pollution entering the Gulf of Mexico each spring. Taxpayer subsidies encourage excess fertilizer use to produce corn and other commodities.

The EWG says nitrate pollution is greatest where crop subsidies are concentrated and where some counties get 10,000 times more in crop subsidies than in water quality conservation dollars. While thousands of farmers signed up for federal programs supporting clean water, best management practices and conservation, many were turned away because most money is being spent on traditional subsidy programs. The EWG suggests more support for environmental farming practices.

“Dead in the Water,” Environmental Working Group, www.ewg.org/reports/deadzone/

And why not? A University of Michigan study found 293 examples in previous studies indicating that organic farming is more productive than industrial agriculture and can feed the world. "Model estimates indicate that organic methods could produce enough food on a global per capita basis to sustain the current human population, and potentially an even larger population, without increasing the agricultural land base."

Sources: “Organic Farming Can Feed the World,” Organic Bytes #113, Organic Consumers Assoc., July 12, 2007; www.organicconsumers.org/articles/article_5996.cfm; and “Organic farming could feed the world,” by Catherine Brahic, New Scientist, July 12, 2007; <http://environment.newscientist.com/article/dn12245-organic-farming-could-feed-the-world.html>)

Consumers continue to support the goodness of organic foods and soils. The Organic Trade Association's (OTA's) 2007 Manufacturer Survey says U.S. organic food sales totaled nearly \$17 billion in 2006, representing approximately 3% of retail sales of food and beverages--up from

1.9% in 2003 and approximately 2.5% in 2005. Sales of organic foods grew by 22.1% in 2006 to \$16.9 billion. Sales in 2005 were \$13.831 billion. The OTA launched HowToGoOrganic.com for producers and processors transitioning to organic.

“U.S. organic sales show substantial growth,” Organic Trade Assoc. press release, May 6, 2007. Full report sold at www.ota.com/bookstore.html

Foods labeled as organic in the United States may contain some nonorganic ingredients. In June, the USDA published an interim final rule to amend its National List of Allowed and Prohibited Substances to include 38 nonorganic, minor ingredients recommended by the National Organic Standards Board, when organic ingredients are not available. The interim final rule, effective June 21, 2007, provided a 60-day period for additional comment. This is the same rule that the USDA published on May 15, 2007--with a 7-day comment period, after which some 1,250 people commented that the comment period was too short.

USDA Agricultural Marketing Service press release No. 133-07, Joan Shaffer and Billy Cox. The interim final rule is posted at www.ams.usda.gov/nop .

Organic advocates such as the Cornucopia Institute are watching factory farms that allege to be organic. In June, authorities suspended organic certification of the 10,000-cow Case Vander Eyk Jr. Dairy in Pixley, California. In 2005, Cornucopia filed a formal legal complaint with the USDA against large factory-farm operators, including Vander Eyk, alleging violations of organic law by confining animals. Quality Assurance International (QAI), a USDA-accredited certifier, suspended Case Vander Eyk’s organic certification for questions about records of antibiotics, hormones, feed and grazing. Mark Kastel of Cornucopia questions why QIA certified the farm in the first place.

Cornucopia Institute press release, “Factory Farm Producing ‘Organic’ Milk Shutdown--Industry Coalition Demanding Organic Integrity Prevails,” June 7, 2007, Mark Kastel, 608-625-2042

People

In May 2007, Maine Coast Heritage Trust (MCHT) gave MOFGA member Tin Smith the 2006 Land Heritage Award. Smith helped found the Great Works Regional Land Trust, for which he has volunteered for 20 years, including serving six years as its president. Great Works stewards 3,400 acres in southern Maine. Smith helped launch the Wells National Estuarine Research Reserve at Laudholm Farm and is its stewardship coordinator. In 1998, he spearheaded creation of the Coastal Mosaic Project at the Reserve, which provides natural resource data and maps to conservation groups and is a leading GIS center in southern Maine. Smith also helped found the Maine Land Trust Network, an education and training resource. A resident of Wells and an organic farmer, Smith is a common fixture at the Common Ground Fair, where he sells entrance tickets.

Pesticides

Board of Pesticides Control

Pesticides Board Pressured by Structural Pest Control Industry

After an exhaustive process, Maine's Board of Pesticides Control (BPC) adopted Chapter 26, Standards for Indoor Pesticide Applications and Notification for All Occupied Buildings Except K-12 Schools, in May 2006, and the standards became effective on January 1, 2007. Since then, members of the structural pest control industry have complained that the rule is unworkable and burdensome.

The New England Pest Management Association introduced LD 1698, "An Act To Provide for Public Notification of Indoor Pesticide Applications," sponsored by Senator Nancy Sullivan. LD 1698 sought to change procedures for notification,¹ exempt crack and crevice (C&C)² treatments from notification requirements and exempt FIFRA Section 25(b)³ pesticides from the rule. The Joint Standing Committee on Agriculture, Conservation and Forestry reported the bill out as 'ought not to pass,' contingent on the BPC's placing the issue on its next meeting agenda.

Accordingly, the BPC reviewed concerns of the structural pest management industry at its June 2007 meeting. Representatives from several pest control companies were present and admitted that the exemption for FIFRA Section 25(b) materials that was part of the proposed legislation was not necessary. The real issue for them is that they must follow the same notification requirements for C&C treatments as for any application, which they believe causes an undue burden on their business. They argue that C&C treatments are exempted in Chapter 27, Standards for Pesticide Application and Public Notification in Schools, and that the rules should be consistent.

Board members who helped develop the rule maintain that a definition is needed of C&C that avoids exposure; and that their concern is primarily with potential exposure to airborne particulates.

A representative from Modern Pest Services explained that equipment and products keep getting better, but pesticide applicators are not required to use these improved products.

Russell Libby, MOFGA's executive director, suggested that the BPC review all notification requirements across all rules, evaluate which work best, and develop a standard notification procedure. The BPC directed the staff to draft language around C&C applications and posting requirements that would satisfy all parties. The public may comment to the BPC on this issue.

Genetically Engineered Bt Field Corn

At its April 2007 meeting, the BPC discussed pending registration requests from three companies covering seven Bt corn products (corn that has been genetically engineered to express a toxin produced by the *Bacillus thuringiensis* bacterium). A technical committee is reviewing concerns relating to insect resistance and gene flow (including pollen drift). Lauchlin Titus, Certified Professional Agronomist, presented information he has collected to support the need for these products.

Titus estimates that the percentage of Maine corn growers using soil insecticides has gone from 15 in 2003 to 40 in 2006. (Other professionals working in the field estimate that the insecticide use in the state is much lower.) From Titus' perspective, this increase is explained partly by a

difference in the economic climate and relative costs of these products now compared with four years ago. Titus assumes that if farmers can afford these products, they will purchase and use them as 'insurance' against crop failure.

The Bt corn seed will cost an additional \$5 to \$10 per acre (assuming the farmer is already purchasing seed with other 'stacked traits,' such as Roundup Ready), while reducing the current \$6-12 per acre cost of applying insecticides, with the additional benefit of eliminating personal and environmental risk associated with use of the product(s).

Titus agrees that crop rotation is the best option to limit pest pressure, but that option is not viable for the farmers with whom he works, who have to continuously plant all the land they have available. Titus believes that these Bt corn products may increase yields, but no data from studies in Maine support this.

Another serious challenge to Maine farmers is that seed companies are making fewer and fewer seed varieties without this trait, so options, especially for short season varieties, are limited without registering Bt corn varieties.

Despite over 100 emails and 50 people present to oppose registration of Bt corn, the BPC voted at its July 29 meeting to register seven genetically engineered field corn products from three companies, Pioneer Hi-Bred International, Dow AgroSciences and Monsanto. In registering any new pesticide, the BPC is charged with determining that a need for the product exists and that use of the product will not cause unreasonable, adverse effects on the environment. The BPC determined that farmers had made a sufficient case for need, citing competitive disadvantage and reduced exposure to pesticides; and that the products present no unreasonable adverse effects that cannot be addressed through conditions imposed on registration of the product and through further rulemaking around use of the product. Board member John Jemison abstained from voting, but the remaining five members voted to approve the registration request with two conditions: that the applicant provides aggregate sales data to the board; and that the applicant participates in and supports an education program.

The board also voted (5-0-1, with Jemison abstaining again) to instruct BPC staff to draft rulemaking to address concerns including pollen drifting onto neighboring farms, establishing and enforcing a sufficient education program around the use of Bt corn, and tracking sales. A public comment period will follow the rulemaking.

Browntail Moth and Marine Waters

The Maine Legislature enacted emergency legislation in the spring of 2006 and 2007, temporarily restricting pesticide applications near marine waters to control browntail moths. The Joint Standing Committee on Agriculture, Conservation and Forestry agreed with a recommendation from the BPC to continue the restrictions during 2007, so that the BPC could develop a rule to continue the restrictions indefinitely. A rule will be in place before the 2008 browntail moth spray season.

In the current, temporary rule, biological pesticides, injected pesticides and applications using nonpowered equipment are exempt; rulemaking leaves the specific ingredients up to the discretion of the BPC. No spray is allowed within 50 feet of the high water mark. Spray between 50 and 250 feet of the high water mark is allowed only with an approved product; with certain application methods; and when the spray is directed away from water and the wind is blowing away from water at 2 mph or more.

Fines

The following companies were fined for violating pesticide application rules:

- Maine Helicopters, Inc. of Whitefield--Imidan was applied to two blueberry fields in Steuben that were not supposed to be sprayed. A Maine Helicopters' employee marked the wrong fields on the map supplied to the pilot. A fine of \$2,500 was agreed upon.
- The Lawn Ranger of Brunswick--An unlicensed commercial applicator applied pesticides. A few customers specifically requested that a granular fertilizer/pesticide combination be applied to their lawns. A BPC inspector observed these applications on two occasions.
- Northeast Agricultural Sales, Inc.--A licensed, restricted-use pesticide dealership operated a major pesticide storage facility that did not comply with BPC requirements in Chapter 24. The staff pursued enforcement action after the company was very slow to respond to BPC efforts to bring the facility into compliance. A fine of \$2,000 was agreed upon.

Russell Libby told the BPC that if a major storage facility is noncompliant, the board should not wait a year to inspect the facility and another year to inspect again after major violations were found upon the first inspection. Board chair Carol Eckert agreed, especially considering the potential for disaster in such a large facility.

Other Business

The board is developing acceptable methods of "Verifiable Authorization" for commercial applicators providing ongoing, periodic applications. As of the June 2007 meeting, the BPC is leaning toward requiring one method of verification if a response is received (ex/pre-payment, signed contract) and two methods of verification otherwise (mailing where details of pesticide application are prominent, record or recording of phone call, e-mail).

The BPC continues to draft language regarding buffer zones to protect water quality. Defining which types of surface waters would be affected is difficult.

Following application to the BPC for registration of several plant incorporated pesticide (PIP) products, the technical committee continues to review the potential for gene drift and development of insect resistance from genetically engineered Bt crops. For more information, or to provide information, contact committee chair John Jemison, jjemison@umext.maine.edu, (207) 581-3241.

A stakeholders' committee will soon issue a final report about pesticide drift issues to the BPC. Contact MOFGA's associate director Heather Spalding for more information: heathers@mofga.org, (207) 568-4142, MOFGA, PO Box 170, Unity, ME 04988.

LD 861, "An Act To Require a Commercial Applicator's License To Use Pesticides in Food-handling Establishments," closes a loophole that allowed pesticide applications in non-public areas of food-handling establishments without an applicator's license.

LD 1798, "An Act To Fund Pesticide Education in the State," was signed into law, but not before being modified from its original form to remove the funding mechanism of a 15-cent surcharge on each container of pesticide sold.

LD 1891, "An Act To Designate Certain Rules of the Board of Pesticides Control as Major Substantive Rules," was signed into law in May. Any major rule changes the BPC creates must now be approved by the Legislature before going into effect.

¹The rule currently requires notification of at least 24 hours and no more than seven days before a pesticide application.

²Crack and crevice treatments are defined in Chapter 26 as "using an injector tip and placing the tip inside an opening to apply small amounts of pesticides into cracks and crevices in which pests hide or through which they may enter a building."

³FIFRA Section 25(b) products are defined by the EPA as minimum risk pesticides that do not require an EPA registration. Many of the products on this list are plant-based, such as garlic, garlic oil, citric acid, citronella and citronella oil.

[end of BPC news]

Pesticides Poison Kids, Disrupt N Fixation

More than 6,000 Canadians (nearly half under age six) are directly poisoned by pesticides annually, says the David Suzuki Foundation. "The mere presence of pesticides in a home, garage, or garden creates a risk to homeowners and children, as does the application of pesticides," says Lisa Gue of the Foundation. "Governments should ban the use and sale of cosmetic pesticides on lawns and gardens to eliminate a probable source of many of these poisonings."

"The best way to prevent these tragic pesticide poisonings is by banning toxic lawn chemicals," says Dr. Kapil Khatter of the Canadian Association of Physicians for the Environment. More than 125 Canadian municipalities restrict cosmetic pesticide use, and Quebec province prohibits the sale of pesticides containing any of 20 active ingredients. "Thousands of Canadians poisoned by pesticides each year," press release, June 21, 2007, David Suzuki Foundation. Full report, "Northern Exposure: Acute Pesticide Poisonings in Canada," at www.davidsuzuki.org/Publications/Northern_exposure.asp

Pesticides can also disrupt communications between crops and soil bacteria that fix nitrogen, thus reducing yields or delaying growth, say University of Oregon researchers. Legumes secrete chemicals that signal N-fixing bacteria, which convert atmospheric N into ammonia for plants to use. More than 20 commonly used agrichemicals bind to and block connections to receptors in N-fixing rhizobia bacteria.

University News, University of Oregon, "Pesticides can block nitrogen path," June 6, 2007, www.uoregon.edu/newsstory.php?a=6.6.07-Crops-Jen.Fox.html, Jennifer Fox, 541-346-1537

Rooftop Gardens

Environmentalists from the nonprofit New York City Sun Works say that hydroponic systems on New York's 14,000 acres of unshaded rooftop could feed as many as 20 million people all year. Rooftop gardens on schools would help reduce vandalism and support winter gardening. "Environmentalist Dreams of New York Rooftop Farms," by Sinead Carew, Planet Ark World Environment News, Reuters, Aug. 6, 2007

Soil Fertility

Here's a biofuel-related product to watch: agrichar. The New South Wales Department of Primary Industries' (DPI) Wollongbar Agricultural Institute has studied this black carbon byproduct of pyrolysis (heating biomass without oxygen to generate energy). Agrichar is a stable carbon compound, which, added to soil at a rate of 10 tons/ha, doubled or tripled crop growth while storing carbon for many years (thus reducing CO₂ and nitrous oxide emissions from soils.) Wheat grew as well with agrichar alone as with N fertilizer. The product raises soil pH and calcium levels; can reduce aluminum toxicity; improves soil biology and soil water-holding capacity; and reduces the need for fertilizers. DPI researchers say that one application of agrichar may equal decades of annual compost applications of the same weight. The product will not be available until pyrolysis plants are built.

"Soil offers new hope as carbon sink," New South Wales Department of Primary Industries, Science Blog, June 1, 2007, www.scienceblog.com/cms/node/13355/print; Link: www.dpi.nsw.gov.au/research

Composting operations can help farmers grow that food for farmers' markets, and Maine officials developed a new process in June for overseeing commercial compost operations. Previously, the Department of Environmental Protection (DEP) had authority over these operations because of potential pollution from runoff, but some lawmakers wanted Maine's agriculture department to regulate the businesses, because they help farmers. A compromise was developed in light of a 2005 case of pollution in Lyman, when heavy rains caused retention ponds to overflow at Winterwood Farm and nutrients ran into a brook. (Winterwood settled with the DEP over the complaint and reportedly is developing a plan to prevent runoff.) Now, the DEP will review standards for commercial composting permits; and the agriculture department will help develop compost management guidelines. The Maine Association of Agricultural Composters says the compromise will help the industry.

"Compromise reached over state control of compost operations," by John Richardson, Portland Press Herald, June 20, 2007

That good compost can help fight climate change. The Rodale Institute has shown that sustainably-farmed soil absorbs 30% more carbon than conventional agriculture, and switching U.S. farmland to organic would cut U.S. greenhouse emissions by 10% (20% in most of the rest of the world). A 10-minute video explains how. See "SOIL: The Secret Solution to Global Warming," at www.quantumshift.tv/v/1181028043/. Organic Bytes #112, July 27, 2007; www.organicconsumers.org

A USDA study supports the move to organic. Organic farming can build soil organic matter better than conventional no-till farming, according to a nine-year USDA study in Maryland. No-till eliminates plowing and minimizes even light tillage to avoid damaging organic matter and soil erosion, while organic farming often relies on tillage and cultivation to kill weeds; but the study showed that organic farming's use of manure and cover crops more than offset losses from tillage, and organic plots had more carbon and nitrogen and yielded 18% more corn than other plots. "Organic Farming Beats No-Till?" Agricultural Research Service News Service, USDA, Don Comis, July 10, 2007; Agricultural Research, July 2007, www.ars.usda.gov/is/AR/archive/jul07/soil0707.htm

Urine could help meet the N needs of plants. Urine makes up 1% of the volume of wastewater but contributes about 80% of the N and 45% of the phosphate. Some Europeans use urine separation toilets to divert urine from the sewage stream, recycle the nutrients, and save energy and water. Civil engineer and urine-separation expert Jac Wilsenach, at Delft University of Technology in the Netherlands, calculated that separating half our urine would create sludge that is richer in organic matter and generates more methane, turning sewage works from net consumers to net producers of energy. Separated urine can be used as fertilizer, which could be helpful as the world's phosphate mines are expected to run out in 100 years. Others are experimenting with extracting N and K from urine in forms that can be sprayed onto crops. "Pee-cycling," by Graham Lawton, New Scientist, Dec. 20, 2006

Water

Do high food prices have you thinking of switching from milk to water? If so, avoid bottled water. Tap water quality is more strictly controlled, and some bottled water is tap water. Still, each U.S. citizen drank over 22 gallons of bottled water in 2004. Some 1.5 million gallons of oil are used to make plastic water bottles each year, and thousands more gallons of oil are used to transport water. Only about 10% of the bottles are recycled. In some areas, extracting water is causing shortages for nearby consumers. Two gallons of water are wasted to purify every gallon of bottled water. So, bottle your own water, preferably in glass.

"Is Bottled Water Better?" Greentips, June 2007, http://ucsaction.org/ct/Pp_h4oK1MzJd/

Wine

Clem Blakney and Ron Rudolph are creating an organic vineyard and winery on their Unity properties. They have planted 1,200 vines and anticipate a winery where customers enjoy their organic product with local cheese, bread and art, and a view to Sugarloaf. Blakney chose the spot for its view, southern exposure, and for the community, including MOFGA, the Unity Barn Raisers and Unity College. Blakney learned to grow grapes in the Pacific Northwest. He sees

potential for the wine industry in Maine as temperatures rise in California's Sonoma Valley, but Maine growers and horticulturists note Maine's difficult climate.

"Unity men join forces to create state's largest vineyard," by Craig Crosby, Kennebec Journal & Morning Sentinel, June 10, 2007

Winter 2007-2008

Bees

Bees could use an immune boost. By screening genetics of healthy and unhealthy bees, scientists found a strong correlation between colony collapse disorder (CCD) and a honeybee virus called Israeli acute paralysis virus (IAPV). The virus was in 96.1 percent of the CCD-bee samples. This is the first report of IAPV in the United States; it was first identified in Israel in 2002, where bees exhibited such unusual behavior as twitching wings outside the hive and loss of worker bee populations. Researchers have not proven that IAPV causes CCD; and other factors, such as stress, may be involved.

"Genetic Survey Finds Association Between CCD and Virus," Agricultural Research Service News Service, Sept. 6, www.ars.usda.gov/is/br/ccd/

A more organic approach to beekeeping may help honeybees. In an article about her family's bees, Leslie Land says she thought that keeping heirloom bees might broaden bees' genetics and strengthen the colony against disease—and that weaknesses in bees were probably masked previously by use of pesticides and antibiotics on bees. Those treatments are no longer working well, and at the same time, a narrow gene pool of susceptible bees has probably been selected. Land learned from Charles Mraz of Champlain Valley Apiaries in Vermont that breeding colonies from your own survivor bees is the best way to ensure resistance and genetic variation—and that backyard beekeepers, with bees adapted to the local climate, with four or five hives spread out, and, if possible, with only natural treatments against pests, can help significantly. Land gave the following resources for beekeepers: Beesource.com; The University of Minnesota Bee Lab (www.extension.umn.edu/honeybees); and American Bee Journal (dadant.com).

"Backyard Beekeepers as Warriors Against a Plague," by Leslie land, The New York Times, Sept. 27, 2007

Genetic Engineering

In July, Maine's Board of Pesticides Control (BPC) approved license applications from Dow, Pioneer and Monsanto for genetically-engineered (GE) corn that contains the Bt (*Bacillus thuringiensis*) toxin. Most BPC members accepted that the Bt corn was needed and would not adversely affect the environment. (Now-former member Lee Humphreys opposed the move, but after voting against a motion saying the corn was needed, and against a motion saying the corn would have no significant adverse environmental effects, she felt forced to vote for a third motion, because it would regulate use of the corn.) Similarly, the USDA deregulated GE plums in July, despite thousands of opposing comments.

Just three months after the BPC's move, the National Science Foundation (NSF) reported that as pollen, leaves and cobs from Bt corn wash into streams near corn fields, toxins from Bt corn

travel far and may harm aquatic insects and fish that eat them. Previous studies, said the NSF, show that corn-grown toxins harm beneficial insects living in the soil. Field data, added the NSF, indicate that Bt corn pollen is being eaten by caddisflies, close genetic relatives of targeted Bt pests; and lab tests show that eating Bt corn byproducts reduced growth and increased mortality of caddisflies. Fish and amphibians eat caddisflies.

Bt corn is engineered to produce a toxin that protects against pests, particularly the European corn borer. Bt corn now accounts for approximately 35% of U.S. corn acreage, and its use is increasing. Streams draining the landscape heavily intersect Midwest agricultural lands where Bt corn is grown.

“Genetically Engineered Corn May Harm Stream Ecosystems,” National Science Foundation, Oct. 9, 2007; www.nsf.gov/news/news_summ.jsp?cntn_id=110265&org=NSF&from=news; D. Saxena, G. Stotzky, 2000, “Insecticidal toxin from *Bacillus thuringiensis* is released from roots of transgenic Bt corn in vitro and in situ,” *FEMS Microbiology Ecology* 33(1), 35–39.

MOFGA opposed the Bt corn registration, because Bt that is not genetically engineered and is not incorporated into plants, but is applied only as needed as an insecticide, is an important tool used by some organic farmers to control rootworms, cutworms and corn borers. With GE Bt corn, however, the entire plant becomes an insecticide, likely hastening development of resistance.

The major sources of information that the BPC had on pests in field corn came from an informal survey by a seed supplier and the testimony of dairy farmers who want to use the corn. Pests that might be controlled are not present for the entire growing season, are not sprayed often, and are most prevalent when crop rotation is not practiced.

The BPC had scheduled a November hearing on draft rules for using the Plant Incorporated Pesticide (PIP) crops as we went to press. Organic grower Jim Gerritsen of Wood Prairie Farm in Bridgewater urged the BPC to require annual training for farmers wishing to use Bt corn and for all dealer personnel handling PIPs. Gerritsen also proposed a 1-mile buffer between GE corn and certified organic corn crops, seed corn crops, or sweet corn crops, the minimum isolation distance for seed corn noted in Knott's Handbook for Vegetable Growers. He added that approximately 10,000 mail-order customers who seek his quality organic seed and food expect it to be free from genetic contamination. “I assert my right, and the rights of all organic farmers, to provide clean crops, free of genetic contamination, to our families and to our customers.” Finally, Gerritsen opposed “the secrecy implied in the provisions for requested confidentiality... Concerned citizens in order to protect themselves and their families should have public warning of proposed Bt corn use. In past years when we spread raw herring scale on our fields our supplier was required by the DEP to run public announcement ads in the local weekly newspapers. In the same way, BPC should require the manufacturer or its dealer or the farmer to run similar public ads including maps and locations of proposed Bt corn plantings. By any standard the temporary scent of natural fish scales pales in comparison to the threat of unwanted genetic pollution from such a notorious pollen emitter as Bt corn.”

Native peoples in Minnesota worry about the legal future of their traditional wild rice, says Winona LaDuke in *Orion* magazine. They are upset that California's paddy-grown rice is

marketed as "wild" and that universities and corporations want to genetically engineer and patent strains of wild rice.

"Tribes Concerned over Wild Rice Patent," National Sustainable Agriculture Information Service, Weekly Harvest Newsletter, Aug. 1, 2007; attra.ncat.org/newsletter/archives.html

Peruvians, too, reject GE. Farmers and residents of the Cusco region of Peru passed an ordinance restricting transport and production of GE potatoes and other crops, in order to protect genetic diversity of native crops.

Pesticide Action Network News Update, July 26, 2007; www.panna.org

Not so sweet, however, is news that American Crystal, a Wyoming-based sugar company with an organic line of sugar, and other leading U.S. sugar providers say they will source their sugar from sugar beets that have been genetically engineered to withstand Monsanto's Roundup herbicide; the product will arrive in stores in 2008—without a GE label. Half of the granulated sugar in the United States comes from sugar beets. Candy companies such as Hershey's are urging farmers not to plant GE sugar beets, noting consumers' resistance. The European Union has not approved GE sugar beets for human consumption.

Organic Bytes, Sept. 12, 2007, Organic Consumers Assoc., www.organicconsumers.org/articles/article_7031.cfm

Livestock

The City of Vancouver, host of the 2010 Olympics, voted to become the first host city in the world to recommend not using eggs from caged hens in city-run facilities. The city council also recommended that residents and food businesses choose certified organic, free-range eggs. The neighboring city of Richmond made the same recommendation earlier.

"Vancouver Bans Caged Hen Eggs from Facilities," ACORN Organic E-News, Sept. 5, 2007, www.acornorganic.org

Nutrition

After a single dietary change, lab mice with a genetic tendency toward Alzheimer's disease did as well as healthy peers in maze tests. The differences in the Alzheimer's-prone mice occurred after feeding them blueberry extracts for eight months from the equivalent of their early adulthood to early middle age.

"Blueberry Extracts Boost Brain Function," Agricultural Research Service, USDA, Aug. 8, 2007, www.ars.usda.gov/is/AR/archive/aug07/aging0807.htm

Researchers in Britain recently showed that a mix of some common artificial colorings and the preservative sodium benzoate in drinks can increase hyperactivity and decrease attention span in a range of children—not only in those with learning problems. The dose of additives equaled that in one to two servings of candy per day, and responses were sometimes seen within an hour.

"Some Food Additives Raise Hyperactivity, Study Finds, by Elisabeth Rosenthal," The New York Times, Sept. 6, 2007

A man who had eaten microwaved, butter-flavored popcorn at least twice a day for 10 years developed “popcorn lung”—a disease also known in popcorn plant workers who inhale the synthetic, butter-flavored diacetyl on the job. Heated diacetyl inhaled over long periods seems to damage or destroy lungs. The consumer in this case inhaled the buttery smell deeply when he opened popcorn bags. Concentrations of diacetyl in his home after he microwaved popcorn were like those in popcorn plants. Popcorn manufacturers interviewed denied any problem with normal, everyday consumption of their products, but had removed or were planning to remove diacetyl from their products due to consumers’ concerns.

“Doctor Links a Man’s Illness to a Microwave Popcorn Habit,” by Gardiner Harris, The New York Times, Sept. 5, 2007

Organic

UC Davis researchers say that organic tomatoes contain more of the health-protective flavonoids quercetin and kaempferol than those raised conventionally, and that the flavonoids increase after soil health is established and heavy additions of compost are not needed. The 10-year research project compared dried tomatoes raised organically with those raised conventionally and found a mean of 79% more quercetin and 97% more kaempferol. Researchers suggest that excess, readily available nitrogen in nonorganic agriculture lowers concentrations of the flavonoids. Similarly, European research shows that organic tomatoes, peaches and processed apples were more nutritious than nonorganic.

Pesticide Action Network News Update, Aug. 2, 2007; www.panna.org; abstract at <http://pubs.acs.org/cgi-bin/sample.cgi/jafcau/2007/55/i15/abs/jf070344+.html>; “Organic food 'better' for heart,” BBC News, July 5, 2007, <http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/6272634.stm>

Have some organic meat with those organic tomatoes? A study of breastfeeding mothers in the Netherlands, reports the British Journal of Nutrition, says a diet in which 90% or more of dairy and meat products are organic increases amounts of a beneficial fatty acid in mothers’ breast milk. The fat, conjugated linoleic acid (CLA), is thought to be anti-carcinogenic, anti-atherosclerotic, anti-diabetic and immune-enhancing, and is believed to favorably influence body fat composition. For newborns, CLA is believed to aid immune system development especially. Other studies have shown that cows that get most of their nutrition from grazing pasture produce milk with less saturated (“bad”) fat and more unsaturated (“good”) fatty acids and CLA. European Union and U.S. organic standards require that dairy farms maximize use of pasture. “Study: Organic Dairy and Meat Improves Quality of Mothers’ Breast Milk,” Press Release, Cornucopia Institute, July 24, 2007; report at www.cornucopia.org/Rist_2007_study.pdf

Something’s green in D.C., where a section of the National Mall is getting a “green make-over” from [Safe Lawns.Org](http://www.SafeLawns.Org). The project will test whether environmentally friendly soil treatments such as compost tea can improve soil and grass viability under the extreme compaction on the National Mall. At an excellent talk on organic lawn care in Camden in October, Paul Tukey of Safe Lawns and of People, Places & Plants told a packed room about his excitement for this project and encouraged Maine’s coastal communities to follow suit in order to preserve coastal ecosystems and health.

Diann Black-Layne, Antigua's chief environment officer, has proposed that the Caribbean island transition to organic farming within 10 to 15 years. The call came after recent incidents of improper use and disposal of pesticides and chemical fertilizers. "We are importing [organic foods]," Black-Layne told the Antigua Sun. "The fact that there is a market for it speaks volumes. It's a healthier choice, for our environment and our water supply and human health." Black-Layne noted that Antigua's farms are "nice and small and geared toward organic farming." In addition to saving money and increasing yields, Black-Layne predicts that Antigua could make a name for itself as an "organic territory" that might "lure more tourists, especially the health gurus."

Pesticide Action Network News Update, Sept. 6, 2007, www.panna.org

Back home, in August, USDA Secretary Mike Johanns announced the availability of \$1 million to defray annual organic certification costs in 15 states, including Maine. The states will reimburse each eligible producer for up to 75% of organic certification costs, not to exceed \$500. This program is in addition to and separate from the USDA's National Organic Certification Cost Share Program. (See www.ams.usda.gov/nop.)

That \$1 million is...not much, as an August 19 New York Times article by Andrew Martin shows: The National Organic Program, which regulates the organic industry, has just nine staff members and an annual budget of \$1.5 million, while some individual chemical-agribusinesses receive more than that in subsidies, including \$1.7 million to a single mega-farm in Florida. The USDA (whose annual budget is \$100 billion) spent \$28 million on organic agriculture programs last year—and \$37 million subsidizing farmers who grew dry peas; but consumers spend only \$83 million a year on dry peas, and spent almost \$17 billion last year on organic food. The Times noted, "It's not entirely surprising that organics are such a low priority at the department and in Congress. Both the agency and farm-state members of Congress are reliable cheerleaders for industrialized agriculture, and Big Ag has often viewed organics with suspicion, if not outright disdain." Organic Bytes #116, Aug. 23, 2007; FMI: www.organicconsumers.org/articles/article_6710.cfm). As we went to press, the Farm Bill was headed for the Senate floor with some provisions for increased funding for organic agriculture.

One result of low funding and undue influence by industrial agriculture is that nonprofits, such as the Cornucopia Institute and the Organic Consumers Association (OCA), have had to guard organic agriculture carefully. Cornucopia has filed several complaints with the USDA alleging that some large organic milk producers, such as Aurora Organic Dairy, have not met federal organic standards. Cornucopia alleged that Aurora kept thousands of cows confined, with little pasture access. The USDA found problems with Aurora's records and with keeping organic and nonorganic cows together, and suspended a portion of Aurora's organic certification. Aurora agreed to stop labeling some of its milk as "USDA Organic," to sell hundreds of conventionally raised cows, to expand its pasture and to file new organic systems plans. Aurora's certifying agent, the Colorado Department of Agriculture, agreed to increase its training and hire more personnel. No fine was levied against Aurora, even though Federal organic regulations state that "any operation that knowingly sells or labels a product as organic, except in accordance with the Act, shall be subject to a civil penalty of not more than \$10,000 per violation."

In September, Cornucopia filed another legal complaint alleging that Aurora's newer 4000- to 4200-head dairy is not grazing cattle or providing pasture in accordance with federal law. Cornucopia also filed a legal complaint against two USDA accredited certifiers associated with Aurora; and Cornucopia argued that the wholesale price of organic milk was reduced by a surplus created by "questionable facilities."

Aurora threatened to sue OCA, Cornucopia and the Center for Food Safety if they did not retract statements they made about Aurora, alleging consumer fraud. Finally (for now), on behalf of organic food consumers in 27 states, class action lawsuits filed in U.S. federal courts charge Aurora Dairy Corporation with allegations of consumer fraud, negligence and unjust enrichment concerning the sale of organic milk by the company. Organic Bytes, Sept. 12, 2007, Organic Consumers Association, www.organicconsumers.org/articles/article_6912.cfm; Organic Bytes #119, Oct. 4, 2007, www.organicconsumers.org; USDA Agricultural Marketing Service Press Release, Aug. 29, 2007; Press Releases, Cornucopia Institute, Aug. 31 and Sept. 13, 2007; www.cornucopia.org/Aurora/HighPlainsComplaint.pdf; www.cornucopia.org/Aurora/CertifierComplaint.pdf; Press Release, Organic Consumers Assoc. "Aurora Dairy Threatens to Sue Public Interest Groups" Sept. 25, 2007; Organic Bytes #120, Oct. 18, 2007

The USDA has issued a voluntary standard for grass- (forage-) fed marketing claims. The grass-fed standard states that grass and/or forage shall be the feed source consumed for the lifetime of the ruminant animal, with the exception of milk consumed prior to weaning. Animals cannot be fed grain or grain by-products and must have continuous access to pasture during the growing season. The proposed standard will establish minimum requirements for producers who choose to operate a USDA-verified program involving a grass- (forage-) fed claim. ATTRA News, Oct. 25, 2007

Pesticides

A study by the California Department of Public Health shows higher incidences of autism among children born to mothers who, while pregnant, lived in areas of heavy applications of the organochlorine pesticides endosulfan and dicofol. Pesticide Action Network Updates Service, Aug. 2, 2007; www.panna.org

Another study, of 129 Bay Area women by UC Berkeley, found that women who were heavily exposed to DDT before the age of 14 were five times as likely to get breast cancer as women with the lowest exposures; women exposed when young were most affected by the pesticide. DDT was widely used against mosquitoes and other insects beginning in 1945 and peaking in 1959; its U.S. use was banned in 1972. The researchers measured DDT in stored blood collected between 1959 and 1967 from women who had just given birth. For women born before 1931, cancer rates and DDT were not linked; these women would have been older when exposed. Two-thirds of women with invasive breast cancer are 55 or older when diagnosed. "Study Suggests DDT, Breast Cancer Link," by Marla Clone, Los Angeles Times, Sept. 30, 2007"

Farm chemical use and lower academic achievement were correlated in another study. According to Dr. Paul Winchester of Indiana University School of Medicine, seasonal runoff of pesticides and nitrates used on corn fields coincided with conception dates for children with lower scores on the state's academic achievement tests.

“Indiana study shows correlation between ag chemicals and fetal impacts, from pre-term births to children's school performance,” by Dr. Paul Hepperly, New Farm, June 15, 2007; www.newfarm.org/columns/research_paul/2007/0607/testscores.shtml

And Costa Rican researchers linked childhood leukemia to parents' exposure to pesticides: The Central American Institute for Studies on Toxic Substances investigated effects of 25 pesticides. Cases of childhood leukemia were associated with maternal exposures to pesticides during the year before conception and during the first and second trimester. Paternal exposures to paraquat, benomyl and picloram were also linked to the occurrence of leukemia in offspring. Leukemia accounts for 25-35% of childhood cancers in most countries, but Costa Rica, with a largely agricultural economy, has one of the world's highest incidences of childhood leukemia. Pesticide Action Network News Update, Sept. 6, 2007, www.panna.org

Another revolving door? Controversial pesticides continue to be approved. In October, despite strong opposition from scientists, public health professionals and farmworker advocates, the EPA granted one-year approval for agricultural use of carcinogenic methyl iodide to replace the soil fumigant (and ozone depletor) methyl bromide. The manufacturer, Arysta LifeScience, spent eight years and \$11 million to get methyl iodide registered. The EPA hired Elin Miller, an executive from Arysta LifeScience, shortly after the agency turned down methyl iodide last year. A year later, EPA reversed its decision and approved methyl iodide. Arysta must still win approval for its Midas pesticide, which includes methyl iodide, in California and Florida. Pesticide Action Network News Update, Oct. 18, 2007, www.panna.org

Maine BPC Approves Genetically-Engineered Bt Corn By Melissa White

At its July meeting, the Maine Board of Pesticides Control (BPC) voted to approve registration applications for seven genetically-engineered (GE) Bt field corn products, and it directed BPC staff to draft a rule addressing concerns about insect resistance and pollen drift associated with Bt corn. At the September and October meetings, the staff presented that language, and at the October meeting, the BPC decided to proceed with rulemaking.

The proposed rule requires anyone purchasing Bt corn seed to hold a pesticide applicator's license and a product-specific training certificate demonstrating attendance at a BPC-approved training session on the use of GE Bt corn. Growers must also maintain detailed records on use of the product, including site and planting information. Growers must map crops susceptible to cross-pollination within 500 feet, but no buffer requirements are included in the proposed rule yet.

The proposed rule requires anyone selling Bt corn seed products to hold a general use pesticide dealer's license and to notify the BPC of his or her intent to distribute plant-incorporated protectant products. The seller must verify that the customer holds a valid license and product

specific training certificate. The seller must maintain records of plant-incorporated product sales, including the customer's pesticide applicator license number.

For more on the Bt corn vote, see the News section of this MOF&G. The Board was to accept comment at a Public Hearing on November 16 on this and the following two proposed rules.

Indoor Pesticide Application Notification

On January 1, 2007, the new rule, "Standards for Indoor Pesticide Applications and Notification for All Occupied Buildings Except K-12 Schools" (Chapter 26), became effective. Since the rule was adopted, pest management professionals have alerted the BPC that advance notice requirements are creating unreasonable hardships for applicators and customers. The BPC has since drafted amendments to this rule that would allow exemption from notification for crack and crevice treatments in locations that are not readily accessible to people and when they are made in a way that minimizes airborne particles.

The rule has also been modified to allow the notification posting to be made by someone other than an employee of the pest management company, and responsibility for posting falls on the person who makes the posting.

Buffer Zones to Protect Water

The BPC has developed language that would require a 25-foot buffer between certain defined waters and the application of terrestrial pesticides (except those used to control human diseases). Waterways included are: any lake or pond except those contained completely within an individual's private property; rivers; any stream depicted as a solid or broken blue line on a USGS 7.5 minute topographic map; estuarine and marine waters as defined under 38 MRSA; and wetlands that are connected to great ponds at any time of the year or that contain visible surface water or are dominated by emergent or aquatic plants.

Aerial Spray/Pesticide Drift

A Stakeholders' Committee on aerial pesticide application issues met several times in the spring and summer of 2007 and concluded its work with recommendations for BPC consideration. The BPC reviewed the report and directed the staff to begin framing regulatory language covering notification, drift management plans and verification of the correct site. The BPC will continue to discuss these and other aerial pesticide application issues to determine appropriate regulation.

Turf Treatments

The BPC has approved Best Management Practices for the Application of Turf Pesticides and Fertilizers; see www.thinkfirstspraylast.org.

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The Good News

Percy and Louise Schmeiser of Bruno, Saskatchewan, won the **2007 Right Livelihood Award**, an alternative Nobel prize, "for their courage in defending biodiversity and farmers' rights, and challenging the environmental and moral perversity of current interpretations of patent laws." In 1998, Monsanto took the couple to court for using its genetically modified patented canola seeds without a license, seeking \$400,000 in damages. The farmers denied using the seeds, saying they could have blown in from a neighbor's farm or passing trucks. The Schmeisers lost the case and the right to use seed varieties they had painstakingly adapted to their local environment for years—but they did not have to pay the damages sought. Since the lawsuit, Percy Schmeiser has campaigned widely against genetic engineering in agriculture—and in January 2008, he sued Monsanto, asking to be reimbursed for the \$600 (Canadian) spent to dig and destroy Monsanto's GE canola seedlings on his land in 2005. Monsanto admitted that its GE seeds had contaminated his field but the company refused to pay unless Schmeiser signed a non-disclosure statement. "No way would we ever give that away to a corporation," Schmeiser replied. The case could set a precedent that could cost Monsanto millions in legal settlements around the world. ("Right Livelihood Award for Schmeisers," www.rightlivelihood.org/schmeiser.html; "Schmeiser vs. Monsanto," Pesticide Action Network News Update, Jan. 24, 3008, www.panna.org)

Closer to home, **Roger Doiron** of Scarborough, Maine, received a **Food & Society Policy Fellowship** for 2008-2009 from the Thomas Jefferson Agricultural Institute. The two-year stipend enables North American professionals in food and agriculture to use mass media to inform the public about sustainable food systems that promote health, vibrant communities and environmental stewardship. Doiron founded and directs Kitchen Gardeners International, a nonprofit network of over 4700 home gardeners promoting food self-reliance through kitchen gardening, home-cooking and sustainable local food systems. Doiron is also a freelance food writer, photographer, is the regional organizer for the Northeast Sustainable Agriculture Working Group and coordinates the Eat Local Foods Coalition of Maine. The Missouri-based nonprofit Jefferson Institute conducts agricultural education and research projects. (Thomas Jefferson Agricultural Institute press release, Nov. 16, 2007, www.jeffersoninstitute.org)

We may see more of that local food as **Maine's Voluntary Municipal Farm Support Program**, enacted in 2007, enables towns to make annual farm support payments to farmers who grant the municipality limited 30-year easements. Payments would equal the assessed annual property taxes on the land and buildings subject to the easement. In 2008, the Department of Agriculture, Food and Rural Resources will draft regulations for the program. (American Farmland Trust E-News, Jan. 3, 2008, and www.mainelegislature.org/legis/bills/billtexts/LD141401.asp)

Soils Research

Nine years of comparison in the Long-Term Agro-ecological Research Program at Iowa State University show that the longer rotations and careful management of **organic systems** give **greater yields, profitability and soil quality than conventional practices**. The study is believed to be the largest randomized, replicated comparison of organic and conventional crops in the nation. Using identical crop varieties, researchers found that organic crop yields equaled conventional in the three years of transition. In the fourth year, organic corn yields in the longest

rotation outpaced those of conventional. Organic and conventional soybean yields have been similar throughout the trial. The biggest differences are in soil and water quality. More water infiltrates organic plots, which reduces soil runoff and more effectively recharges groundwater supplies. The organic soils also cycle nutrients more efficiently, making them available when and where plants need them. Soil structure remained good, despite increased tillage in organic rotations. ("Organic Practices Outpace Conventional in Long-Term Research," Press release, Leopold Center, Nov. 13, 2007, www.leopold.iastate.edu/news/newsreleases/2007/organic_111307.htm)

Adding **nitrogen fertilizer** to soils has long been thought to help build organic carbon by promoting plant growth and, thus, increasing plant residues returned to the soil. Now University of Illinois soil scientists dispute this, after analyzing soil samples from the 100-year-old Morrow Plots and studying other long-term trials. Corn growth and yields have been about 20% lower during the past 50 years in continuous corn plots than in the corn-oats-hay Morrow Plots, despite considerably greater added fertilizer N and residues.

Since the onset of synthetic N fertilization in 1955, says Saeed Khan, one of the researchers, "What we learned is that after five decades of massive inputs of residue carbon ranging from 90 to 124 tons per acre, all of the residue carbon had disappeared, and there had been a net decrease in soil organic carbon that averaged 4.9 tons per acre. Regardless of the crop rotation, the decline became much greater with the higher nitrogen rate."

The findings raise questions about the widespread use of yield-based N recommendations since the 1970s. "The one-size-fits-all approach was intended to minimize the risk of nitrogen deficiency as insurance for high yields. Unfortunately, the usual result is over-fertilization because of the assumption that the fertilizer supplies more nitrogen than the soil. The opposite is true in most cases, and especially for the highly productive soils of the Corn Belt that receive the highest nitrogen rates." Added Khan, "The rates have been progressively inflated over the years by yield increases from agricultural advances such as better varieties and higher [plant] populations."

Excessive N applications, say the researchers, cut profits and harm soils and the environment. The loss of soil carbon decreases water storage, releases carbon dioxide to the air, and contributes to the nitrate pollution. Nitrogen management should be site specific, they add.

In comparing USDA data for Iowa and Illinois, the two states that rank highest in corn production, they found that from 1994 to 2001, annual grain yields in Iowa averaged 1.7 billion bushels with 740 thousand tons of nitrogen, as compared with an average of 1.5 billion bushels produced in Illinois with 847 thousand tons of nitrogen. The difference, Khan said, translates into lower fertilizer efficiency that cost Illinois farmers \$68 million per year. ("Study Reveals that Nitrogen Fertilizers Deplete Soil Organic Carbon," by Debra Levey Larson, ACES News, Oct. 29, 2007, http://www.aces.uiuc.edu/news/internal/preview.cfm?NID=4185&CFID=1627523&CF_TOKEN=53360267; and Saeed Khan, Richard Mulvaney, Tim Ellsworth and Charlie Boast, "The Myth of Nitrogen Fertilization for Soil Carbon Sequestration," J. Environmental Quality, Nov.-Dec. 2007)

Nutrition News

A four-year European Union (EU) study indicates that some organic foods are more nutritional than their non-organic counterparts, says Professor Carlo Leifert of the Tesco Centre for Organic Agriculture at Newcastle University in the United Kingdom. Preliminary results from this study, which is part of the EU-funded Quality Low Input Food Project, show **organic produce has up to 40% more antioxidants** than non-organically grown produce, while **organic milk contains up to 80% more antioxidants** than conventionally produced milk in the summer, and up to 60% more in the winter. Organic milk also had more vitamin E. Leifert said such benefits suggest that eating organic food would be equal to eating an extra portion of produce a day. The study is scheduled to run for an additional year. (“Organic Produce and Milk Rich in Antioxidants,” Organic Trade Assoc. press release, Oct. 29, 2007; www.organicnewsroom.com/2007/10/the_organic_trade_association_2.html)

Diets rich in organic produce might benefit from garlic, as well. Research published in October in the Proceedings of the National Academy of Sciences shows that adding **garlic** juice to red blood cells seemed to cause the cells to produce hydrogen sulfide, an antioxidant, and to increase blood flow. Hydrogen sulfide (at certain concentrations) **may protect against breast, prostate, colon and other cancers**, and may **protect the heart** against damage caused by a heart attack. The concentration of garlic juice used was about the same as that in an adult who ate two medium cloves per day. Researcher Dr. David Kraus of the University of Alabama said that benefits occur when garlic is crushed and held at room temperature for about 15 minutes before it’s added to food. (“Unlocking the Benefits of Garlic,” by Tara Parker-Pope, The New York Times, Oct. 15, 2007; www.timesonline.co.uk/tol/news/uk/health/article2753446.ece)

Add some dried beans to that diet, too. Consuming as little as one-half cup of **cooked dry beans** daily helped volunteers **lower their total cholesterol levels**. Eighty volunteers ages 18 to 55--half healthy and half at risk for cardiovascular disease—were divided randomly into two groups. For 12 weeks, half ate one-half cup of cooked dry pinto beans daily along with their regular daily diet; others ate a replacement serving of chicken soup instead of the pinto beans. All volunteers who ate beans had reduced cholesterol. (“Eating Beans Helps Lower Cholesterol,” by Rosalie Marion Bliss, USDA Agricultural Research Service News Service, Nov. 28, 2007; www.ars.usda.gov/is/pr)

Watch the B vitamins, though: Cereal grain products in the United States have been fortified with the synthetic form of folate (folic acid, a B vitamin) since 1998, and folate levels have become extremely high in the U.S. population since then. On the other hand, aging and taking stomach-acid blockers can gradually reduce vitamin B12 absorption in the body. Now researchers have found that people with **high folate and low B12** status have **more anemia and cognitive impairment** than those with normal folate and low B12. (“When It Comes to Vitamins, More Is Not Always Better,” by Rosalie Marion Bliss, USDA Agricultural Research Service, Agricultural Research, Nov./Dec. 2007; www.ars.usda.gov/is/AR/archive/nov07/brain1107.htm)

And watch the calcium. Today's **recommended adequate intake (AI) for calcium**, 1,000 mg

per day for those aged 19 to 50 years, and 1,200 mg per day for those 51 or older, **may be too high**. The body's skeleton needs adequate dietary calcium to reach its full potential bone mass, but calcium alone does not protect against bone loss, especially during menopause. When USDA Agricultural Research Service scientists analyzed data on 155 male and female volunteers, ages 19 to 75, who participated in controlled feeding studies, resulting models suggest that the average AI calcium needed to maintain a neutral calcium balance is about 741 mg per day. Calcium balance means that the amount of calcium consumed equals the amount eliminated. Volunteers received 415 to 1,740 mg of calcium. When they were fed the lower amounts, their bodies kept more calcium; when fed higher amounts, the extra calcium was eliminated. ("Calcium Requirements May Be Overstated, by Rosalie Marion Bliss, Agricultural Research Service News Service, USDA
Rosalie Marion Bliss; www.ars.usda.gov/is/pr)

Animal Health

Cows Unite, an initiative of Organic Valley Family of Farms, has a "**Bovine Bill of Rights**" that demands pasturing for cows and the end of the use of synthetic hormones and pesticides, antibiotics and genetically engineered feed for cattle. The campaign aims to raise awareness and build grassroots public support for organic dairying. (ATTRA Weekly Harvest Newsletter, Oct. 31, 2007, and cowsunite.org)

Hold the ethanol byproducts, too? **Feedlot cattle**, often located next to ethanol plants and **fed distiller's grain**, a byproduct of ethanol production, have about twice as much **E. coli O157:H7** in their hindgut as cattle who didn't consume the grain, according to Kansas State University researchers. This type of E. coli is a health risk to humans exposed to undercooked meat, raw dairy products and produce contaminated with cattle manure. ("Cattle Fed Byproducts Of Ethanol Production Harbor Dangerous E. Coli Bacteria," ScienceDaily. December 12, 2007; www.sciencedaily.com-/releases/2007/12/071204091851.htm)

Meanwhile, University of Liverpool scientists hypothesize that a bacterium that causes **Johne's disease**, a wasting disease in cattle, may also cause **Crohn's disease** (chronic intestinal inflammation) in humans. Mycobacterium paratuberculosis releases a molecule that keeps macrophages (a type of white blood cell) from killing E.coli bacteria in the body. Crohn's patients, who have increased E.coli in their tissue, may ingest the Mycobacterium when consuming dairy products. The researchers will see whether an antibiotic combination can target bacteria in white blood cells and treat Crohn's disease. ("How Bacteria In Cows' Milk May Cause Crohn's Disease," ScienceDaily. Dec. 13, 2007; www.sciencedaily.com-/releases/2007/12/071210104002.htm)

Researchers have identified a **new strain of swine influenza--H2N3--**which belongs to the group of H2 influenza viruses that last infected humans during the 1957 pandemic. This new strain has a molecular twist: It is **composed of avian and swine influenza genes**. An Agricultural Research Service team identified the pathogen that in 2006 infected two groups of pigs at separate production facilities. Both groups of pigs consumed water from ponds frequented by migrating waterfowl. The new pathogen is an H2N3 influenza virus that is closely

related to an H2N3 strain found in mallard ducks. This is the first time it has been observed in mammals.

These findings show that swine can serve as a "mixing vessel" for influenza viruses carried by birds, pigs and humans and supports the need to monitor swine--and livestock workers--for H2-subtype viruses and other influenza strains. ("New Swine Flu Has Avian Flu Genes," by Ann Perry, USDA Agricultural Research Service News Service, Dec. 19, 2007; www.ars.usda.gov/is/pr)

Genetic Engineering News

Last fall, the Pennsylvania Agriculture Department, under pressure from Monsanto, moved to ban **labeling** that said dairy products came from cows that were not treated with recombinant **Bovine Growth Hormone** (rBGH). After public outcry, however, Penn. Governor Ed Rendell delayed implementing the rule in order to review its impact and legality, and in January 2008, the Penn. Dept. of Agriculture ruled that producers could label their milk as coming from cows that were not treated with rBGH. Also, in December 2007, more than 70 organizations wrote to Ohio Governor Ted Strickland urging that state not to prohibit farmers from telling consumers that they do not treat their cows with artificial hormones.

In 1994, after the U.S. Food and Drug Administration (FDA) approved use of Monsanto's rBGH (also known as rBST), the FDA also said that the following label statement, in proper context, is acceptable: "from cows not treated with rBST." Earlier this year, Monsanto asked the FDA and the Federal Trade Commission (FTC) to declare these labels to be misleading. In late August, the FTC wrote to Monsanto: "The FTC staff agrees with FDA that food companies may inform consumers in advertising, as in labeling, that they do not use rBST."

"Since the FDA's controversial decision to approve the use of rBGH, questions have only grown about its safety for humans," said Dr. Michael Hansen, Senior Scientist for Food Safety for Consumers Union, nonprofit publisher of Consumer Reports. "Consumers should have the ability to buy milk from untreated cows if they want to." (Organic Consumers Assoc., Organic Bytes, Nov. 30, 2007, www.organicconsumers.org; Consumers Union Press Release, Dec. 18, 2007, www.consumersunion.org)

Genetically engineered (GE) crops continue to be planted, promoted, banned and studied. Farmers in the upper Midwest and West are expected to begin planting GE **Roundup Ready sugar beets** this spring in order to save on fuel and labor costs. About half of the U.S. sugar supply comes from beets; the rest comes from sugar cane, which is not genetically engineered.

Kellogg's spokeswoman Kris Charles told The New York Times that the company "would not have any issues" buying such sugar for its products sold in the United States, where "most consumers are not concerned about biotech." Kellogg's also has a line of organic cereals, for consumers who are concerned... Hershey's and Mars would not comment to the Times.

Refined sugar does not contain DNA or proteins, so biotech sugar is the same as nonbiotech, says Luther Markwart of the American Sugarbeet Growers Association and of the Sugar Industry

Biotech Council. As with other foods made from GE crops, those containing sugar from biotech beets will not have to be labeled as such for U.S. markets.

Biotech sugar beets may not be innocuous, though. On Jan. 23, 2008, farmers, food safety advocates and conservation groups filed suit in federal court challenging the deregulation of GE beets, which could contaminate beets and related crops grown for seed. ("Round 2 for Biotech Beets," by Andrew Pollack, The New York Times, Nov. 27, 2007; Press release, Center for Food Safety and Earthjustice, Jan. 23, 2008)

Environmental officials from the **European Food Safety Authority**, citing the precautionary principle, have **proposed banning cultivation of two kinds of GE corn** that may harm butterflies and aquatic life and the food chain it feeds. The EU has not approved planting any GE crops since 1998, but it has not banned them, either. ("Proposed Ban on Genetically Modified Corn in Europe," by James Kanter, The New York Times, Nov. 23, 2007)

In October 2007, **French** President Nicolas Sarkozy, also citing the precautionary principle, said that he would **suspend planting of GE, pest-resistant crops** until a government authority on such crops evaluated them. The only GE crop that the EU grows is a borer-resistant corn. Hungary, one of the largest grain producers in the EU, and Austria have banned the variety. ("France Suspends Planting of GMO Crops," by Sybille de La Hamaide, Reuters, Oct. 26, 2007)

Australia is going the other way. On November 27, 2007, Victoria Premier **John Brumby** **announced** that he would **end a four-year moratorium on growing GE crops** in his state. New South Wales earlier announced that it planned to allow farmers to start growing GE canola. Australia's Network of Concerned Farmers warns that introducing GE canola could cost Australian canola farmers more than \$143 million, with organic farmers "carrying an unjust burden of over \$65 million a year." (Pesticide Action Network News Update, Dec. 6, 2007, www.panna.org)

Japan's experience could prove those concerned farmers right: **Seed of GE canola has spread** from a factory that extracts oil from the seeds in Chiba prefecture in Japan, and the citizens' No!GMO Campaign says that the engineered crop has been found in 43 of Japan's 47 prefectures and has spread to ports, factories and roadways. (Pesticide Action Network News Update, Dec. 6, 2007, www.panna.org)

The GE canola found near the oil extraction factory tolerated both Roundup and Basta. No commercially available GE canola variety has transgenes for tolerance to both herbicides, so the cross must have occurred when the crop was cultivated or near where it was spilled. Another concern is that GE canola is becoming perennial in Japan's relatively warm winters, where the plant can grow for several years into a bush, continuing to spread pollen to wild mustards and conventionally cultivated canola, as well as other cruciferous vegetables, such as Japanese radish and Chinese cabbage. ("Spilled GM canola keeps on contaminating," www.gmwatch.org/archive2.asp?arcid=8179; "Spilled GM Canola Growing in Japan - Citizens' Survey Results 2007," Environmental News Network, Nov. 30, 2007, www.enn.com/top_stories/article/26199)

Furthermore, a European study has confirmed that **grazing wild animals can spread GE canola seed**. Fallow deer fed a varied diet of weeds, herbs, GE maize and GE canola spread viable GE canola seed through their feces. (P. Guertler, B. Lutz, R. Kuehn, H. H. D. Meyer, R. Einspanier, B. Killermann and C. Albrecht, 2007, "Fate of recombinant DNA and Cry1Ab protein after ingestion and dispersal of genetically modified maize in comparison to rapeseed by fallow deer (*Dama dama*)", *European Journal of Wildlife Research*, 11 April 2007; www.springerlink.com/content/g8463t7n5424x888/)

Jeffrey Smith warns that Australians' **health** as well as the country's economy is **at risk from GE crops**, which can cause toxic or allergic-type reactions in humans and livestock. "Government safety assessments, including those of Food Standards Australia New Zealand (FSANZ), do not identify many of the dangers, and analysis reveals that industry studies submitted to FSANZ are designed to avoid finding them," he notes. "The process of inserting a foreign gene into a plant cell and cloning that cell into a GE crop produces hundreds of thousands of mutations throughout the DNA. Natural plant genes may be deleted or permanently turned on or off, and hundreds can change their function. This is why GE soy has less protein, an unexpected new allergen and up to seven times higher levels of a known soy allergen."

Genes from GE foods can be transferred into the DNA of human gut bacteria and continue to produce proteins inside our intestines, continues Smith.

"Lab animals fed GM crops had altered sperm cells and embryos, a five-fold increase in infant mortality, smaller brains, and a host of other problems." He adds that a growing number of North American doctors are prescribing non-GE diets. ("Abundant Evidence to Warn People Against GE Crops," by Jeffrey M. Smith, Institute for Responsible Technology, Iowa; Environmental News Network, Nov. 30, 2007; www.enn.com/top_stories/article/26199)

An article in the December 2005 issue of *The Maine Organic Farmer & Gardener* described research into **GE trees** and its potential problems. Now *The New York Times* writer Andrew Pollack says that researchers want to reduce the amount of lignin in trees, or change its composition, since lignin covers cellulose in cell walls, making it difficult for enzymes to turn that cellulose into such biofuels as ethanol. However, lignin also gives trees strength and pest resistance. Currently, acids and steam break down lignin in pulp and papermaking.

Silencing a gene that makes lignin by inserting a reverse copy of the gene that codes for the process has cut lignin production by up to 50% in experiments.

ArborGen of Summerville, S.C., a company owned by International Paper, MeadWestvaco and Rubicon, is developing low-lignin eucalyptus, potentially to be grown in South America for pulp and papermaking, and a hardier eucalyptus for the United States.

The USDA has already approved two GE trees for other traits—a papaya that resists ringspot virus and a plum that resists plum pox virus. China grows GE insect-resistant poplars.

Because tree pollen can travel hundreds of miles, the reduced lignin trait may spread widely. ("Through Genetics, Tapping a Tree's Potential as a Source of Energy," by Andrew Pollack, *The New York Times*, Nov. 20, 2007)

Pesticide Issues

The pesticide industry's **use of humans to test** its products was halted by Congress in 1998, after it was revealed that poor women, children and minority Americans were being paid to swallow pesticides—sometimes being told they were taking "vitamins." The chemical industry sued and overturned the moratorium in 2003. In 2005, Congress made it illegal to test pesticides on children and pregnant women, but an EPA loophole allowed the practice to continue. So a coalition of environmental, farmworker and health groups challenged human testing as a violation of the 1947 Nuremberg Code. The case, NRDC vs. EPA, went before a Federal Appellate Court on January 17, 2008. (Pesticide Action Network News Update, Jan. 24, 2008)

And Now, Nanotechnology

The Soil Association, the largest U.K. certifier of organic products ranging from cosmetics to food, has banned inclusion of manufactured nanoparticles in products it certifies as organic. The Soil Association notes that nanotechnology “poses a serious new threat to human health” and cites the government’s failure to follow scientific advice and regulate nanotech products as a reason for its action. Nanotechnology--manipulating material at the molecular level--can be unpredictable. (Press release, Friends of the Earth, Jan. 15, 2008; “Soil Association bans nanomaterials from organic products, by Rebecca Smithers, guardian.co.uk, Jan. 15, 2008)

Organic Issues

Lawsuits were filed in December 2007 accusing Wal-Mart, Costco, Target, Safeway and Wild Oats of **consumer fraud** for marketing **suspect organic milk**. The legal filings in federal courts in Seattle, Denver and Minneapolis came soon after class action lawsuits against Aurora Dairy Corporation, based in Boulder, Colorado, alleging consumer fraud, negligence and unjust enrichment from the sale of organic milk. USDA investigators concluded in 2007 that Aurora—with five dairy facilities in Colorado and Texas, each milking thousands of cows—had 14 “willful” violations of federal organic regulations, including labeling some milk as organically produced when it was not produced and handled according to National Organic Program regulations. The organic watchdog group Cornucopia Institute found that Aurora was confining cows in feedlots rather than grazing them, and Aurora brought conventional animals into its organic milking operation in a manner prohibited by the Organic Food Production Act. (“Nation’s Largest Retailers Accused of Organic Fraud,” Cornucopia Institute press release, Dec. 13, 2007)

In December 2007, the U.S. Senate approved its version of the **Farm Bill** that included funding and direction for key organic priorities. The Senate version of the Farm Bill:

- recognizes that increased funding is essential for the National Organic Program at the USDA at the full authorized level;
- includes \$5 million for organic data collection to help provide better price and yield information for organically-grown crops;
- includes \$22 million in new money for certification cost share to aid organic farmers;

- bars USDA from charging a premium surcharge on organic crop insurance, unless validated by loss history on a crop-by-crop basis;
 - adds organic production as an eligible activity in the Environmental Quality Incentives Program;
 - adds to the Soil and Water Conservation Protection Loans a priority for those converting to organic farming practices and adds conversion to organic production as an eligible loan purpose;
 - provides \$80 million over the life of the bill for organic agriculture research and extension; and
 - includes a sense of the Senate resolution that funding for organic research should be commensurate with organic agriculture's share of the market, currently about 3 percent.
- (“U.S. Senate approves Farm Bill with provisions for Organic Agriculture,” Organic Trade Assoc. press release, Dec. 14, 2007; www.ota.com)

The Clones are Out There

The Senate's **Farm Bill** also included a provision to delay the FDA's endorsement of food from **cloned animals** and called for a rigorous and careful review by the National Academy of Sciences of the human health and economic impacts of bringing cloned food into the U.S. food supply. "The FDA risk assessment ignored the fact that most clones never make it to adulthood because they die in gestation or shortly after birth, and also failed to consider whether clones might need more drug treatments," said Dr. Michael Hansen, Senior Scientist, Consumers Union. A 2007 national survey conducted by Consumers Union found that 89% of Americans want cloned foods labeled, and 69% are concerned about cloned meat and dairy products in the food supply. A Gallup Poll reported that more than 60% of Americans believe that cloning animals is immoral. (“FDA Approval of Clones Stalled by Passage of Mikulski-Specter Amendment in Farm Bill,” Center for Food Safety press release, Dec. 14, 2007, www.centerforfoodsafety.org/pubs/FDA_Cloning_RAreview_Report_FINAL.pdf)

Despite the Senate provision, on Jan. 15 the **FDA** announced its final **approval of meat and milk from cloned cows, pigs and goats and their offspring**. Such products would not be labeled as coming from cloned animals. In addition to concerns about the safety of eating such food, the Organic Consumers Association says that a healthy population of any animal or plant requires genetic diversity; and, regarding animal welfare, most cloned animals are born with painful birth defects.

Organic standards ban cloned animal products in organic foods. (Organic Bytes, Jan. 18, 2008, Organic Consumers Assoc., www.organicconsumers.org/articles/article_9699.cfm)

Also on Jan. 15, the USDA asked farmers to voluntarily keep cloned animals off the market for now, due to the emotional nature of the issue. The request could be too little, too late. Rick Weiss reports that people may already be eating meat from clones' progeny, since cattle cloning companies say they have not tracked how many clone offspring have entered the food supply, and a Kansas farmer said he has already sold semen from clones to many producers. (“USDA Recommends That Food From Clones Stay Off the Market,” by Rick Weiss, Washington Post, Jan. 16, 2008, www.washingtonpost.com)

On Jan. 24, California State Sen. Carol Migden introduced a bill requiring all food products from

cloned animals and their offspring to display clear and prominent labeling. The Center for Food Safety and Consumers Union cosponsored the bill. In 2007, Sen. Migden authored a similar bill that was passed by the California legislature but was vetoed by Gov. Schwarzenegger. (Press release, Consumers Union, Jan. 24, 2008; www.consumersunion.org)

Pesticides

Board of Pesticides Control Rules on Use of Genetically Engineered Corn

At its July 2007 meeting, the Maine Board of Pesticides Control (BPC) approved registration of genetically engineered (GE) Bt field corn seed products, making Maine the last state to allow sale of the plant incorporated pesticide (PIP) transgenic product. Recognizing the sizable contingency that strongly opposed use of the product, the BPC resolved to implement further rulemaking for use of the product, to be in place before the seeds could be planted in 2008. At its November 2007 meeting, a public hearing gathered input on the proposed rule. Thirty-four people testified in person and over 100 submitted written comments, with three-fourths favoring more stringent rules than currently proposed.

At its December 2007 meeting, the BPC held a work session to refine the language in the rule based on public comments. The board approved the final rulemaking language at its January 2008 meeting.

Also at the December meeting, three new Bt field corn products were approved for registration, bringing the total to 10 products from 4 companies: Pioneer Hi-Bred International, Dow AgroSciences, Monsanto and Syngenta Biotechnology.

According to the new rules, growers using Bt corn will require annual Board-approved training and a product-specific training certificate.

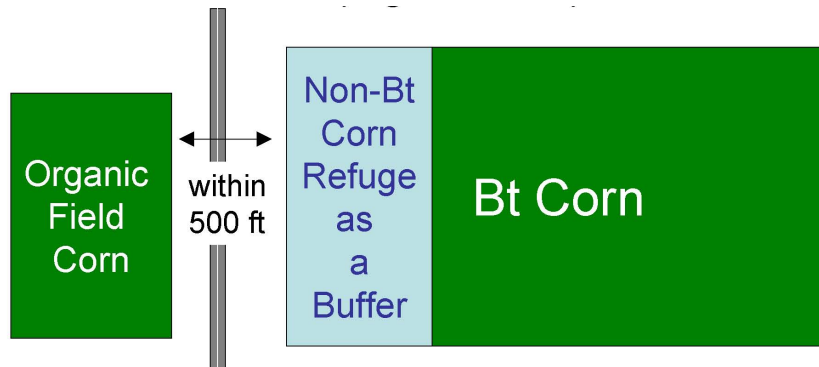
Regarding buffers, the rule states:

When non-Bt-corn crops are or will be located within 500 feet of a prospective Bt-corn planting site, the refuge must be planted in a configuration that provides maximum protection from pollen drift onto the adjacent non-Bt-corn crop. Unless otherwise agreed, this standard shall apply:

- i. When the non-Bt-corn grower notifies the owner or lessee of the land to be planted with Bt corn;
- ii. The notice is given prior to planting of the Bt-corn crop; and
- iii. Such notice identifies the non-Bt-corn crop to be protected.

This, in effect, means that Bt corn growers must plant the federally mandated 20% refuge of non-Bt corn so that it lies between their Bt corn and their neighbor's non-Bt (organic, sweet and/or seed) corn. If the neighbor is still not satisfied with the distance between the non-Bt corn and the Bt-corn, it becomes that neighbor's responsibility to establish an additional buffer on his or her own land to meet his or her own needs.

In a fact sheet issued by the BPC, the following illustration demonstrates the buffer requirement:



For two years from the date of planting, anyone using PIPs shall maintain records including site and planting information, maps showing crop location and refuge configuration in relation to adjacent crops within 500 feet that may be susceptible to cross-pollination, total acres planted, information on pesticide application to the refuge, date and time of planting and brand name of the product used. These records shall be kept on the farm and be available for BPC inspectors upon request. The records may be declared confidential. Growers have no reporting requirements.

The federally mandated 20% refuge requirement was designed not as a buffer, but to minimize the development of pesticide resistant insects. In the training for growers who wish to use Bt-corn, information about the importance of the refuge, as well as requirements for siting and configuring the refuge, are central topics. Several of these trainings occurred at the Maine Agricultural Trades Show in January, paving the way for planting Bt corn seed in 2008.

Dealer Requirements

Those selling PIP products must hold either a General or Restricted Use Pesticide Dealer's License. Dealers must notify the BPC when they are distributing and when they stop distributing Bt corn, so that the BPC will know which dealers are distributing the products. This will enable the BPC to verify compliance with insect resistance management plans and BPC rules.

Dealers must also record sales, and the BPC may use these records to monitor compliance with insect resistance management and pollen drift management requirements. These records are confidential and will not be available to the public.

Aerial Spray

A series of recommendations from the Stakeholders' Committee on Pesticide Drift, which met in 2007 to discuss public concern about this topic, is available on the BPC's Web site, www.thinkfirstspraylast.org. Priorities are:

1. addressing conflict between abutting landowners;
2. improving notification requirements;
3. allocating sufficient BPC resources to enforce existing rules;
4. mandating drift management plans;
5. applicator and consumer education programs;

6. prohibiting pesticide application where drift onto residences, yards and drinking water wells is likely;
7. monitoring drift; and
8. measuring harm from drift.

The BPC will draft new rules around aerial spray and drift based on these recommendations as well as input received at its Dec. 2007 Public Information Gathering Meeting and from written comments. If you are concerned about pesticide drift and want stricter rules governing the practice, contact BPC Director Henry Jennings, 207-287-2731, henry.jennings@maine.gov.

For more information about BPC activities, visit www.thinkfirstspraylast.org.

Sidebar

Did You Know?

If you own, lease or manage a property within 500 feet of another piece of property that may be managed with pesticides, INCLUDING Bt corn, you have the right to ask your neighbor what pesticides he or she is using.

Summer 2008

The Good News

A new path for global agriculture: After six years of work by 400 scientists, government agencies and civil society participants, the United Nations-sponsored International Assessment of Agricultural Science and Technology for Development ([IAASTD](#)) concluded that "modern" agriculture is not sustainable. According to the [UN News Service](#), "Modern agricultural practices have exhausted land and water resources, squelched diversity and left poor people vulnerable to high food prices." According to The Guardian, the report says that genetic engineering is not a quick fix to feed the world's poor, and growing biofuel crops for automobiles threatens to increase worldwide malnutrition.

Fifty-five world governments agreed on the final report; Canada, Australia, the United Kingdom and the United States requested more time to consider whether to approve it. The IAASTD calls for replacing dependence on petrochemical fuels and pesticides with resilient, sustainable agricultural systems, grounded in agroecological science and drawing on local, indigenous and community knowledge. The IAASTD was bitterly attacked by Syngenta and other multinational corporations. (Pesticide Action Network News Update, April 17, 2008, [panna.org](#); "Change in farming can feed world—report," by John Vidal, The Guardian, April 16, 2008, [guardian.co.uk](#))

Local, organic, sustainable agriculture can mitigate nearly 30% of global greenhouse gas emissions and save one-sixth of global energy use, say Dr. Mae-Wan Ho and Lim Li Ching. Also, organic agriculture resists climate extremes such as droughts and floods better than industrial agriculture. Conventional agriculture produces an estimated 11% to 13% of greenhouse gases and is "the main source" of methane and nitrous oxide. In the UK, organic

production is about 26% more energy efficient than chemically reliant farms, and greenhouse gas emissions from Europe's organic acres are 48 to 66% lower per hectare. Because organic systems collect 180% more solar energy -- equal to saving 64 gallons of fossil fuel per hectare--growing 10% of U.S. corn organically would save approximately "200 million gallons of oil equivalents." Since nearly 18% of greenhouse gases are due to deforestation, saving the world's forests may be the other most cost-effective way to stabilize the climate. ("Mitigating Climate Change through Organic Agriculture and Localized Food Systems," Institute of Science in Society, Jan. 31, 2009, i-sis.org.uk/mitigatingClimateChange.php; and Pesticide Action Network North America, Feb. 14, 2008, panna.org)

Those benefits can be attained without sacrificing yields. Long-term Wisconsin Integrated Cropping Systems Trials compared six cropping systems: conventional continuous corn; conventional corn-soybean; organic corn-soybean-wheat where the wheat included a leguminous cover crop; conventional corn-alfalfa-alfalfa-alfalfa; organic corn-oats-alfalfa-alfalfa; and rotationally grazed pasture. **Organic forage crops yielded as much or more** dry matter as conventional counterparts with quality sufficient to produce as much milk as conventional systems; and organic grain crops (corn, soybean and winter wheat) produced 90% as well as conventional. Researchers believe that improved weed control for organic systems may close the gap in productivity of corn and soy in wet seasons. ("Are Organic Crops as Productive as Conventional?" Amer. Soc. of Agronomy press release, March 24, 2008; agron.scijournals.org/cgi/content/abstract/100/2/253)

Adding some dairy products and a limited amount of meat may increase the **land-use efficiency of a vegetarian diet**, Cornell researchers suggest. A moderate-fat, plant-based diet with a little meat and dairy uses more land than an all-vegetarian diet but feeds more people because it uses more pasture land, which is widely available. Researchers say that if everyone in New York State followed a low-fat vegetarian diet, the state could directly support almost 50% more people, or about 32% of its population, agriculturally. With today's high-meat, high-dairy diet, the state can support directly only 22% of its population. The study found that a person on a low-fat vegetarian diet will need 0.44 acre per year for food, while someone on a high-fat diet with a lot of meat needs 2.11 acres. However, fruits, vegetables and grains must be grown on high-value, quality cropland, while products from ruminant animals can be produced from more widely available, less tillable pasture and hay land. ("Diet for small planet may be most efficient if it includes dairy and a little meat, Cornell researchers report," by Susan Lang, Cornell Univ. press release, Oct. 4, 2007; original study in Renewable Agriculture and Food Systems)

Raw milk consumers won a victory when Judge Harry J. Tobias of the San Benito Superior Court in Hollister, California granted a temporary restraining order against enforcement of AB 1735, which called for a strict coliform limit of 10 per ml or under in bottled raw milk. Organic Pastures Dairy Company and Claravale Farms argued that raw milk from their dairies has a superlative safety record in California and that the new coliform limit would put them out of business. Coliforms are beneficial bacteria found in raw milk. The plaintiffs were represented by Gary Cox of the Farm-to-Consumer Legal Defense Fund, which gives legal support to member farmers who provide raw milk and other farm products directly to the public. Cox said that there was no scientific or reasonable basis for using coliforms as the standard for safety and health. A preliminary hearing

on April 25 was to determine whether the temporary stay should remain in effect until the parties actually go to trial, conceivably later this year. (Press release, March 20, 2008, The Farm-to-Consumer Legal Defense Fund, (703) 964-7421; farmtoconsumerfoundation.org)

“The World of Organic Agriculture: Statistics and Emerging Trends 2008” shows that **30.4 million hectares (75.1 million acres) were certified organic** at the end of 2006, with 12.3 million hectares in Australia, 2.3 in China, 2.2 in Argentina and 1.6 in the United States. Austria has the largest percentage of organic hectares (13%, 361,487 hectares), followed by Switzerland (12%, 125,596 hectares). Organic area grew by approximately 1.8 million hectares in 2006. The global market for organic products reached \$38.6 billion U.S. in 2006, \$5 billion more than in 2005, with most products consumed in North America and Europe. (“Global Organic Farming: Continued Growth,” IFOAM press release, Feb. 20, 2008, ifoam.org)

Likewise, **California Certified Organic Farmers** had certified over half a million acres—501,066—as of March 2008; experienced 129% growth in certified organic acreage over the last two years; and, in 2007, 40.7% growth in acreage. (Press release, CCOF, March 28, 2008, ccof.org)

Indian plastics and textiles manufacturer Sintex Industries has developed a **biogas digester that turns human, cow or kitchen waste into fuel** for cooking or producing electricity. As bacteria decompose the organic matter, they produce gases--mostly methane—that are piped into a storage canister. A four-person family using a \$425, 1-cubic-meter digester primed with cow dung (for bacteria) can produce enough gas for all of its cooking, with organic fertilizer left over. (“Waste not, want not--Plastics maker Sintex seeks to solve India's energy and sanitation problems in one stroke -- with an at-home biogas digester,” by Jeremy Kahn, Fortune Magazine, CNNMoney.com, Feb. 27, 2008)

To provide market stability to crop growers and livestock producers, **Organic Valley Family of Farms is opening its membership to organic crop growers** through its Grower Pool.

Growers of feed-grade grains, beans, oilseeds and hay joining the pool will benefit from a guaranteed floor price for their crops on a long-term contract basis and will be able to enroll all or portions of their crop acreage in the pool. For more information, contact CROPP Cooperative at 888-809-9297 (Organic Valley press release, March 18, 2008, www.organicvalley.coop)

Researchers in Spain found that, compared with conventionally grown peppers, **organically grown ‘Almuden’ sweet peppers** were more intensely red and yellow when ripe and had mostly higher concentrations of a range of minerals and of carotenoid precursors of vitamin A. (“Organic Peppers: More Colorful and More Nutritious,” HortIdeas, Feb. 2008. Original reference: Antonio José Pérez-López (Dept. of Food Science and Technology, Campus de los Jerónimos, Catholic University of San Antonio, s/n 30107, Guadalupe, Murcia, SPAIN), et al., “Effects of Agricultural Practices on Color, Carotenoids Composition, and Minerals Contents of Sweet Peppers, cv. ‘Almuden’,” J. Agricultural and Food Chemistry 55(20), Oct. 3, 2007, 8158-8164.)

A review of 14 studies shows that extracts of **hawthorn** leaves, fruits and flowers, combined with conventional treatment, increased exercise endurance and strengthened heart muscle contractions in patients who had had **heart** failure. The researchers don’t know how hawthorn works and caution patients not to self-diagnose and self-treat with the herb. (“Regimens: An

Herbal Extract Eases Symptoms of Heart Failure,” by Nicholas Bakalar, The New York Times, Feb. 5, 2008, nytimes.com/2008/02/05/health/research/05regi.html?pagewanted=print. Original study: “Hawthorn extract for treating chronic heart failure,” by Pittler, M.H., R. Guo and E. Ernst, Cochrane Database of Systematic Reviews, Jan. 23, 2008, cochrane.org/reviews/en/ab005312.html)

Researchers at Barts and The London School of Medicine found that drinking 500 ml of **beetroot juice** a day can significantly reduce **blood pressure**. They say that the nitrate in beetroot juice (and in green, leafy vegetables) decreases blood pressure. Previously the protective effects of vegetable-rich diets had been attributed to their antioxidant vitamin content.

Blood pressure in healthy volunteers was reduced within an hour of ingesting beetroot juice; the maximum drop occurred three to four hours after ingestion; and some reduction persisted for up to 24 hours. Bacteria on the tongue convert nitrate in the juice into nitrite, which, in the stomach, is converted to nitric oxide or re-enters the circulation as nitrite. Greatest blood pressure reduction correlated with greatest concentrations of circulating nitrite. (“Daily Glass Of Beet Juice Can Beat High Blood Pressure, Study Shows,” ScienceDaily, Feb. 7, 2008, sciencedaily.com/releases/2008/02/080205123825.htm. From materials provided by Queen Mary, University of London, Feb. 6, 2008. Ed. note: The usual dietary advice cautions against consuming nitrates, since they can be toxic...)

The **Home Depot** will voluntarily **stop selling traditional pesticides and herbicides in its stores in Canada** by the end of 2008, before legislated deadlines, and will increase its selection of environmentally friendly alternatives. The Home Depot stores in Quebec already do not sell pesticides; and residential use, but not sale, of pesticides is already banned in over 55 municipalities in Canada. (www.newswire.ca/en/releases/archive/April2008/22/c8079.html)

Nutrition

In Norway, 23 children suspected of having **hyperactive disorders** and having abnormal levels of peptides in their urine were tracked since they went on **milk-free diets** in 1996-1997 to test Karl Ludvig Reichelt’s hypothesis that trouble breaking down certain proteins, including casein, may cause the disorders. Some children experienced huge improvements in behavior within days, and 22 families noted improved behavior and increased attention span in their children within the first year of the study. One child wrote messy, squiggly lines for numbers after drinking milk but wrote clearly two days after eliminating milk. After eight years, six children were still avoiding milk products, and some avoided gluten, with good results. The study does not prove that casein or gluten cause all cases of hyperactivity, but the proteins should be considered before children are put on drugs. (“Diet change gives hyperactive kids new taste for life in Norway,” by Nina LarsonSun, Yahoo! News, Feb 24, 2008. news.yahoo.com/s/afp/20080224/hl_afp/norwayhealthchildrenmedicinehyperactive&printer=1)

After studying 25,000 Norfolk County, England, people ages 45 to 79 for 11 years, researchers found that each of four positive behaviors promoted longer life. Participants received one point each for not smoking, for exercising, for drinking moderately if at all, and for eating sufficient produce. Those scoring 4—i.e., following all **four good behaviors**—tended to **live 14 years**

longer than those scoring 0. (“Heeding Familiar Advice May Add Years to your Life,” by Nicholas Bakalar, The New York Times, Jan. 22, 2008)

In a nine-year study of over 9,500 middle-aged people, drinking **diet soda** was **correlated with metabolic syndrome** — the combination of abdominal obesity, high cholesterol and blood glucose levels, and elevated blood pressure, thought to be risk factors for cardiovascular disease and diabetes.

Diets high in refined grains, fried foods and red meat were correlated with an 18% increased risk for metabolic syndrome; diets rich in fruits, vegetables, fish and poultry were not correlated with a greater or smaller risk. The one-third of the participants who ate the most fried food had a 25% greater risk than the one-third who ate the least. Most strikingly, people who drank one can of diet soda per day were 34% more likely to develop metabolic syndrome than those who drank none. (“Symptoms: Metabolic Syndrome Is Tied to Diet Soda,” by Nicholas Bakalar, The New York Times, Feb. 5, 2008.)

Strawberries, grapes, blueberries and some familiar seasonings such as rosemary contain compounds that can—in test tubes—kill cells of acute lymphoblastic **leukemia**, a childhood cancer, according to Susan J. Zunino of the Agricultural Research Service Western Human Nutrition Research Center in Davis, California. Zunino previously found that carnosol from rosemary; curcumin from turmeric; resveratrol from grapes; and ellagic acid, kaempferol and quercetin from strawberries killed leukemia cells by interfering with orderly operations of mitochondria, the energy-producing “power plants” inside cells. Without energy, cells die. (Agricultural Research Service News Service, Marcia Wood, Agricultural Research magazine, March 2008, ars.usda.gov/is/AR/archive/mar08/plants0308.htm)

Genetic Engineering

Montville, Maine, is the first town outside California to ban genetically engineered (GE) crops. On March 29, 2008, citizens passed a binding ordinance banning cultivation of GE crops there. The ordinance was developed after residents directed the town to include such a ban in the town's comprehensive plan at its 2006 town meeting. Residents growing GE crops must phase them out within two years. A Montville farmers' coop has been helping those farmers transition to non-GE varieties that will benefit the local food economy. The towns of Liberty and Brooklin passed nonbinding resolutions declaring themselves "GE Free Zones" in 2005 and 2007. Several counties in California have binding moratoriums on GE crops.

Maine farmers won a major battle against GE seed corporations in April 2008, when the Maine Legislature passed LD 1650, [An Act to Amend the Laws Concerning Genetically Engineered Plant and Seeds](#). The bill prevents lawsuits for patent infringement against farmers who unintentionally have GE material in their crops, ensures that lawsuits that do occur are held in Maine, and directs the Maine Department of Agriculture, Food and Rural Resources to develop and implement Best Management Practices for GE crops. A House amendment that the Senate failed to adopt would have required companies selling GE seeds in Maine to report their annual aggregate sales data to the Commissioner of Agriculture. (Food for Maine's Future press release, April 9, 2008; foodformainesfuture.org)

In March 2008, **Percy Schmeiser settled his lawsuit with Monsanto**, which will pay all costs of removing its Roundup Ready canola that contaminated Schmeiser's fields. Monsanto had refused to compensate Schmeiser unless he agreed not to speak publicly on the matter and never to sue Monsanto for contamination again. The settlement, however, allows Schmeiser to speak freely and to sue Monsanto if contamination occurs again. "In an indirect way, Monsanto has acknowledged liability for the contamination of a field by the unwanted appearance of its genetically altered product," says Schmeiser. ("Schmeiser pleased with victory over Monsanto," CNW Group, March 19, 2008, newswire.ca/en/releases/archive/March2008/19/c5736.html)

Meanwhile, where GE crops still grow, the **USDA, EPA and FDA recalled 'Event 32' corn and instructed Dow Agrosciences to recall its unapproved GE crop** that was found in three commercial corn seed lines planted on 72,000 U.S. acres over the past two years. 'Event 32,' containing an engineered insecticide, has not undergone the regulatory review process established to test for environmental and human health problems resulting from insecticide-producing GE corn. A similar problem with GE 'Starlink' corn in 2000-2001 led to the largest U.S. food recall. (Press release, Center for Food Safety, Feb. 22, 2008, centerforfoodsafety.org)

Fear of potential problems with GE crops is not unwarranted. Journalist Jeffrey Smith says studies show **organ damage in rats fed GE foods**—but those studies, says Grist, were suppressed within the FDA when the Clinton administration appointed former Monsanto lawyer Michael Taylor to the FDA to oversee the safety of GE foods. Taylor spent a decade minimizing regulation of GE foods, then returned to Monsanto as a vice president. ("Eco-Farm: Seeds of ignorance. Investigative journalist reveals serious safety concerns about GM food," by Tom Philpott, Grist, Jan. 25, 2008. gristmill.grist.org/story/2008/1/25/104054/049)

Monsanto reported in January 2008 that **fewer farmers** growing biotech corn **are including refuges** of non-GE corn to minimize development of resistance among corn pests, because growers seek maximum yields for biofuel production. This could diminish the effectiveness of non-GE, natural Bt, a valuable pest control for organic farmers. The EPA requires that farmers plant at least 20% of their corn acreage with non-Bt seed so that pests that are developing resistance to Bt will mate with others in the refuge, slowing the development of resistance. The EPA leaves refuge monitoring to biotech companies, who phone farmers for reports. (Institute for Agriculture and Trade Policy, Feb. 1, 2008, typepad.com/t/trackback/2281622/25232752)

GE crops have increased pesticide use without increasing yield or alleviating world hunger and poverty, say Friends of the Earth and the Center for Food Safety. Most GE crops "are used to feed animals in rich countries, to produce damaging agrofuels, and don't even yield more than conventional crops," says Nnimmo Bassey of Friends of the Earth. Andrew Kimbrell of the Center for Food Safety adds, "These crops really promote greater use of pesticides, and cause direct harm to the environment and small farmers. More and more, foundations and international aid and development organizations are recognizing the dead end that GM crops represent."

For example, South America's expanding GE soy plantations produce soy meal for Europe's livestock industry and have reduced food security by displacing poor farmers and reducing land

planted to food crops for local consumption. GE cotton yield gains are due more to favorable weather and increased irrigation than to biotech. No GE crop on the market is engineered for enhanced nutrition, increased yield potential, drought-tolerance or other traits touted by the biotech industry.

Four of five acres of GE crops worldwide are Monsanto's Roundup Ready varieties, designed for use with Monsanto's weed killer glyphosate (Roundup). Government data show a 15-fold increase in the use of glyphosate on U.S. soy, corn and cotton from 1994 to 2005, as Roundup Ready crops were adopted. Weed scientists report glyphosate-resistant weeds on 2.4 million U.S. acres, more than doubling the use of 2,4-D on soybeans from 2002 to 2006.

Regarding yield, **Roundup Ready soybeans yield 6% less** than conventional soy, say Univ. of Nebraska researchers; and the USDA says that no GE crop on the market has been modified to increase yield. ("GM Crops Have Not Reduced World Hunger, Study Concludes," press release, Center for Food Safety, Feb. 13, 2008. Executive summary of "Who Benefits from GM Crops?" foei.org/en/publications/pdfs/gmcrops2008Q-A.pdf ; full report: foe.co.uk/resource/briefings/who_benefits.pdf ; document showing that GE crops do not help meet UN Millennium Development Goals of halving hunger and poverty by 2015: foeeurope.org/GMOs/Who_Benefits/QA_FINAL_FEB08.pdf)

Bollworms have evolved resistance to the Bt toxin in Mississippi and Arkansas. These are the first pests that are fully resistant to GE plants, says the [Washington Post](#). (Pesticide Action Network North America news update, Feb. 20, 2008, www.panna.org)

In January 2008, farmers, food safety advocates and conservation groups sued in federal court, challenging USDA's deregulation GE **herbicide-tolerant beets**. The [Center for Food Safety](#) says that since introduction of herbicide-tolerant GE crops in 1994, herbicide use in the U.S has increased 15-fold, by 122 million pounds. Consumers can tell major food companies that they won't buy products made with sugar from GE beets: [See dontplantgmo.org/actiontaken.cfm](http://See.dontplantgmo.org/actiontaken.cfm) . (Pesticide Action Network North America news update, Feb. 20, 2008, www.panna.org)

Afact vs. consumers: An alleged "grassroots" group, American Farmers for the Advancement and Conservation of Technology (Afact), wants state legislatures to stop dairies from labeling milk as coming from cows that were not treated with Monsanto's synthetic, **GE hormone, rBGH**. The group includes dairy farmers and a consultant who also does work for Monsanto; is aided by marketing firm Osborn & Barr, which includes among its founders a former Monsanto executive; and reportedly was organized with help from Monsanto. Cows on the hormone usually produce an extra gallon of milk per day, but the hormone has been banned in Canada and Europe because of health concerns for cows.

Afact failed in attempted legislation in Pennsylvania but has legislation pending in other states, despite the actual fact that 88% of consumers want labeling, according to Consumers Union. ("Fighting on a Battlefield the Size of a Milk Label," by Andrew Martin, The New York Times, March 19, 2008, nytimes.com/2008/03/09/business/09feed.html)

On March 13, 2008, **farmers testified before House subcommittee hearings** conducted by Rep. Dennis Kucinich **about the costs of GE crops to U.S. growers**, focusing on USDA's failure to comply with National Environmental Policy Act requirements for assessing economic impacts when regulating GE organisms.

Arkansas rice farmer Harvey Howington said that USDA's mismanagement of field trials of Bayer LL601, a GE rice, resulted in disastrous contamination affecting all rice farmers in the South, costing them \$1.2 billion, and closed many international markets to U.S. rice. He called for more comprehensive environmental and economic analyses before allowing field trials that pose major economic threats to agriculture; for more transparency in decisions about approving these trials (including input from farmers); and for requiring biotech companies to demonstrate how contamination will be prevented to the satisfaction of the industry and farmers.

Wheat farmer Todd Leake testified on USDA's failure to consider the significant potential for market loss posed by deregulating Monsanto's Roundup Ready wheat. The product is opposed by 82% of wheat buyers; if approved, it would have decreased by 32 to 35% the price paid to wheat growers and resulted in loss of important markets. The virtual certainty of contamination and the potential for significant economic impact should have triggered the need for an Environmental Impact Statement (EIS).

North Dakota organic farmer Fred Kirschenmann, also a distinguished Fellow at the Leopold Center at Iowa State, noted USDA's failure to conduct an EIS before deregulating Roundup Ready canola, despite the great potential for widespread contamination in the U.S. and Canada, which did occur. He also discussed the economic impacts on organic producers. "Crop rotations are crucial for pest control and nutrients in organic systems. When a new GMO crop is commercialized and you have a non-GE variety of that crop in your rotation, it has to be removed for fear of contamination, and that destroys the balance in the entire system." He added that increased requirements for testing for contamination add to organic farmers' costs. (Kelly Keane, Goodman Media International, Inc. 410.321.0137, www.goodmanmedia.com; FMI: Farmer to Farmer Campaign on Genetic Engineering, PO Box 272: Stoughton, WI 53589, 877-968-3276; bwenzel2@aol.com)

Those **GE crops can persist for a long time**. Ten years after researchers at Lund University in Sweden planted experimental GE oilseed rape, GE plants still grew—despite scouting and intensive herbicide applications after the experiment. ("GM seeds can last for 10 years," by Richard Black, BBC News, April 2, 2008, news.bbc.co.uk/go/pr/ft/-/2/hi/science/nature/7324654.stm)

On International Women's Day, March 7, 2008, dozens of **Brazilian women occupied a Monsanto research site** in the state of São Paulo. The [Center for International Policy](#) says that the women destroyed a greenhouse containing experimental GE corn. La Vía Campesina, the international farmers' organization, said the action was a response to the government's decision to legalize Monsanto's GE Guardian® corn. Contaminating world food crops by GE varieties threatens biodiversity and the organic foods industry. Greenpeace International reported 39 cases of GE crop contamination in 23 countries in 2007. California organic dairy farmer [Albert Straus](#) found about one-third of the corn he'd been feeding his cows had been contaminated. Since 2007,

Straus tests every lot of grain he buys. In January, Brazilian officials admitted that GE soy and cotton had been smuggled into the country and illegally planted. Brazil approved Guardian® just weeks after France banned it due to environmental and human health concerns and four months after a Vía Campesina member was assassinated while occupying Syngenta Seeds' research station in Paraná. (The company was illegally testing GE soy in Iguazu National Park. Syngenta was fined about \$500,000 for its crime but has refused to pay.) In November 2006, the governor of Paraná signed a decree to expropriate the Syngenta site and convert it to a research center for agroecology, but Syngenta lawyers got the decree overturned in state and federal courts. (Pesticide Action Network News Update, March 27, 2008, panna.org)

For more about biotech hardball, read “**Monsanto’s Harvest of Fear**,” by Donald L. Barlett and James B. Steele in the May 2008 Vanity Fair and watch Marie-Monique Robin’s video **The World According to Monsanto** (both online).

Nanotechnology

Untested nanotechnology is being used in more than 100 food products, food packaging and contact materials without being labeled as such, says Friends of the Earth (FOE). Nanotechnology manipulates matter at the scale of atoms and molecules. It is used to manufacture nutritional supplements, flavor and color additives, food packaging, cling wrap and containers, and agricultural chemicals. Risks, says FOE, include organ damage and decreased immune system response. (“Nanotech Exposed in Grocery Store Aisles,” Friends of the Earth, March 11, 2008. Complete report, “Out of the Laboratory and onto Our Plates: Nanotechnology in Food and Agriculture,” is available at www.foe.org.)

Pesticides

Board of Pesticides Control News

By Melissa White Pillsbury

Tell the Maine BPC You Want a Buffer from Aerial Spray!

The Maine Board of Pesticides Control (BPC) continues to discuss ways to address public concerns about aerial spraying. It held a Public Information Gathering Meeting on aerial spraying and spray drift at its Dec. 2007 meeting and discussed issues and ideas at its Jan., Feb. and March 2008 meetings. To date it has covered improving the notification process for nearby residents, strengthening requirements designed to ensure that applicators spray the correct area, detailed site plans and identification of sensitive areas.

To date, the BPC **has not discussed implementing a buffer from aerial spray** for schools, parks, playgrounds or any area likely to be occupied by humans. As an example of the kind of leadership that policymakers can demonstrate in protecting citizens from exposure to pesticide drift, three counties in California ban aerial spraying within a quarter-mile of homes, schools and occupied farm labor camps. If you would like the BPC to take stronger measures to protect you and your children from being exposed to chemical drift, call or write to Director Henry Jennings, 207-287-2731, henry.jennings@maine.gov today.

Two More Monsanto Bt Corn Varieties Registered

The BPC staff automatically renewed 2008 registration requests for the same Bt corn products or products containing the same genetic events (gene transformations) that it registered in 2007, but agreed to review any Bt field corn registration requests that involve a different genetic event before granting registration. Monsanto Ag Products submitted registration requests for two such products: Yieldgard VT Rootworm/RR2 and Yieldgard VT Triple. According to Monsanto's Web site, "YieldGard VT™ hybrids are created using a process called VecTran technology, which stands for Vector-Stack Transformation," a way to incorporate two traits with a single DNA insertion process. In this case, the traits are insect resistance (through genes that produce the Bt toxin) and resistance to Roundup herbicide. Staff toxicologist Lebelles Hicks reviewed the two new products and concluded that the risks are comparable to the previously registered products, so 14 Bt corn products are now registered in Maine.

The BPC staff anticipates an application for Bt sweet corn soon.

Rule Violations

Sterling Insect-Lawn Control, Inc., of Gorham failed to notify an individual listed on the 2007 Pesticide Notification Registry who was within 250 feet of an application. The company paid a \$425 fine.

Mainly Grass, Inc., of York applied pesticide to the wrong property without the owner's knowledge or permission. The company paid a \$750 fine.

TruGreen Chemlawn, Inc., of Westbrook failed to notify an individual listed on the 2007 Pesticide Notification Registry who was within 250 feet of an application. The company paid a \$2,000 fine.

Purely Organics of York Harbor had an unlicensed applicator applying pesticides, and made pesticidal claims for the sale and application of an unregistered vinegar product. The company paid a \$500 fine.

Service Master of Saco, which is not a licensed pesticide applicator, performed a custom application of mold remediation products. The company paid a \$500 fine.

David Register of Lisbon, an unlicensed applicator, made a custom application of bleach to control mold in a rented residential unit. He paid a \$200 fine.

Did You Know?

If you own, lease or manage a property within 500 feet of another piece of property that may be managed with pesticides, INCLUDING Bt corn, you have the right to ask your neighbor what pesticides he or she is using.

[End of BPC news]

A year-long study of 21 Washington state preschoolers showed that the urine and saliva of **children who ate conventional supermarket foods had** biological markers for **organophosphate pesticides**; children who consumed organic produce and juices do not have the markers. Emory University's Chensheng Lu, principal investigator, found that the two pesticides measured, malathion and chlorpyrifos, disappear within eight to 36 hours after kids switch to organic produce, and reappear as soon as they eat conventional foods again.

Organophosphate pesticides, especially chlorpyrifos, have affected behavior and brain development and functioning in animal studies. Use of these insecticides has been eliminated on many crops and restricted on others, but Dow Chemical's chlorpyrifos is one of the most widely used organophosphate insecticides in the United States and, possibly, in the world.

Lu suggests consuming organic strawberries, since they grow close to the soil and often receive more pesticides than some other produce; he also recommends organic apples and spinach.

Because urine contained greater pesticide (marker) levels in the winter, Lu recommends that the government ensure that standards for imported food equal those for domestic. ("Study Reveals Pesticides from Foods in Children's Bodies," by Andrew Schneider, Seattle Post Intelligencer, Jan. 30, 2008,

seattlepi.nwsource.com/local/349263_pesticide30.html?source=myspi; Original study: "Dietary Intake and Its Contribution to Longitudinal Organophosphorus Pesticide Exposure in Urban/Suburban Children," by Chensheng Lu, Dana B. Barr, Melanie A. Pearson, and Lance A. Waller, Environmental Health Perspectives, Jan. 15, 2008, ehponline.org/docs/2008/10912/abstract.html)

New evidence linking **pesticides and Parkinson's Disease** appears in the journal [BMC Neurology](#). Among nearly 600 people from similar environmental and genetic backgrounds, those with more than 200 days of lifetime exposure to pesticides had double the risk of developing Parkinson's. In the Parkinson's Disease Society's own survey of 10,000 Parkinson's patients, 10% reported long-term exposure to pesticides. (Pesticide Action Network News Update, April 4, 2008, panna.org)

A Danish study reports that boys born to women exposed to occupational pesticides had **smaller penises and testicles**, and lower levels of testosterone. (Pesticide Action Network North America News Update, Feb. 14, 2008, www.panna.org, and [Environmental Health Perspectives](#), Jan. 22, 2008, <http://dx.doi.org/>)

On February 1, France banned 30 chemicals used in 1,500 pesticides as part of a plan to **halve pesticide use** over the next 10 years. (Pesticide Action Network North America News Update, Feb. 14, 2008, www.panna.org)

The BioDiversity Research Institute of Gorham, Maine, announced in March that over 100 harmful **contaminants were found in Maine bird eggs**. Flame retardants, industrial stain and water repellants, transformer coolants, pesticides and mercury were found in all 23 species of

birds tested. The bird species studied live on Maine's ocean, salt marshes, rivers, lakes and uplands. Contaminants come from global and local sources, deposited most likely in rain and snow. Birds in midcoast and southern Maine tended to have higher levels, suggesting more local sources of contaminants there, such as incinerators and water treatment facilities. Maine has significantly lower levels today than in the past of chemicals that were banned, such as PCBs and DDT, showing that bans are effective. ("Study Finds Over 100 Harmful Contaminants in Maine Bird Eggs," Biodiversity Research Institute, March 12, 2008, www.briloon.org)

Animal Welfare

In January 2008, 143 million pounds of beef products were recalled by Westland/Hallmark Meat Co. in California—the **largest beef recall** in U.S. history. Much of the meat had already been eaten, some in school lunches. The Humane Society of the United States released an undercover video showing sick, "downer" cows being forced to walk at the plant. Downer cows are not permitted in the U.S. food supply because they may carry diseases, including mad cow. The USDA verified that cows were not always adequately inspected. Last year saw 21 recalls of beef for possible E. coli O157:H7 contamination. ("Largest Recall of Ground Beef Is Ordered," by Andrew Martin, The New York Times, February 18, 2008.)

Fall 2008

The Good News

Researchers from the USDA Genetic Improvement of Fruits and Vegetables Laboratory and Rutgers University tested 'Bluecrop' highbush blueberries grown on five New Jersey farms with the same soil type, weather and harvesting conditions. Organic blueberries contained 46 ORAC units, a measure of total antioxidant capacity, while conventional berries contained 31. **Organic blueberries** also had 50% more antioxidant activity, 67% more phenolics and 50% more anthocyanins – health-promoting chemicals that give blueberries their dark blue hue. The conclusion published in the [Journal of Agricultural and Food Chemistry](http://pubs.acs.org/cgi-bin/abstract.cgi/jafcau/2008/56/i14/abs/jf703775r.html) (July 1, 2008, <http://pubs.acs.org/cgi-bin/abstract.cgi/jafcau/2008/56/i14/abs/jf703775r.html>): "Blueberries produced from organic culture contained significantly **higher amounts of phytonutrients** than those produced from conventional culture."

Cows that graze on fresh pasture produce milk with more antioxidants and beneficial fatty acids, says a study from the UK's Newcastle University, published in the Journal of the Science of Food and Agriculture. Previous studies had shown that **organic milk has higher concentrations of favorable nutrients**. This study attributes the benefits to the fresh grass and clover diet of organic cows. Studying milk from 25 farms, researchers found 67% more antioxidants and vitamins in organic than ordinary milk, and 60% more conjugated linoleic acid, a healthy fatty acid that can shrink tumors. Organic milk had more vaccenic acid, too, which may reduce the risk of heart disease, diabetes and obesity. And organic milk had 39% more omega-3 fatty acids—which also reduces the risk of heart disease--and lower levels of the less healthy omega-6 fatty acid. The increases were greatest in summer, when cows were on pasture. Cows on most organic dairy farms graze as much as possible. The Cornucopia Institute ranks organic dairy brands on this measure at www.cornucopia.org. Similarly, The Organic Center, in

State of Science Review: Nutritional Superiority of Organic Foods, determined that **organic plant-based foods generally are more nutritious than non-organic**. (“Study: Organic Milk from Pasture-Fed Cows Contains Higher Levels of Beneficial Nutrients,” press release, Cornucopia Institute, June 4, 2008; “Organic milk is healthier, says study,” by Kate Devlin, Telegraph, London, May 27, 2008, www.telegraph.co.uk/news/uknews/2039183/Organic-milk-is-healthier%2C-says-study.html)

Another good thing about organic foods: They don’t contain **artificial dyes**. According to The Baltimore Sun (“Color Me Concerned,” by David Kohn, July 17, 2008, <http://www.baltimoresun.com/news/health/bal-to.hs.additive17jul17.0.6973489.story?page=1>), “A prestigious British medical journal recommended that doctors use dye-free diets as a first-line treatment for some behavior disorders,” including **Attention Deficit Hyperactivity Disorder (ADHD)**. In the United States, the Center for Science in the Public Interest has petitioned the FDA to ban artificial dyes and the preservative sodium benzoate (also thought to contribute to ADHD) in foods. The FDA says the dyes cause no problems; yet the British Food Standards Agency has suggested that children with ADHD avoid consuming the chemicals. The eight artificial food dyes used in the United States are made from petroleum or coal tar, and research indicates that these nitrogen-containing chemicals interfere with the neurotransmitter dopamine. When British researchers studied the effects of artificial dyes and sodium benzoate on 300 children, at concentrations common in diets, the 8- and 9-year-old children had a “significant adverse effect” from the dyes and sodium benzoate; while 3-year-olds were affected only by the dyes. Dr. David Schab of Columbia University, reviewing 30 years of work, concluded that artificial dyes likely cause “neurobehavioral toxicity” in a small percentage of children—i.e., in millions of children.

American Farmland Trust has recognized Washington state farmer **Nash Huber of Nash’s Organic Produce as its 2008 Steward of the Land**, for his leadership in protecting agricultural land, local food and the environment. Huber manages over 350 acres on the Olympic Peninsula. He protects water quality by participating in public campaigns for water protection and by creating vegetated buffers near creeks, rivers and ponds. The certified “salmon safe” farm also provides migratory waterfowl habitat for dozens of types of birds, and grasses and trees have been planted to ensure quality habitat for wildlife. Huber has helped save hundreds of acres of farmland and wildlife habitat through his work with land trusts and other groups. (American Farmland Trust press release, americanfarmlandtrust.org)

Vermont Governor Jim Douglas has allowed a bill that permits farms to plant **industrial hemp** to become law without his signature. Federal law prohibits cultivating hemp, but Vermont lawmakers believe that federal policy will change, so their law directs the Agriculture Agency to prepare for the change, including drafting rules for hemp cultivation so that farmers can be licensed as soon as federal law changes. North Dakota has done the same. (ATTRA Weekly Harvest Newsletter, June 4, 2008, www.attra.ncat.org)

The USDA Agricultural Research Service has developed a new, winter-hardy, early blooming **hairy vetch** called ‘Purple Bounty’ that can be grown in more of the Northeast and should be available commercially in 2009. Hairy vetch may be managed both as a nitrogen source and as a mulch that smothers weeds. (See Sustainable Production of Fresh-Market Tomatoes and Other

Vegetables with Cover Crop Mulches, by Aref A. Abdul-Baki and John R. Teasdale, www.ars.usda.gov/IS/np/SustainableTomatoes2007/TomatoPub.pdf)

A 2004 study (Kumar, V., D.J. Mills, J.D. Anderson, and A.K. Mattoo, 2004, “An alternative agriculture system is defined by a distinct expression profile of select gene transcripts and proteins,” Proc. Natl. Acad. Sci. 101:10535-10540; www.pnas.org/cgi/reprint/101/29/10535) showed that tomatoes grown after a hairy vetch cover crop lived longer, had less disease, and had delayed leaf senescence compared with tomatoes grown under plastic mulch, since the vetch switched on protective metabolic pathways in the tomato plants.

University of New Hampshire researchers have received a \$380,000 SARE (USDA Sustainable Agricultural Research and Education) grant to study energy and nutrient cycles on the **UNH organic dairy** research farm. “In a closed system, the only thing leaving the farm is the milk,” says John Aber, professor of natural resources at UNH and the principal investigator on the grant. “The goal is to see whether we can have a closed-nutrient-cycle and energy-independent organic dairy.” In a closed system, for instance, cow manure fertilizes the fields on which the herd grazes. Sawdust from woodlands on UNH’s 300-acre farm in Lee might provide animal bedding, which is becoming increasingly expensive; woodlands might also provide fuel for small cogeneration plants. Methane digestion could produce usable methane from manure. The first step is to assess energy and nitrogen budgets and balances. Already, Aber and his students’ work suggests that energy independence and a closed nitrogen system could be achieved by intensively managing manure; changing the bedding used on the 40-cow farm; increasing the time cows are on pasture; and growing grain, hay, bedding and silage onsite instead of purchasing them. (Univ. of N.H. press release, June 3, 2008. For more, see www.organicdairy.unh.edu)

Three Oregon **Christmas tree farms**--all members of [Coalition of Environmentally Conscious Growers](http://www.coalitionofenvironmentallyconsciousgrowers.org)--have **replaced chemical sprays** with ecological pest management. With help from elementary school kids, Holiday Tree Farms, Silver Mountain, and Yule Tree Farms released 72,000 lady beetles to gobble aphids and mites that might threaten their firs. (Pesticide Action Network North America, May 7, 2008; panna.org)

Thanks to **Citizens for a Green Camden**, this Midcoast Maine town approved a policy in April (on Earth Day) of keeping **town property free of pesticides**—and the group has gotten local businesses and residents to do the same. Their work is modeled after that of Castine, the first Maine town to ban synthetic pesticides on its town-owned property. Under the policy, town employees will not use pesticides on town-owned land except when the town manager views situations as emergencies. The policy promotes plant health through soil testing; by using low-maintenance, pest-resistant plants adapted to the area; by controlling weeds with mulch and hand weeding; and by eliminating conditions that support pests.

Laurie Wolfrum, Marsha Smith and Patrisha McLean collected information about maintaining grounds without using harmful pesticides and synthetic fertilizers and made it available at a table at the town office. They brought Paul Tukey (author of *The Organic Lawn Care Manual*) to town to tell residents how to maintain lawns ecologically. Beginning in May (and ongoing), residents could sign a sheet at the town office pledging that they would not use toxic synthetic chemicals in their yards; and at the end of May, the Citizens group recognized those people.

Next, the Citizens approached the business community. In June they held a celebration to recognize inns that pledged not to use toxic chemicals. Very quickly, all 16 inns and Bed and Breakfast establishments in town joined the effort and received certificates to display at their sites. The local Chamber of Commerce will promote these inns' green practices.

("Citizens for a Green Camden seeks businesses, residents to pledge no pesticides," by Holly S. Anderson, VillageSoup/Knox County Times, May 7, 2008; "Innkeepers join green business movement," Camden Herald, May 7, 2008; "Town now limits pesticide use on public land," by Susan Milisa Mustapich, Camden Herald, April 24, 2008; personal communication with Marsha Smith)

Rodale Institute has proved that **organic practices**, or "regenerative farming," **can remove about 7,000 pounds of carbon dioxide** from the air each year and sequester it in an acre of farmland. Converting all 434 million acres of U.S. cropland to organic practices would equal eliminating 217 million cars – nearly 88% of all U.S. cars and more than a third of all the cars in the world. Rodale CEO Timothy LaSalle says, "The way that we farm may be the single biggest – and most undervalued – way that we can mitigate global warming." Conventional agriculture, using petroleum-based fertilizers and pesticides, disrupts the natural carbon storage in soils and contributes nearly 10% of U.S. greenhouse gas emissions. Rodale researcher Paul Hepperly, Ph.D., says that organic practices could counteract up to 40% of global greenhouse gas output by using soil-building crops and compost to build soil carbon levels while keeping productivity in line with conventional systems. Rodale's Web site www.hero-farmers.org has practical steps to fight global warming by the way we shop, eat, garden and support our farmers. ("Rodale Institute Begins Mission to Fight Global Warming – with Farms," Press release, Rodale Institute, April 21, 2008)

Maine residents can receive \$5 for each mercury-containing thermostat they return for recycling to the TRC (**Thermostat Recycling Corporation**). Homeowners can request a TRC mailing label and shipping instructions from TRC@nema.org or 1-800-238-8192. After the thermostat is received, the homeowner gets a \$5 check in the mail. The rebate program offers homeowners a way to safely recycle mercury. Many Maine towns and cities also have mercury collection programs where thermostats can be recycled. The TRC program allows homeowners to recycle old thermostats directly with thermostat manufacturers.

The **2008 Farm Bill** provides \$78 million for organic agriculture research and education, five times more than the \$15 million allocated in the 2002 Farm Bill. These funds will expand competitive grants for developing and sharing organic farming systems information through the USDA's Integrated Organic Program. The increase is still not a "fair share" of public investment in this area, says the Organic Farming Research Foundation (OFRF), as it represents approximately 1% of USDA's research budget, while organic products have nearly 4% of the U.S. retail food market. The 2008 Farm Bill also provides \$5 million to collect economic data about organic production and markets; \$22 million to offset part of farmers' organic certification costs; takes steps to eliminate bias against organic growers in crop insurance programs; and establishes financial and technical support for conversion to organic production. ("Organic Farming Research Foundation Applauds Farm Bill Victories^[1]_{SEP} for Organic Farmers and

Ranchers,” press release, OFRF, May 27, 2008; For more, see http://ofrf.org/policy/federal_legislation/farm_bill/080520_update.pdf)

Pesticides

Board of Pesticides Control

MDOT to Use Herbicides along Roads

At its May 2008 meeting, the Maine Board of Pesticides Control (BPC) granted a variance to the Maine Department of Transportation (MDOT) from the 25-foot setback otherwise required from waterways when broadcasting herbicides along guardrails. According BPC Director Henry Jennings, the MDOT has been using mechanical methods (mowing) to manage guardrails at least since 1994 but wants to return to using herbicides due to high fuel prices for mowing weeds.

In a somewhat related matter, several representatives of the Maine Department of Environmental Protection (DEP) were present do discuss whether a 25-foot setback for broadcast applications of pesticides near waterways is sufficient. The DEP had investigated a complaint about pesticides to lawns at condominiums near the ocean in Lincolnville and found that pesticides had been applied in areas directly adjacent to culverts, storm drains and other drainage areas. The application conformed with the BPC outdoor pesticide application rule requiring a 25-foot setback to surface water, but conflicted with the DEP rule requiring no direct discharge to waterways. The DEP wants to work with the BPC to educate pesticide applicators about DEP rules; and would like the BPC to strengthen the outdoor application rule to protect drainage ways.

Montville’s GMO Ban Questioned

Since the town of Montville passed an ordinance this spring banning the use of genetically modified organisms (GMOs), both the Maine Department of Agriculture and the BPC have questioned the legality of the ordinance. The BPC requires that a town notify it of a pesticide-related ordinance before voting on the ordinance so that the BPC can catalog municipal ordinances and have them available in a central location. According to BPC Director Henry Jennings, the town can come into compliance simply be sending the BPC a copy of the ordinance and then adopting it again. (Seed products that have pesticidal products of *Bacillus thuringiensis* incorporated into them are the only GMOs that contain a pesticide, so they are the only GMOs under BPC control and are the only GMOs for which the BPC requires notification of an ordinance.)

Continued Development of Aerial Spray Drift Rules

The BPC continues to develop new requirements for aerial applications of pesticides. Concepts developed to date are: a definition for “Sensitive Area Likely to be Occupied” (SALO), which would carry more stringent requirements than other sensitive areas; notification requirements that would include an annual notice to all landowners within 1000 feet of a target spray area, allowing them to request notification before each application; more detailed mapping and site

identification to ensure that aerial applicators spray the correct site; and adoption of a Standard of Harm, whereby a complaint about drift becomes a violation when evidence shows that the drift residue caused harm.

In its coming meetings, the BPC will work through more topics, including standards of practice, recordkeeping and best management practices. Once all topics have been addressed, the BPC will draft a rule.

Sidebar

Did You Know?

No Spray Agreements are available for landowners abutting roadways, railroads and utilities. Parties who participate agree to remove brush adjacent to their properties in lieu of herbicide treatments. To request a No-Spray Agreement, call Maine DOT at 207-624-3000.

In the Maine DOT Roadside Brush Control Program, powered spraying is prohibited in the following areas: within 100 feet of wells and springs; 150 feet of parked vehicles; 100 feet of animal pastures; 150 feet of occupied buildings, homes or playgrounds; 100 feet of organic farms, pedestrians, bicyclists or picnic tables; or within areas defined by Maine DOT No-Spray Agreements.

To report violations of these buffers, call the BPC at 207-287-2731 (24-hr answering service).

[End of BPC news]

Bowing to pressure from Monsanto and others, the USDA announced on May 21 that it plans to **eliminate pesticide reporting** at the National Agricultural Statistics Service (NASS). The program has tracked national pesticide use and provided critical information for consumer groups, scientists, farmers and environmental groups monitoring pesticide use and hazards. Eliminating the Agricultural Chemical Use Database is a direct attack on consumers' and farmworkers' right to know about pesticide residues and food safety. Pesticide reporting has become particularly important in the last 10 years as many genetically engineered crops require more and more pesticides. (Organic Bytes, June 10, 2008; www.organicconsumers.org/articles/article_12662.cfm)

Researchers at the University of California San Francisco (UCSF) report that atrazine, the second most widely used herbicide in the United States, can cause serious problems for both fish and humans. [Environmental Science and Technology](#) (ES&TAtrazine20082805.pdf) says the UCSF study of **atrazine's endocrine-disrupting effects** in zebrafish and in cultured human cells suggests that human gene cells may be more sensitive to atrazine than previously thought. Zebrafish exposed to "environmentally relevant" doses of atrazine in the lab developed slightly higher female-to-male ratios, indicating some feminization induced by the weed killer. Exposure appears to stimulate a gene that encodes aromatase, which converts androgens such as testosterone to estrogens. Estrogen-sensitive breast cancers are often treated with drugs that reduce the level of aromatase and, consequently, the level of estrogen. Researchers found that atrazine activated NR5A receptors in human cell lines, increasing the activity of aromatase. The

experiments show definite effects at 2 parts per billion (ppb); the EPA's drinking-water limit for human exposure is 3 ppb. The pesticide is currently under review. According to ES&T, Holly Ingraham, coauthor of the new research, suspects other genes "may be much more sensitive to atrazine and could be linked to other important systems, such as reproduction and adrenal gland function."

Genetic Engineering

Switzerland has extended its moratorium on genetically engineered (GE) crops, originally imposed in 2005, until Nov. 2010, so that government scientists can research the technology, including its effects on organic farming. The government says that the moratorium has not obviously harmed farming, but, in fact, farmers have been able to market their produce abroad as GE-free. ("GM crops banned in Switzerland until 2012, Animal Feed & Animal Nutrition News, May 29, 2008, www.allaboutfeed.net/tsal/portlets/ts/core/news_singleeditorsc...)

The moratorium hasn't stopped Swiss seed company Syngenta along with Germany's BASF and Bayer and U.S.-based Monsanto from **seeking 530 patents on genes believed to help crops withstand stresses caused by climate change**, including drought, heat, floods, saline soils and additional UV radiation. The Ottawa-based ETC Group calls the action an intellectual-property grab, possibly removing genetic material currently made available in public plant breeding programs. Monsanto says it will provide the germplasm free in some African countries. ("Firms Seek Patents on 'Climate Ready' Altered Crops," by Rick Weiss, Washington Post, May 13, 2008; washingtonpost.com; "Patenting the 'Climate Genes' . . . and Capturing the Climate Agenda," Action Group on Erosion, Technology and Concentration, etcgroup.org)

Meanwhile, a three-year-long study at the University of Kansas, started after farmers reported problems with GE soy, found about a **10% reduction in yield of Roundup Ready, GE soy** over its conventional equivalent. Researcher Barney Gordon got equal yields of the GE crop when he added extra manganese to the soil—suggesting that genetic engineering cut the ability of the crop to take up this essential element from the soil. Earlier, a University of Nebraska study found that another GE soy variety yielded 6% less than its closest non-GE variety, and 11% less than the best non-GE variety; and **U.S. cotton yields have dropped since GE varieties were introduced**. Not surprisingly, the International Assessment of Agricultural Science and Technology for Development announced in April, after extensive study, that GE crops as currently developed would not solve world hunger: "Assessment of the [GM] technology lags behind its development, information is anecdotal and contradictory, and uncertainty about possible benefits and damage is unavoidable." ("Exposed: the great GM crops myth," by Geoffrey Lean, The Independent, April 20, 2009, Independent.co.uk; "GM will not solve current food crisis, says industry boss," by David Adam, The Guardian, June 27, 2008; guardian.co.uk)

The Organic Consumers Association's (OCA) and allies are calling for a **boycott of all Kellogg's products** after Kellogg's refused to source only GE-free sugar. **Monsanto's RoundUp Ready GE sugar** is due to hit stores this year, exposing millions of consumers to this untested and unlabeled food. (Organic Bytes, July 7, 2008, <http://organicconsumers.org/kelloggs.cfm>)

The Organic Trade Association filed a legal complaint against **Ohio's** Department of Agriculture on June 30, 2008, challenging as **unconstitutional an "emergency" rule** seeking to prevent labeling that tells a consumer whether **cows were treated with rBST (rBGH)**, Monsanto's synthetic growth hormone. USDA National Organic Standards prohibit the use of this hormone. In issuing its rule prohibiting organic products from being labeled "produced with milk from cows that have not been treated with synthetic growth hormones," the state of Ohio fails to recognize the federal Organic Foods Production Act (OFPA) and ignores the rights of consumers and organic dairy farmers, says the Organic Trade Assoc. (OTA), which adds that the Ohio rule is unconstitutional, denying free speech rights, violating federal labeling protocols followed by organic dairy farmers, and violating Congress' sole authority to regulate interstate commerce (of dairy products moving into or out of Ohio). Over 1600 Ohioans wrote to state officials to oppose the measure, but Monsanto's influence prevailed. A similar action was filed on the same day by the International Dairy Foods Association, www.idfa.org. (Press Release, Organic Trade Assoc., June 30, 2008, www.ota.com)

Clear labeling of GE products is important in order to track potential health problems of these novel foods. Labeling might help, for instance, determine **whether GE foods are linked to Morgellons Disease**. The Centers for Disease Control (CDC) is investigating the large and increasing number of complaints of Morgellons, characterized by "a range of cutaneous (skin) symptoms including crawling, biting and stinging sensations; granules, threads, fibers, or black speck-like materials on or beneath the skin, and/or skin lesions" and, sometimes, fatigue, mental confusion, short term memory loss, joint pain and changes in visions. Fibers taken from Morgellons patients' bodies do not resemble any ordinary natural or synthetic fibers. Vitaly Citovsky, professor of molecular and cell biology at Stony Brook University in New York, found that "all Morgellons patients screened to date have tested positive for the presence of Agrobacterium, whereas this microorganism has not been detected in any of the samples derived from the control, healthy individuals." Agrobacterium is a soil bacterium that causes crown gall disease in plants and is widely used to transfer genetic material into GE plants. San Francisco physician Raphael Stricker notes, "There's almost always some history of exposure to dirt basically either from gardening or camping or something" in Morgellon's patients. He suggests that the disease is transmitted by ticks: Of 44 Morgellons patients tested in San Francisco, 43 had the bacterium causing Lyme disease; and most patients who took antibiotics for Lyme experienced remission of Morgellons symptoms. Mae-Wan Ho and Joe Cummins say that if this connection with Agrobacterium is confirmed, then genetic engineering might be implicated in the creation of new disease agents. Agrobacterium is known to transfer DNA into chromosomes in human cells. Most Morgellons cases are in the United States, the leading country for producing and releasing GE crops. ("Agrobacterium & Morgellons Disease, A GM Connection?" by Dr. Mae-Wan Ho and Prof. Joe Cummins, Institute of Science in Society press release, April 28, 2008, <http://www.i-sis.org.uk/agrobacteriumAndMorgellons.php>. For more on Morgellons Disease, see <http://psychologytoday.com/articles/index.php?term=20070227-000003&page=1>)

Inconsistent Feds

In June, the USDA announced that **Promiseland Livestock, LLC**, a 22,000-head cattle producer, had "willfully" **violated the Organic Foods Production Act** of 1990 by failing to keep adequate

records to confirm that all its cattle were managed organically. Promiseland management also repeatedly refused to openly share records with USDA and prevented agency officials from conducting an unannounced inspection at its facilities.

The investigation and USDA's attempt to strip Promiseland's certification result from Cornucopia Institute's investigation of Aurora Dairy, the largest U.S. supplier of private-label organic milk and supplier to Wal-Mart, Target, Costco and other major retailers. The USDA found that Aurora confined cattle to giant feedlots instead of grazing as law requires; and it brought in conventional, non-organic cattle. That led federal investigators to Promiseland, with facilities in Missouri and Nebraska, the largest U.S. supplier of organic dairy replacement animals. The USDA was criticized last fall when Bush administration officials overruled career civil servants in the Aurora controversy. Instead of decertifying Aurora, as officials at the National Organic Program recommended, USDA allowed the corporation to continue to operate under a one-year probation. Promiseland also overrode USDA recommendations when political appointees changed the producer's proposed revocation to a two-year suspension. Connecting dots, Kastel notes that "Aurora Dairy has supplied Dean Foods with milk for their Horizon brand, Promiseland is the leading supplier of cattle for organic factory farms, Covington and Burling, the powerful Washington lobbying and legal firm, has represented them all, and they have all been certified by Quality Assurance International (QAI) acting as an agent for the USDA. Calling an operation with 22,000 head of cattle 'organic' is a joke."

In May, Cornucopia filed its third legal actions against Dean Foods regarding its **Horizon Organic** milk, claiming that Horizon supplier Fagundes in Snelling, California, confined the majority of its cows to a filthy feedlot rather than providing fresh grass and pasture. Cornucopia has asked the USDA Inspector General to investigate appearances of favoritism at the agency that benefited Dean Foods. Based on Cornucopia research, the USDA did sanction or decertify two independent factory farms supplying Horizon, but USDA dismissed both legal complaints against Dean Foods itself, apparently without investigating or visiting Dean's largest industrial dairy in desert-like central Idaho.

Also regarding organic dairy, Cornucopia found earlier this year that management at the farmer-owned coop **Organic Valley** was buying a small percentage of its milk from Natural Prairie in Texas, which milks over 5,000 cows. Challenged by their farmer-owners, Organic Valley management said the purchasing arrangement was temporary and that the Texas operation offered some level of grazing, which Cornucopia disputed. In July, Organic Valley's board of directors decided to stop buying from Natural Prairie.

(Cornucopia Institute, press releases, June 13 and 19 and May 12, 2008; www.cornucopia.org) While the big guys get off, small, local producers suffer under USDA, which, this spring, informed Bob Sewall and Mia Montello of **Sewall Orchard in Lincolnville, Maine**, that their wholesale **cider** must be pasteurized. Refusing to convert their product line from a whole, living food to what they define as apple juice, Sewall and Montello decided to drop their wholesale cider business -- a blow to the farm income. They will continue to sell cider directly to consumers at farmers' markets and on-farm. Look for their cider booth at the Common Ground Country Fair.

A journalist covering family-farm issues is challenging the government regarding **National Animal Identification System (NAIS)** records. The USDA wants all livestock owners--even

those keeping animals as pets--to register their premises with the government, voluntarily for now. Many livestock owners object but say that even without registering and without their knowledge or consent, they were placed in the program's database. Freelance journalist Mary-Louise Zaroni is seeking disclosure of the USDA's National Premises Information Repository (NPIR), a list of contact information for livestock premises. She also wants USDA to reveal how many livestock owners have requested removal from NPIR and how many such requests USDA has honored. The NPIR is being compiled as the first step in the USDA NAIS; the second step entails assigning a unique ID number, usually in the form of a microchip or distance-readable Radio Frequency ID tag, to each animal. The third step would have livestock owners report all changes in ownership and significant changes in location or status of an animal to a private database that will charge for each report. Zaroni, represented by Leonard G. Brown, III, of the Lancaster, Penn., law firm Clymer & Musser, P.C., submitted a Freedom of Information Act (FOIA) request to the USDA's Animal and Plant Health Inspection Service (APHIS) for the NPIR livestock list last fall. Initially, APHIS indicated that it planned to disclose some 17,000 pages of NPIR records to Zaroni but later denied her request, citing FOIA's Exemption 6, which sometimes lets an agency withhold "personnel and medical files and similar files the disclosure of which would constitute a clearly unwarranted invasion of personal privacy." Zaroni says that basic contact information is not exempt. The 2008 Farm Bill Section 1619 was added, with no public debate, to shield much USDA information from public disclosure. (Press release, June 2, 2008, Leonard G. Brown, III, Clymer & Musser, P.C., 717-299-7101)

Consumers Union has asked the **USDA** to reverse itself and allow Kansas-based Creekstone Farms to **test its slaughtered cows for mad cow disease**. Last year, Creekstone won its suit against the USDA for the right to test and label its meat as "tested for BSE." USDA appealed, arguing that the same rapid test used by the agency to screen for bovine spongiform encephalopathy (BSE), or mad cow, is "worthless" when used by a private company. Currently, the USDA tests only 0.1% of slaughtered or dead U.S. beef cattle, while Japan tests every cow entering the food system.

While the test used by USDA can miss a case of mad cow disease if it is in an early stage of incubation, it can catch the disease in later stages, before the animal shows symptoms. The European Union, using the same test on healthy-appearing cattle, found over 1,100 cases of BSE between 2001 and 2006. (Consumers Union press release, June 10, 2008. See also <http://blogs.consumerreports.org/safety/>)

The European Food Safety Authority's final **cloning** risk assessment says that **more testing is required** to determine whether or not foods from new cloning technology are safe for human consumption. The decision casts doubt upon the U.S. FDA assessment announced in January, saying that animal clones and their offspring are not demonstrably different from naturally raised livestock and need no additional testing. However, studies reviewed in the FDA's own risk assessment uncovered troubling abnormalities and defects in animal clones that could threaten public safety. Moreover, as cloning uses recently developed technologies, no historical data exist to determine the safety of these foods for long-term human consumption. (Center for Food Safety press release, July 24, 2008, www.centerforfoodsafety.org)

Nutrition

A study at the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University in Boston, Mass., suggests that **plant foods may help preserve muscle mass** in older people.

The typical American diet is rich in protein, cereal grains and other acid-producing foods. In general, such diets generate tiny amounts of acid each day, and with aging, a mild but slowly increasing metabolic "acidosis" develops. Since acidosis appears to trigger muscle-wasting, the researchers looked at links between measures of lean body mass and diets relatively high in potassium-rich, alkaline-residue-producing fruits and vegetables. Such diets could help neutralize acidosis. Foods can be considered alkaline or acidic based on the residues they produce in the body, rather than whether they are alkaline or acidic themselves. For example, acidic grapefruits are metabolized to alkaline residues. Volunteers whose diets were rich in potassium had a mean of 3.6 pounds more lean tissue mass than those with half the higher potassium intake. That almost offsets the 4.4 pounds of lean tissue typically lost in a decade in healthy people aged 65 and above, say the authors. (USDA Agricultural Research Service News Service, Rosalie Marion Bliss, May 23, 2008; www.ars.usda.gov/is/pr. The study was published in the March 2008 American Journal of Clinical Nutrition.)

Eating **raw** (but not cooked) **cruciferous vegetables** (broccoli, cabbage, etc.) just three times per month **cut the risk of developing bladder cancer** by 40%, say researchers at the Roswell Park Cancer Institute in Buffalo who studied the diets of 825 people without bladder cancer and 275 with the disease. Not smoking reduced the risk even more. ("Raw Broccoli, Cabbage Slash Bladder Cancer Risk by 40 Percent; Cooking Destroys Benefits, by Mike Adams, NaturalNews, July 18, 2008, www.naturalnews.com/z023655.html; "Consumption of Raw Cruciferous Vegetables is Inversely Associated with Bladder Cancer Risk," by Li Tang et al., Cancer Epidemiology Biomarkers & Prevention 17(938-944), April 1, 2008; <http://cebp.aacrjournals.org/cgi/content/abstract/17/4/938>)

Winter 2008-2009

The Good News

A nationwide survey of 750 consumers by the Ames, Iowa, Leopold Center for Sustainable Agriculture showed that:

- consumers are re-assessing **shopping and eating habits** to cut fuel use and were more likely to respond to rising food and fuel prices by taking fewer vacations, buying more foods on sale, eating out less and purchasing fewer desserts (compared with other food categories);
- 17% were very likely to cope with rising prices by purchasing more at farmers' markets or by canning or freezing more produce;
- 55% perceived the U.S. food system to be safe—a drop from 70% in a 2007 survey;
- 15% viewed a global system as safe; 74% said a local system was safe; 73% trusted a regional system;
- respondents would be more confident in the food supply given a food safety seal or inspection certification, more information about who handled and produced food, and country of origin labeling;
- more than 50% would value carbon labels on food products if they did not increase costs;
- 50% said loss of natural habitat is a more important environmental issue than climate change; more than 40% said water pollution is more important;

- more than two-thirds defined local food as traveling 100 miles or less from farm to point of purchase; a third (especially from larger western states) said it was grown in their state or region. ("Food, Fuel and the Future: Consumer perceptions of local food, food safety and climate change in the context of rising prices," by Rich Pirog and Becky Rasmussen, The Leopold Center, Sept. 29, 2008; www.leopold.iastate.edu/pubs/staff/consumer2/report.html)

During the August Slow Food Nation meeting, Roots of Change, which is organizing to transform California's food system, released a **Declaration for Healthy Food and Agriculture** (www.FoodDeclaration.org). The Declaration principles include:

- access to affordable, nutritious food for everyone;
- information for customers about how food is produced, where it comes from, and what it contains;
- preventing exploitation and upholding the quality of life for all farmers and food workers;
- ensuring future prosperity by educating youth, protecting finite resources and transitioning to renewable resources and energy; and
- creating a more secure, prosperous and healthy society.

Britains buying **organic** foods through CSAs are getting **quality food often for the same or even lower prices than non-organic** equivalents in supermarkets, and farming and food are now the U.K.'s largest goods-producing industries. Now, research commissioned by Britain's Soil Association shows that producing organic field crops, such as wheat, barley and oil seed rape, could become more profitable than non-organic when oil costs \$200 per barrel—possibly within five to 10 years. With oil at \$135, profit margins are similar for the two systems. For rotations with potatoes, non-organic systems are more profitable when oil costs \$135—and at \$200, but far less so. Organic systems become more profitable mainly because manufacturing artificial fertilizers used in non-organic systems uses fossil fuels. The research concludes that organic systems use less energy, generally emit fewer greenhouse gases, sequester carbon in the soil, provide more jobs, support more wildlife and probably offer a more secure long-term financial future for U.K. farmers. ("Organic food: no flash in the pan fad," Peter Melchett, Sept. 3, 2008; guardian.co.uk)

Working with the U.K.'s Organic Research Centre (ORC) at Elm Farm and Germany's University of Kassel, **College of the Atlantic** in Bar Harbor, Maine, has established the **Trans-Atlantic Partnership in Sustainable Food Systems**. The college has also created a Chair in Sustainable Food Systems. Both are funded by the Partridge Foundation. David Hales, president of COA., says, "We envision this program as a platform for creating national and international leadership in meeting the needs of providing healthy and affordable food in the 21st century, in understanding the role of international trade and finance, and in transforming the way that higher education approaches this subject." Students will be able to do research at the ORC; and may obtain a master's degree at the University of Kassel's graduate school and receive full funding for their education. Researchers at Kassel and the ORC can study organic practices at COA's Beech Hill Farm. The institutions have already begun faculty exchanges and are planning an international conference on sustainable food systems for next fall.

Preserving the Nearing Legacy: During the 1970s, while Helen and Scott Nearing were building their third and final Forest Farm, thousands journeyed to Harborside to glean wisdom or advice from two true pioneering spirits. In return for practical homestead advice, a lecture on important matters of the day, and perhaps a meal, the wandering soul traded her labor. No one watched at Forest Farm--those who wished to learn had to work. This beautiful relationship between wise elders and seeking students gave birth to Forest Farm. Thousands whose lives were impacted by the Nearings still visit the farm.

Last summer, long-standing moisture issues were compounded by weeks of near-daily rains, with excessive mold and mildew resulting. The board of The Good Life Center is working to preserve the Nearings' 4000-volume personal library and to ensure that staff and visitors have a safe and healthy place to work. Contact The Good Life Center, 372 Harborside Rd., Harborside, ME 04642, or www.goodlife.org, for more information.

(Thanks to Bob St. Peter and Juli Perry, the most recent Forest Farm stewards, for this update. The Good Life Center holds regular meetings in the area for those who want to get more involved.)

Food Safety

The USDA's mandatory **country of origin labeling** (COOL) program is effective for foods produced or packaged on or after Sept. 30. The rule covers muscle cuts and ground beef (including veal), lamb, chicken, goat and pork; perishable agricultural commodities (fresh and frozen fruits and vegetables); macadamia nuts; pecans; ginseng; and peanuts. The COOL program for fish and shellfish began in 2004. Commodities covered under COOL must be labeled at retail to indicate their country of origin, unless they are in processed foods. Food service establishments are exempt from COOL. Specific criteria must be met for a covered commodity to bear a "United States country of origin" declaration. Consumers Union (CU) applauded the program, saying that under a decades-old law, foods canned, boxed or bagged in another country had to be labeled as to their origin. The new law extends the requirement to fresh perishable meat, poultry, fish and produce. CU questioned exemptions for meat and poultry sold in most butcher shops and fish sold in most fish markets, since the law covers only large establishments selling a certain minimum amount of fresh foods. CU also objected to exemptions for processed foods, such as ham, bacon, roasted peanuts, peanut butter, fruit salad, bagged salad mix, frozen peas and carrots (mixed), trail mix, cooked shrimp and smoked salmon. CU has a guide to COOL at www.consumersunion.org/pdf/CU-Cool-Tool.pdf. (USDA press release, July 29, 2008; www.ams.usda.gov/COOL; Consumers Union press releases, Sept. 12 and 30, 2008; www.consumersunion.org)

Rather than dealing with problems inherent in factory-farmed foods, **the FDA will allow irradiating lettuce and spinach** with x-rays to destroy pathogens. The process may create toxic free radicals or other cancer-causing chemicals and reduce nutrient concentrations. Irradiated lettuce and spinach must be labeled in supermarkets but not in restaurants, schools, hospitals or nursing homes. Food irradiation is prohibited on products labeled "organic." (Organic Bytes, Aug. 28, 2008, organicconsumers.org)

Pesticides

Board of Pesticides Control News

By Melissa White Pillsbury

BPC Addresses Aerial Spray, Genetically Engineered Sweet Corn, Violations

The Maine Board of Pesticides Control (BPC) continues to struggle with concerns over aerial spraying. For over a year, BPC members and staff have been developing rulemaking language to address problems that have emerged with the practice over the decades, but the board clearly is not ready to take a strong position against aerial applications of pesticides.

MOFGA is advocating for the strongest position possible to protect landowners from being exposed to spray drift, including a mandatory buffer between spray activity and private landowners or public spaces. The BPC has been reluctant to use buffers to protect these landowners and prefers to rely on improving notification procedures and on site planning by applicators and agricultural land managers contracting the service to make sure applications are made to the correct site using appropriate methods.

At its October 22 meeting, the BPC reviewed draft rules on aerial spraying and drift, in preparation for submitting the language for rulemaking. The forum, a procedural step, did not allow public input, but MOFGA did witness the discussion, which focused on definitions of sensitive areas and sensitive areas likely to be occupied (SALOs); standards for outdoor application of pesticides by powered equipment in order to minimize off-target deposition; and notification provisions for outdoor pesticide applications.

The BPC hopes to finalize and vote on language in the rule at its Dec. 19 meeting at the John E. Dority Safety & Performance Training Center, 10 Mountain Ave., Fairfield. For more information, see www.state.me.us/agriculture/pesticides/laws/rulemaking.htm.

Pesticide Registrations

The BPC approved a Special Local Needs [24(c)] Registration to allow use of DuPont™ Express® Herbicide with TotalSol to control bunchberry in lowbush blueberries--despite concerns that the active ingredient in Express does not bind to soil particles but leaches through soil readily, especially the coarse soils of many blueberry growing areas of Maine. A Washington County organic blueberry grower also expressed concern that this substance might affect mammals, particularly deer foraging in fields after harvest and humans eating the deer shortly after; and insects, particularly pollinators such as bees. The registration request was approved with an expiration date of Dec. 31, 2009, when the BPC will evaluate effects that applications may have had on groundwater. BPC director Henry Jennings suggested that groundwater monitoring of Express be added to the hexazinone monitoring slated for winter 2009-2010. Monsanto Company has submitted registration requests for genetically engineered Bt sweet corn products. In 2007 the BPC approved registration requests from several companies, including Monsanto, for Bt field corn products. Farmers growing Bt field corn are required by federal law to have at least 20% of the total acreage planted to non-Bt corn in order to delay development of Bt-resistant pests. A condition of registration of Bt field corn in Maine was that when an abutting landowner requests it, this 20% refuge must be configured to maximize the distance between the Bt field corn and abutting land. Bt sweet corn does not carry the same refuge requirement, so the law does not require that abutting landowners be protected from genetic drift

through refuges. If you are concerned about Bt sweet corn pollen drifting onto your sweet corn, please alert the BPC. In response to the current request from Monsanto, the BPC is convening the Bt Corn Technical Committee to review pest resistance concerns, and the Medical Advisory Committee to review human health concerns associated with Bt sweet corn consumption.

Pesticide Application Rule Violations

Vaughn Rasar of Rome was fined \$100 for purchasing and applying a restricted use pesticide, Brigade, with an expired private applicator license and expired certification.

Waterville Schools were fined \$100 after contracting with Scotts Lawn Service to have herbicides applied to athletic fields at the junior and senior high schools. The application was made on a regular school day while school was in session; school personnel did not follow the five-day notification requirement; the spray was not given adequate time to dry or dissipate before people reentered the target area; and record keeping requirements were not followed.

Scotts Lawn Service was fined \$500 after contracting with Waterville Schools for the above mentioned applications. The applicator did not schedule the application to allow the maximum time for sprays to dry or dissipate before people would be reentering the target area.

Employees of the landscape company Hands of Thyme of Boothbay made a commercial application of Roundup herbicide at St. Andrew's Village in Boothbay Harbor without a commercial applicator's license. A \$1000 fine was levied.

A vegetable grower with an expired private applicator license and expired certification purchased and applied restricted use pesticides Atrazine 4L and Proaxis to Belle Vue Farm of Manchester. A \$100 fine was imposed.

Licensed restricted use pesticide dealers employed by Paris Farmers Union of Oxford sold restricted use pesticides to six unlicensed pesticide applicators. A \$1400 fine was levied.

Two employees of P.R. Webster Professional Groundskeeping Inc. of Windham who made a commercial application of Lesco Three-Way Selective Herbicide at the Pineland Center in New Gloucester did not hold commercial applicator's licenses, were not wearing adequate personal protective equipment, and kept insufficient records. Fine: \$250.

Snowman's Oil and Soil, Inc., of St. Albans was fined \$100 after making a commercial application of Roundup herbicide to property at Prime Tanning without a commercial applicator's license.

For detailed minutes of BPC meetings and information about future meetings, see www.thinkfirstspraylast.org. To report violations or voice concerns, contact Henry Jennings, 207-287-2731, henry.jennings@maine.gov.

[End of BPC news]

A Santa Cruz, Calif., **jury awarded \$1 million to an organic farmer** whose culinary herb crops were contaminated by organophosphate **pesticides drifting** from a nearby farm growing Brussels sprouts. (Pesticide Action Network News Update, Oct. 2, 2008; www.panna.org)

In September, Italy banned the use of several **neonicotinoid pesticides** that are blamed for the deaths of millions of **honeybees**. Seed treatment products clothianidin, imidacloprid, fipronil and thiamethoxam used in rapeseed oil, sunflowers and sweet corn were immediately withdrawn. Germany and Slovenia banned sales of clothianidin and imidacloprid in May, and France banned imidacloprid on sunflowers in 1999 and on sweet corn in 2003. France rejected Bayer's application for clothianidin. Thousands of hives in Germany were poisoned by clothianidin in May 2008. Neonicotinoid pesticides move through plants, even into pollen and nectar, and attack insects' nervous system. ("Italy bans Pesticides linked to Bee Devastation," Sept. 19, 2008, Coalition against Bayer Dangers; www.CBGnetwork.org)

The Canadian Pest Management Regulatory Agency **challenged Bayer's clothianidin application**, charging that field studies were "deficient in design and conduct"; that "clothianidin may pose a risk to honey bees" and "is very persistent in soil, with high carry-over of residues to the next growing season. Clothianidin is also mobile in soil." The Natural Resources Defense Council has sued to force EPA to disclose studies Bayer submitted to gain U.S. approval of chlothianidin, to find out if EPA had evidence of connections between pesticides and honey bee die-offs. (Pesticide Action Network North America News Update, Sept. 4, 2008, www.panna.org)

Penn State researchers found "**unprecedented levels of fluvalinate and coumaphos**"--pesticides applied to non-organic hives to combat varroa mites—as well as traces of **70 agricultural pesticides** and their metabolites **in beehive wax**. The accumulation of miticides was expected because bees reuse old wax to build new hives, but the high concentrations and abundance of other pesticides surprised researchers. Every bee tested positive for at least one pesticide, and pollen contained as many as 31 pesticides--six on average. Researchers worry that combinations of some fungicides with pyrethroids and/or neonicotinoids may be hundreds of times more toxic than individual pesticides. (Pesticide Action Network North America News Update, Aug. 28, 2008, www.panna.org) (Ed. note: Maine state apiarist Tony Jadczyk says that the pesticides were found in brood comb, which remains in hives for many years; that wax used in cosmetics, such as lip balm, is from capping wax produced annually, in summer and fall, in honey supers, when beekeepers should not be treating for anything.)

A wetting agent (surfactant or "adjuvant load") in some **glyphosate** herbicides apparently is **taken up by trees and can weaken their bark**, making it susceptible to freeze-thaw injury on the south and southwest sides of trunks of susceptible trees, according to Utah State University Extension ornamental horticulture specialist Heidi Kratsch. Glyphosate drift can also cause stunted, distorted shoots, chlorosis and often death of woody plants. Glyphosate products increase levels of shikimic acid in plants, which reduces the level of phenolic compounds--natural substances in woody plants that protect against pathogens. Glyphosate products accumulate in plant roots over years and can cause injury long after the original herbicide application. ("Bark Splitting Caused by Common Herbicide," Utah State University Extension, Sept. 17, 2008; <http://extension.usu.edu/htm/news/articleID=3857>)

The Journal of Agromedicine reports that an 18-month study by the East Texas Medical Center and the University of Texas Health Science Center of 1,400 patients found that people with Parkinson's were 10 times more likely to have been exposed to rotenone and were twice as likely to have used pesticides with chlorpyrifos, such as Dursban.

Rates are also high in the petroleum industry and the Midwest farm belt. (Pesticide Action Network North America, Sept. 25, 2008, panna.org)

Toxic compost? It's just another "Milestone" in the Dow family of pesticides: After British farmers and gardeners noticed last summer that leaves of vegetable plants were distorted and potato tubers were unusually small, the problem was traced to manure or composted manure from animals that grazed on or ate hay or silage from fields treated by **Dow's weedkiller aminopyralid**, sold as Milestone or Forefront. Dow withdrew the product there, and British authorities suspended approval of aminopyralid products, but treated grass and contaminated manure remain in commerce. Mother Earth News warns that U.S. gardeners using straw from fields treated with aminopyralid, or manure from animals that grazed on treated pastures, may contaminate their crops—as happened with a related Dow herbicide, clopyralid, in 2001. The half-life of aminopyralid, says Mother, is 533 days. Aminopyralid combats bedstraw, an increasingly problematic weed in pastures. William Curran of Penn State University says that transporting contaminated manure onto fields that will be planted with sensitive crops or selling compost containing contaminated manure off the farm could cause serious crop injury. The Milestone label has many restriction related to this. Eric Sideman, MOFGA's organic crops specialists, says, "You do need to know where you manure comes from." According to Gary Fish of the Maine Board of Pesticides Control, 2.5 gallons of Forefront (aminopyralid and 2,4-D) and 2.5 gallons of Milestone VM were reportedly sold in Maine in 2007—enough to treat about 28 acres at a rate of 3 ounces/acre; 2008 data were not yet available. ("Plants in gardens and allotments all over Britain are dying: The reason is as surprising as it is disturbing...", by Marcus Dunk, Oct. 7, 2008, Mail, London, www.dailymail.co.uk; "Watch Out for Killer Compost," by Cheryl Long and Barbara Pleasant, Mother Earth News, Oct.-Nov. 2008; e-mail, Eric Sideman, Oct. 15, 2008)

On August 8, after a 172-day demonstration in which survivors of the **1984 Bhopal pesticide plant explosion** walked 500 miles from Bhopal to New Delhi, camped in Delhi, suffered arrests and police beatings, and launched a 60-day hunger fast, the Indian government said it would meet many of their demands; will take legal action on the civil and criminal liabilities of Union Carbide and its owner, **Dow Chemical Company**; and will establish an "Empowered Commission" on Bhopal to address the health and welfare needs of Bhopal survivors and environmental, social, economic and medical rehabilitation. The disaster killed more than 22,000, left many of the 150,000 survivors with serious ailments, and still poisons drinking water for 25,000. (Pesticide Action Network News Update, Aug. 14, 2008, www.panna.org)

More Dow-ners: Dow AgroSciences has filed a notice of intent to seek compensation under "investor-protection provisions" of NAFTA for damages from **Quebec's provincial ban on the cosmetic use of pesticides**. Kathleen Cooper of the Canadian Environmental Law Association told the Globe and Mail that the Quebec ban is backed by medical and environmental organizations and enjoys wide public support. She is troubled that chemical companies can use

NAFTA to “undermine the decisions of democratically elected governments.” (“Ban on pesticides may face NAFTA test,” by Martin Mittelstaedt and Luke Eric Peterson, Oct. 22, 2008, globeandmail.com)

The U.S. Forest Service (USFS) says Mexican-based "marijuana cartels" are growing **marijuana** at hundreds of sites **in U.S. National Parks and forests** in Kentucky, Tennessee, West Virginia and throughout the West, using fertilizers and pesticides (some banned in the United States), which contaminate the land and the crops. (Pesticide Action Network News Update, Oct. 23, 2008; www.panna.org)

Pyrethrins, natural insecticides made from chrysanthemums, and their synthetic counterpart, pyrethroids, are far less toxic than organophosphate pesticides, but the Center for Public Integrity says they accounted for 27% of reported U.S. pesticide poisonings in 2007. **Pyrethrin and pyrethroid poisonings rose 63%**, from 16,000 in 1998 to more than 26,000 in 2006, and "severe reactions and even deaths" increased from 261 in 1998 to 1,030 in 2007. At least 50 deaths have been attributed to these pesticides since 1982. These pesticides are used in bug repellents, pet shampoos and children's anti-lice shampoos. (Pesticide Action Network News Update, Aug. 14, 2008, www.panna.org)

On July 28, a coalition of farmworker, public health, and environmental groups filed a **lawsuit challenging EPA's** decision to allow continued use of the pesticide **diazinon**--an organophosphate that can cause muscle spasms, confusion, dizziness, seizures, vomiting, diarrhea, coma and death. Exposure is also associated with damage to the liver and pancreas, diabetes, and non-Hodgkins lymphoma. After application, diazinon can become airborne; it has been detected in the air near schools at unsafe levels. Infants and children are especially vulnerable to diazinon, which can interfere with growth and development. Diazinon is also the most common insecticide detected in surface waters, is implicated in numerous bird and fish kills, and threatens numerous endangered species. Diazinon is used on apples, blueberries, broccoli, cherries, cranberries, pears, spinach, tomatoes and many other crops. In 2004, EPA cancelled home uses of diazinon due to the extreme risks that it poses to children, but EPA has continued to allow its use on farms. (Press release, Earthjustice, July 29, 2008; www.earthjustice.org/library/legal_docs/diazinon-complaint-72808.pdf)

Imported produce is grown with types and amounts of pesticides that would often be illegal in the United States, says Bridget Stutchbury, biology professor at York University in Toronto and author of *Silence of the Songbirds*—not only potentially harming our health, but also **victimizing North American songbirds**. Bobolink populations have dropped almost 50% in the last four decades as the birds are poisoned in Bolivian rice fields treated with pesticides that are restricted or banned in the United States. Swainson's hawks wintering in Argentina have been killed by monocrotophos. Barn swallow and Eastern kingbird populations are declining. Stutchbury suggests buying organic, fair trade coffee and bananas and not buying non-organic foods from Latin America in winter. (“Did Your Shopping List Kill a Songbird?” Bridget Stutchbury, *The New York Times*, March 30, 2008)

The **Bush administration halted** a government program that **tests residues of pesticides** in fruits, vegetables and field crops. Data from USDA's 18-year-old Agricultural Chemical Usage

Program were used to set levels of pesticide residues in food and to help farmers reduce pesticides use. [1] [2] (“Citing cost, USDA kills pesticide-testing program,” by Stephen J. Hedges, The Chicago Tribune, Sept. 27, 2008, chicagotribune.com)

Genetic Engineering

Monsanto sold its genetically engineered drug, recombinant Bovine Growth Hormone (**rBGH**), after failing to get federal and some state officials to ban labeling milk as produced without rBGH. On Aug. 20, 2008, Eli Lilly bought the drug. The growth hormone, approved by the FDA in 1993, was one of the first uses of genetic engineering in food. (It is made in genetically engineered bacteria.) It is injected into 17% of U.S. dairy cows to boost milk production by about a gallon a day, according to USDA data from 2007. As consumers increasingly demanded milk from untreated cows, major retailers met that demand. Monsanto told The New York Times that selling the hormone “will allow Monsanto to focus on the growth of its core seeds and traits business...” (Organic Bytes, Aug. 21, 2008, www.organicconsumers.org; “Monsanto Looks to Sell Dairy Hormone Business,” by Andrew Martin and Andrew Pollack, The New York Times, Aug. 7, 2008.)

California adopted a **law making manufacturers of GE crops liable for contamination** of surrounding fields. The bill will protect farmers from frivolous lawsuits and harassment by biotech companies and will prevent those companies from sampling fields without explicit permission of farmers. (“Huffman's genetic engineering bill becomes law,” by Richard Halstead, Sept. 29, 2008, www.marinij.com/marinnews/ci_10593403; ATTRA weekly newsletter, Sept. 10, 2008, www.attra.ncat.org)

The Ninth U.S. Circuit **Court of Appeals** in San Francisco upheld a federal judge's 2007 decision that **halted the planting of Monsanto's Roundup Ready alfalfa** until the federal government completes an environmental impact statement. Alfalfa growers feared that GE alfalfa pollen would contaminate their fields. U.S. District Judge Charles Breyer ruled that the government must assess the effects of GE alfalfa on other crops and human health before more seed was sold or planted. The appeals court agreed. (ATTRA weekly newsletter, Sept. 10, 2008, www.attra.ncat.org)

The Union of Concerned Scientists (UCS) denounced proposed USDA rules governing **food crops engineered to produce pharmaceutical and industrial products**, which could contaminate the food supply. The USDA proposal, unlike the ban that UCS recommended, offers no incentives to drug companies to pursue existing, safer methods for producing drugs. (“USDA's New Biotechnology Regulations Could Allow Drugs in Food,” Jane Rissler, UCS press release, Oct. 6, 2008. Some biotech companies developing drugs more safely; see http://ucsusa.org/food_and_agriculture/solutions/sensible_pharma_crops/sensible-pharma/. To see where pharma crops have been grown outdoors, see http://go.ucsusa.org/food_and_environment/pharm/index.php?s_keyword=XX)

The FDA will **not require labeling of GE animals sold as food**. Consumers Union objects: "In our view, consumers have a right to know if the ham, bacon or pork chops they are buying come

from pigs that have been engineered with mouse genes." Consumers Union is also concerned that products from cows engineered to produce antibiotics in their milk (to help avoid udder infections) will not be labeled. (Consumers Union press release, Sept. 18, 2008)

Activist Jeffrey Smith says **schools should get GE foods out of their cafeterias**. Among his reasons:

- When an Appleton, Wisc., high school replaced processed with wholesome foods seven years ago, the once out-of-control students became calm, focused and orderly. Weapons violations, suicides, expulsions, dropouts and drug violations stopped. Most processed foods contain GE ingredients.
- When an Appleton science class fed junk food to three mice, they destroyed their cardboard tubes, stopped playing, stayed awake during the day, started fighting and even killed one of the three; three other mice consuming nutritious food slept during the day in their cardboard tubes and played with each other when awake. Switching the remaining junk food mice to nutritious foods restored normal behavior.
- When Sister Luigi Frigo's second grade class in Cudahy, Wisc., fed mice junk food for four days, they became lazy, antisocial and nervous. After two to three weeks on nutritious foods, behavior returned to normal.
- A Dutch student who fed mice GE corn and soy saw that the mice became antisocial and fearful, unlike those getting non-GE feed. ("Why Schools Should Remove GE-Tainted Foods from Their Cafeterias," by Jeffrey Smith, www.comanchecountychronicle.com/viewarticle.php?id=397)

The No! GMO Campaign, representing 53 of Japan's leading farmer, consumer and public interest groups, joined the Center for Food Safety and a coalition of U.S. NGOs in **opposing U.S. cultivation of GE sugar beets**. Members of Japan's Seikatsu Club Consumer's Cooperative (SCCC) came to the United States with a statement representing nearly a million Japanese people, expressing their desire to keep food and feed containing GE sugar beets out of Japanese markets. The United States now grows four major GE crops—corn, cotton, soy and canola. No new major GE crops have reached the market in over a decade. Releasing GE sugar beets into the food supply would change that. The SCCC representatives, including livestock and dairy producers, also toured farms, seeking non-GE corn for animal feed. ("53 Japanese Farmer, Consumer and Public Interest Groups Reject GM Sugar Beet Imports," Center for Food Safety press release, Sept. 23, 2008, www.centerforfoodsafety.org)

Spring 2009

The Good News

Maine organic gardener Roger Doiron's "[Eat the View](http://EatTheView.org)" (EatTheView.org) campaign, urging President Obama to plant a **Victory Garden at the White House**, won first prize in the Better World Campaign's OnDayOne.org contest.

Author **Michael Pollan** also asked "**Farmer-in-Chief**" Obama for a nationwide **return to sun-based farming** to help address "the health care crisis, energy independence, and climate

change." In an Oct. 23 interview in Time

(http://swampland.blogs.time.com/2008/10/23/the_full_obama_interview/)

Obama agreed. "Our agriculture sector actually is contributing more greenhouse gases than our transportation," Obama told Time, noting also that the U.S. diet is fueling diabetes, stroke, obesity and heart disease. Pollan suggested that Obama appoint a "slow-food" activist as White House Chef; turn 3 acres of White House lawn into an organic produce garden; and encourage Americans to forgo meat once a week. ("Farmer in Chief," by Michael Pollan, The New York Times Magazine, Oct. 12, 2008; http://www.nytimes.com/2008/10/12/magazine/12policy-t.html?_r=2)

The **White House has offered local, organic foods** and "grown its own," according to The New York Times ("What's Cooking at the White House? Who's Asking?" by Marian Burros, Jan. 21, 2009; <http://www.nytimes.com/2009/01/21/dining/21scheib.html>). In the Clinton years, a rooftop garden on the White House supplied the first family with some fresh produce; and the White House bought from local co-ops and growers, but could not reveal this for security reasons. Also, former White House chef Walter Scheib said, "Mrs. Bush was adamant about organic foods."

Ken Cleaves of Lincolnville, Maine, received the 2008 Kathryn S. Taylor **Award for Private Gardens** for his "Shleppinghurst" garden and its significant use of wildflowers and other native plants. Over 27 years, Cleaves has transformed his 33-acre former quarry into a picturesque, lovingly maintained sanctuary using hardy native plants in traditional and unusual ways that artfully blend into the surroundings. Three acres of year-round gardens feature many hardy plants, while preserving the topographic features and extensive biodiversity of the rest of the site.

Gary Fish received the 2008 **Friend of Casco Bay Award**. The award citation read: "For more than a decade, Gary Fish of Wayne, Maine, has worked to make Casco Bay a healthier place for marine life and the people who live around it by teaching homeowners, gardeners, and landscapers how to 'grow green lawns that keep Casco Bay blue.' Fish, who is the manager of pesticide certification and reduction programs for the Maine Board of Pesticides Control, helped launch the BayScaping program to reduce dependence on fertilizers and pesticides." (www.yardscaping.org/press/fish-focb-award-2008.htm)

The **United Nations** has declared 2009 the **International Year of Natural Fiber**, and many Maine organizations are celebrating the importance of plant and animal fibers in our state's history and culture, and exploring the place of fiber in our agricultural and creative economies. For a list of workshops, shows, fiber sales and more, contact Mary Bird, mary.bird@umit.maine.edu, or visit www.extension.maine.edu/fibermaine-ia.

We have reported previously in The MOF&G about growers' efforts to "**colonize**" **urban and suburban back yards to grow food**. One MOFGA gardener has done this for decades in Camden. The idea of colonizing unused plots sprouted again in a Nov. 3, 2008, article in USA Today ("A bounty sprouts in the city with MyFarm enterprise," by Elizabeth Weise, www.usatoday.com/news/nation/environment/2008-11-02-myfarm_N.htm#) Weise reports on Trevor Paque's "decentralized urban farm" enterprise, MyFarm, which turns vacant back yards into plots growing organic food for San Francisco residents. Last year, MyFarm's 55 gardens

totaled half an acre. Paque and his crew evaluate yards for suitable sun and space and for contaminant-free soil, bring in compost and drip irrigation and grow food for a fee for yard owners. Yardless neighbors can buy shares in nearby gardens. The “farmers” visit each plot about once a week, leaving harvested crops for customers, who pay \$800 to \$1,200 plus a weekly fee depending, in part, on the size of the garden. Excess produce will be sold through a CSA. MyFarm is creating a manual for others who want to start such a business. City Garden Farms in Portland, Oregon, a similar enterprise, fed 30 CSA customers from 12 backyard farms last year. FMI: www.myfarmsf.com and www.citygardenfarms.com.

Organic farming may be the best route to global food security. A Rodale Institute paper, “The Organic Green Revolution,” reviews replicated research showing that organic agriculture offers affordable, immediately usable and universally accessible ways to improve yields; gives access to nutritional food in developing countries; and protects and restores soil and environmental health by sequestering CO₂, cleaning waterways, increasing drought and flood resistance (often associated with climate change). In contrast, the commodity-oriented Green Revolution has left some 923 million people seriously undernourished and 25,000 dying daily from starvation. (“Organic Farming May Be the Best Route to Global Food Security,” Rodale Institute press release, Dec. 11, 2008; www.rodaleinstitute.org/files/GreenRevUP.pdf)

The United Nations Conference on Trade and Development (UNCTD)-United Nations Environment Program (UNEP) also concluded in "Organic Agriculture and Food Security in Africa" that **a transition to organic farming is the best way to secure food stability in Africa.** An analysis of 114 projects in 24 African countries showed that yields increased 128% when growers used organic rather than synthetic-chemical-intensive methods. Organic practices improved soil fertility, soil water retention and resistance to drought (partly because plants root deeper in improved soils). Many studies have shown that yields remain stable and often rise after conversion to organic agriculture and that farm incomes and rural economic activity increase. (Pesticide Action Network North America, Nov. 20, 2008; www.panna.org; “Organic farming 'could feed Africa,’” by Daniel Howden, The Independent, Oct. 22, 2008; www.independent.co.uk/news/world/africa/organic-farming-could-feed-africa-968641.html)

Economists and UN leaders are working on a "**Green New Deal**" to create jobs while helping economies and addressing environmental issues. The plan will ask world leaders to promote redirection of investment away from speculation and into job-creating programs to restore natural systems. The initiative arose after 2006 G8 summit leaders commissioned a study of the economic value of ecosystems. The study says the world’s food, fuel and financial crises are linked and that green growth can address all three. Model projects include Mexico’s hiring of 1.5 million people to plant and manage forests; China’s rapid development of the world's biggest solar energy industry; and Germany’s incentives for homeowners to install energy-saving measures. (“A 'Green New Deal' can save the world's economy, says UN,” by Geoffrey Lean, The Independent, Oct. 12, 2008; www.Independent.co.uk)

The Organic Center and Rodale Institute have launched the **Organic Solution campaign to increase awareness about how organic food and farming can resolve health, environmental and hunger issues**. While organic food sales account for \$20 billion, or nearly 3% of U.S. food sales, only 0.25% of U.S. farmland is farmed organically. Consumer demand for organic

organic diet. (“For Three Years, Every Bite Organic,” by Tara Parker-Pope, The New York Times, www.nytimes.com, Dec. 2, 2008; Greene’s Web site is www.drgreene.com.)

Eating more apples, bananas and oranges may help **stave off** such neurodegenerative diseases as **Alzheimer's and Parkinson's**, says a Cornell study published in the Journal of Food Science. When Chang Y. Lee of Cornell’s N.Y. State Agricultural Experiment Station in Geneva, and South Korean colleagues exposed nerve cells to apple, banana and orange extracts, the fruits' phenolic compounds prevented oxidative stress-induced toxicity in the neurons. "Many studies indicate that the brains of Alzheimer's patients are subjected to increased oxidative stress ... and the resulting cellular dysfunctions are widely believed to be responsible for the nerve degeneration in these patients," said Lee. Lee had reported in 2004 that similar chemicals in apples could protect rat brain cells from oxidative stress, so apples might help prevent the type of damage that triggers Alzheimer's and Parkinson's. His recent work showed that unpeeled apples have the highest content of protective antioxidants, followed by bananas, then oranges; that plums, grapes and cherries have strong antioxidant activity; and that apple phenolics inhibit proliferation of colon-cancer and liver-tumor cells in the lab. (“A fruit a day may keep Alzheimer's at bay, suggests new Cornell study,” by Susan Lang, Cornell Chronicle Online, Feb. 6, 2008; www.news.cornell.edu/stories/Feb08/fruit.Alzheimers.sl.html)

When aged lab rats ate a diet rich in the **berry and grape** compound pterostilbene, the compound **reversed cognitive decline and improved working memory**, report scientists with the Agricultural Research Service. The authors note that additional berry compounds show similar potential. (“Berry Compound Reduces Aging Effect,” by Rosalie Marion Bliss, USDA Agricultural Research Service, Dec. 11, 2008; www.ars.usda.gov/is/pr)

The FDA has approved two patented **zero-calorie sweeteners**: Coca-Cola’s **Truvia** and PepsiCo’s **PureVia**. Both include Rebiana™ (rebaudioside A), an extract from the **stevia** plant. Dr. Joseph Mercola says that although whole-plant stevia has been used as a natural sweetener for over 1,500 years, the FDA calls the whole plant an “unsafe food additive” and has seized and embargoed natural stevia products. Yet, “Stevia contains a number of agents, including various stevioside compounds, rebaudiosides, and glycoside,” says Mercola. “No one has consumed just the active ingredient rebaudioside A for any length of time to be able to tell what might happen.” Whole-plant stevia has antimicrobial and antifungal properties; reduces blood levels of glucose, triglycerides and triiodothyronine; and may be a source of natural antioxidants. Mercola believes that stevia, used in moderation, is safer than sugar and artificial sweeteners. (The New York Times, Dec. 17, 2008; and <http://articles.mercola.com/sites/articles/archive/2009/01/10/fda-approves-two-new-stevia-based-sweeteners.aspx>)

USDA researchers tracked changes in **bone mineral density** in volunteers with a mean age of 75. Over the four-year study, carotenoids were associated with some protection against losses in bone mineral density at the hip in men and at the lumbar spine in women. No significant associations were observed at the other bone sites. The results suggest that **carotenoids, particularly lycopene**, protect against bone loss in older adults, and carotenoids may help explain previously observed protective effects of fruit and vegetable consumption on bone mineral density. Levels of individual carotenoids in selected foods are shown in "Reports By Single Nutrients" at www.ars.usda.gov/Main/docs.htm?docid=15869 (“Nutrient Supports Bone

Health Over Time,” by Rosalie Marion Bliss, USDA Agricultural Research Service, Jan. 14, 2009; www.ars.usda.gov/is/pr)

Drinking **hibiscus tea** (*Hibiscus sabdariffa*, one of the most common ingredients in commercial blended teas sold in the United States) **lowered blood pressure** in a group of pre-hypertensive and mildly hypertensive adults, according to nutrition scientist Diane McKay of Tufts University. McKay's research was funded by the USDA and Celestial Seasonings. McKay tested 65 volunteers with high blood pressure. For six weeks, about half the group drank three cups of hibiscus tea daily; others drank a placebo beverage. Those who drank hibiscus tea had a 7.2-point drop in systolic blood pressure, compared with a 1.3-point drop in those who drank the placebo. Also, 30 volunteers with the highest systolic blood pressure at the start of the study (129 or above) had a greater response to hibiscus tea (a decrease in systolic blood pressure of 13.2 points) than those who drank the placebo (a decrease of 6.4 points). (“Study Shows Consuming Hibiscus Tea Lowers Blood Pressure,” by Rosalie Marion Bliss, USDA Agricultural Research Service, Nov. 10, 2008; www.ars.usda.gov/is/pr)

Toxic Chemicals

Children are exposed daily to toxic chemicals that their developing bodies are ill-equipped to manage. Little is known about the health effects of most chemicals in the environment, and even less is known about children’s unique susceptibility to them. However, the pattern of childhood illnesses is shifting from infectious diseases and genetic abnormalities to those of potentially preventable origin. Childhood diseases now more often result from a combination of environmental triggers and genetic susceptibility.

Maine children, no exception to the “new pediatric morbidity,” suffer from comparatively high rates of asthma and cancer and are at increased risk for lead poisoning due to the aging housing stock and historical industrial activities here.

To understand the economic impact of environmentally-related childhood diseases in Maine, a study released in February by the University of Maine and written by Mary Davis, Ph.D., of Tufts University and the University of Maine, estimates the number of Maine children with and the annual cost of lead poisoning, asthma, childhood cancer and neurobehavioral disorders. Overall, the aggregate annual cost of environmentally attributable illnesses in Maine children is conservatively estimated to be \$350.9 million per year—over 13% of Maine’s total health and human services budget. The economic costs outlined in this report represent preventable childhood illnesses that could be fully avoided if environmental exposures in children were eliminated.

“An Economic Cost Assessment of Environmentally-Related Childhood Diseases in Maine” is available at www.umaine.edu/soe/publications/SOE579.pdf .

Ag Antibiotics

Almost 70% of antibiotics and related drugs made in the United States are fed to cattle, pigs and poultry, says the Union of Concerned Scientists—and those **antibiotics may move into vegetables grown in manure-amended soil**. Six weeks after Univ. of Minnesota researchers planted corn, green onion and cabbage in manured soil in a greenhouse study, the plants had absorbed small amounts of chlortetracycline. In another study, corn, lettuce and potatoes grown in soil amended with hog manure accumulated the antibiotic Sulfamethazine. As concentrations of antibiotics in soils increased, so did concentrations in plants. The antibiotics may be broken down in processed crops, but not in those consumed raw. Consuming foods with antibiotic residues may promote resistant strains of bacteria, and wildlife exposed to manure-amended soils may become vectors of antibiotic-resistant bacteria. Composting manure at high temperatures may break down some but not all antibiotics. (“Crops Absorb Livestock Antibiotics, Science Shows,” By Matthew Cimitile, Environmental Health News, Jan. 6, 2009)

A mutant strain of antibiotic-resistant E. coli has emerged on a British dairy farm. The organism causes life-threatening food poisoning, including hemorrhagic colitis and haemolytic uraemic syndrome. The strain, E. coli O26, is a vera-toxin-producing E. coli (VTEC), similar to E. coli O157. This is the first time in the UK, and the third time in the world, that VTEC E. coli has been found with an enhanced type of antibiotic resistance known as extended-spectrum beta-lactamase (ESBL), which makes it resistant to almost all antibiotics. ESBL resistance has previously been found on 57 UK farms, but until now only in strains of E. coli that cause urinary tract infections and blood poisoning. (“Mutant strain of antibiotic-resistant E. coli found in the UK,” Soil Association press release, Nov. 17, 2008; www.soilassociation.org)

The USDA ordered Tyson Foods to stop using the “raised without antibiotics” label, initially because Tyson treated feed with bacteria-killing ionophores. USDA said that the labeling was not truthful, but that Tyson could label chickens as "raised without antibiotics that impact antibiotic resistance in humans." Tyson continued its "antibiotic-free" ad campaign until competitors Perdue, Sanderson and Foster Farms sued. In May 2008, a federal judge ordered Tyson to stop using the label. On June 3, USDA inspectors discovered that Tyson was also injecting chicken eggs with the antibiotic gentamicin. Tyson agreed to suspend its "raised without antibiotics" labels in July, but filed suit seeking to have USDA regulations changed to exclude antibiotic use prior to hatching. (Pesticide Action Network news update, Nov. 13, 2008; www.panna.org.)

Fertilizers Follies, Costs and Solutions

Jim Downing of The Sacramento Bee reported in Dec. 2008 that **supposedly organic fertilizer** made from chicken feathers and fish and sold widely in California by California Liquid Fertilizer was **made with ammonium sulfate**, a synthetic nitrogen source prohibited on organic farms. The California Dept. of Food and Agriculture was alerted to the problem in 2004 by a former employee of the fertilizer company but did not order the company to stop selling the product until January 2007, and then kept its records confidential until 2008. The employee said that ammonium sulfate had been used for five years before his complaint. California Certified Organic Farmers, which certifies most California organic acreage, did not withdraw certification from farms that used the product, believing that growers had been unaware of the problem with

the OMRI-approved (Organic Materials Review Institute) product. Earthbound Farm and Driscoll's were among the large companies using the fertilizer. Downing reported that in January 2008, the California Liquid Fertilizer factory was sold to Converted Organics, Inc., of Boston, and that Peter Townsley, former president of California Liquid Fertilizer, was working there. On Jan. 12, 2009, Converted Organics reported that Townsley had resigned. ("Organic farms unknowingly used a synthetic fertilizer," by Jim Downing, Sacramento Bee, Dec. 28, 2008, www.sacbee.com/topstories/v-print/story/1501772.html; "Converted Organics Executive Officer Steps Down," press release, Jan. 12, 2009, Converted Organics, <http://ir.convertedorganics.com/releasedetail.cfm?ReleaseID=358796>)

Synthetic chemical **fertilizer nutrients can pollute** bodies of water—**at great economic cost**, says biology professor Walter Dodds of Kansas State University. Dodds and fellow researchers looked at EPA data on nitrogen (N) and phosphorous (P) levels in bodies of water throughout the country. Most comes from nonpoint sources, such as runoff from row crop agriculture. They calculated the money lost from that pollution through such factors as decreasing lakefront property values, the cost of treating drinking water and the revenue lost when fewer people take part in aquatic recreation. The result: Freshwater pollution by N and P costs government agencies, drinking water facilities and individual Americans at least \$4.3 billion annually. Of that, \$44 million a year is spent protecting aquatic species from nutrient pollution. These costs probably are underestimates, Dodds said. ("K-State Researchers Find That Pollution of Freshwater by Nitrogen and Phosphorus Costs the United States at Least \$4.3 Billion Annually," by Erinn Barcomb-Peterson, Nov. 12, 2008; www.k-state.edu/media/webzine/green/index.html; Dobbs' work was published in Environmental Science and Technology, Nov. 12, 2008.)

A tool developed by Agricultural Research Service (ARS) scientists addresses nutrient pollution by **applying poultry litter to fields in shallow bands**. Poultry litter (poultry manure and bedding material) is a natural fertilizer that is normally surface-broadcast on fields, where it is vulnerable to runoff in heavy rains. USDA personnel developed a tool that digs 2- to 3-inch-deep trenches in the soil, places poultry litter in the trenches and covers it with soil—**significantly reducing the risk of runoff**. When researchers in Arkansas used the tool on bermudagrass forage plots and then watered the field with a rainfall simulator, N and P runoff were 80 to 95% lower than when litter was broadcast. Trials in other states show similar results. ("New Tool Fertilizes Fields and Reduces Runoff Nutrients," by Laura McGinnis, USDA Agricultural Research Service News Service, Dec. 23, 2008; www.ars.usda.gov/is/pr)

Genetic Engineering

Honeybees fed the active form of purified Cry1Ab protein, the genetically engineered (GE) protein in engineered **Bt corn**, continued to respond positively to a learned odor even without a food reward. Normally bees that are not rewarded with food from one source seek other food sources. ("Bee Learning Behavior Affected by Eating Toxin from GE Corn," by Ken Roseboro, ed., The Organic and Non-GMO Report, Dec. 2008; www.non-gmoreport.com/)

Consuming the **GE corn MON 810 disturbed the gut and peripheral immune systems** of very young or old **mice**, reported Italy's National Institute of Research on Food and Nutrition in the

Journal of Agricultural Food Chemistry. (“Study Finds GM Corn Disturbs Immune System of Mice,” by Ken Roseboro, ed., The Organic and Non-GMO Report, Dec. 2008; www.non-gmoreport.com/)

An Austrian study shows that the **GE corn hybrid** NK603 x MON810, which has two copies of the RR (Roundup Ready) gene, each with a different promoter sequence, as well as the MON810 gene, **damaged the reproductive system of mice** that ate the corn for 20 weeks. The mice had fewer third- and fourth-generation offspring, and those offspring weighed less than those fed non-GE corn. Similarly, Russian researcher Irina Ermakova found in 2005 that rats fed GE soy produced weaker offspring with a higher mortality rate than rats fed a non-GE diet. A Monsanto press release said that the Austrian study was preliminary and had inconsistent results. (“New Study Confirms Genetically Engineered Food Damages Fertility,” GM Watch (EU), Nov. 12, 2008; <http://monsanto.mediaroom.com/index.php?s=43&item=658>; Organic Bytes, Nov. 19, 2008, www.organicconsumers.org)

Western growers harvested their first **GE Roundup Ready sugar beets** last fall. Sugar now joins other unlabeled GE commodities sold widely to consumers, including corn, cotton, soy and canola. (“First harvest of genetically modified beets to market,” by Steve Porter, Northern Colorado Business Report, Dec. 4, 2008; www.ncbr.com/article.asp?id=97493)

Research published in Nature by Elena Alvarez-Buylla of Mexico's National Autonomous University confirms a 2001 report in the same journal: **Transgenes from GE maize** (banned in Mexico since 1998) **are contaminating traditional "landrace" maize in the Mexican heartland.** (Pesticide Action Network North America, Nov. 20, 2008; www.panna.org)

French researchers found that very dilute concentrations of four **Roundup herbicide formulations**—comparable to residue levels found in food or feed—**damage or kill human cells.** The researchers concluded that Roundup adjuvants change human cell permeability and amplify glyphosate-induced toxicity and that “proprietary mixtures available on the market could cause cell damage and even death around residual levels to be expected, especially in food and feed derived from R[oundup] formulation-treated crops.” (“Glyphosate Formulations Induce Apoptosis and Necrosis in Human Umbilical, Embryonic, and Placental Cells,” by Nora Benachour and Gilles-Eric Séralini, Chem. Res. Toxicol., Article DOI: 10.1021/tx800218n, Dec. 23, 2008, American Chemical Society; <http://pubs.acs.org/doi/abs/10.1021/tx800218n>)

Monsanto says: “We are now well on our way toward developing more than 16,000 markers across 12 crops by the end of 2009, with more than 7,700 markers for tomato, pepper and melon alone. We view the long-term outlook for our vegetable platform much the same way we see our soybean business today, with the potential for reaching \$1 billion in revenue in 2012.” (www.monsanto.com/investors/financial_reports/annual_report/2008/vegetable_seeds.asp)

Labeling Issues

On Nov. 19, 2008, the National Organic Standards Board (NOSB) accepted recommendations for **organic fish production** that allow fish to be fed food other than 100% organic feed and fishmeal from wild-caught fish; and

to be raised in open net cages. The recommendations were transmitted to USDA, which issued an Advanced Notice of Proposed Rulemaking. Consumers Union opposes the recommendations because meal from wild fish may contain contaminants such as mercury and PCBs, and open net cages may discharge pollutants into oceans. (Consumers Union press release, Nov. 19, 2008)

The USDA has issued a voluntary standard for “**naturally raised**” livestock and meat. Consumers Union (CU) and Food & Water Watch (FWW) say the labeling is misleading. ^[1]_[SEP]The naturally raised standard states that livestock used for meat production have been raised without growth promotants and without antibiotics, except for ionophores used as coccidiostats for parasite control, and have not been fed animal byproducts. CU and FWW said that specific labels should say that animals are raised without antibiotics, animal byproducts or growth promotants rather than couching these practices under a term that does not address how animals were raised, their main diet (including GE feed), treatment of animals, space requirements, access to pasture and other concerns. (Consumers Union press release)

On Jan. 15, 2009, the FDA announced that it will not require labeling on meat or fish from **GE animals**. Such animals will have to go through a mandatory safety approval process. Genetically engineered animals may contain genetic material from entirely different species, even humans, says Consumers Union. (Consumers Union press release, Jan. 15, 2009)

Two-thirds of Americans want the FDA to inspect the domestic and foreign food supply monthly, says a Consumer Reports poll, and most consumers want **Country of Origin Labeling (COOL)** loopholes closed so that food from **cloned and genetically engineered animals** is labeled. Currently, the FDA inspects domestic food production facilities once every five to 10 years, and foreign facilities less often—but USDA must inspect meat plants daily. More than 8 in 10 consumers want the FDA to disclose locations of retailers who sold potentially harmful food, as the USDA must do for meat. Mandatory COOL for meats, fish, produce and peanuts was implemented in Sept. 2008—but with loopholes. Meat and poultry sold in butcher shops and fish sold in fish markets—some 11% percent of all meat and fish—are exempt, as are processed (i.e., roasted, salted, smoked) and mixed ingredient foods. CU has a guide to the rules at www.consumersunion.org/pdf/CU-Cool-Tool.pdf. Most Americans—93%—polled say that fish labeled “organic” should be fed 100% organic feed, and that “organic” fish farms should be required to recover waste and not pollute the environment. Nearly 70% believe that cloning of food animals should be prohibited, and nearly 60% are concerned about products from cloned or genetically engineered animals. FDA recently said these foods could be sold without labels. (Consumers Union press release, Nov. 12, 2008; www.GreenerChoices.org/foodpoll2008)

Pesticides

Board of Pesticides Control News

By Katy Green

Board of Pesticides Control Struggles with Aerial Spray Notification

The search for a resolution regarding aerial spraying operations in Maine continues. On November 21, 2008, the Maine Board of Pesticides Control (BPC) heard public comments on

proposed rule changes to Chapters 10, 22 and 28, which relate to aerial spraying. Eighteen people testified at the hearing, with an additional 137 providing written comments.

Representatives, growers and land managers from the blueberry and potato industries provided the overwhelming majority of comments. Most people in these groups thought that the rules as written needed no changes.

Others, however, said they appreciated efforts of the BPC and urged it to take the rules and protections for citizens even further than the proposed changes. “MOFGA's goal in this process,” said MOFGA’s associate director, Heather Spalding, “is to encourage strong standards that will make Maine a state where citizens do not have to defend themselves against toxic chemicals that they never asked to breathe, eat or drink.

“Organic farmers and their customers,” Spalding continued, “absolutely require protection from pesticide spray drift. The incidences of contamination of organic farms in Maine by pesticide drift have been egregious, including the most notorious example of a pesticide application over the organic blueberry fields of a former chair of this board.”

Organic farmer Deborah Aldridge, speaking for her husband, Peter, and herself, said, “As farmers and both of us licensed pesticide applicators and pesticide users, it is easy for us to understand the agriculture lobby's desire to harvest every last ounce of yield to a piece of land, but as organic farmers, we also understand that maximizing private profit in this way should not be allowed to take precedence over the health, the well-being or piece of mind of not only the residents of this state but also the visitors who come to enjoy its reputation of being natural and wholesome, and, in fact, it's probably even worth noting that according to the Federal Bureau of Economic Analysis, the State of Maine in 2007 generated close to three times the revenue—1.9 billion dollars—from tourism-related activities than agriculture, forestry, fishing and hunting combined. That's 750 million.”

Many comments were responses to changes in Chapter 28, regarding notification of aerial spraying events. The rule change would require that land managers contact all neighbors within 1,000 feet of property to be sprayed and ask if they wanted notification 24 hours before spraying. Under the current rule, agricultural land managers need inform neighbors about pesticide spraying only when they live within 500 feet of the sprayed area and specifically request notification.

Many of the large growers who commented believe that the proposed changes would be too much of an administrative burden for them. Most thought that neighbors have a right to know about spraying, but did not want to be responsible for telling them. Many also said they already knew which neighbors wanted notification and were already notifying them as needed.

Liza Eager of Northport shared her experiences to the contrary, detailing two occasions when her neighbor sprayed without giving her enough notice, even though she had requested it.

Much of the debate about Chapter 10 related to the definition of a Sensitive Area Likely to be Occupied (SALO). A SALO provides protections from drift for sensitive areas, including schools, back yards, public rest areas, recreational trails and other areas where people are likely to be present. Many people took issue with public roads being considered a SALO and suggested that too much of their land would be taken out of production if they needed to provide a buffer around the SALO. Again, many commented that their pilots knew what they were doing and would not spray on a road if people were present.

These statements were countered by BPC chair Carol Eckert, who recalled an incident in which a car was sprayed with aerial pesticides while traveling on a main road and the driver knew his rights well enough to report the incident.

MOFGA urged that organic farms be included in the SALO category, but the board disagreed.

In follow-up meetings on Dec. 19 and Jan. 23, the BPC discussed comments received about the proposed rule changes and decided to move forward with Chapters 10 and 22 after removing public roads from the SALO category and changing some wording in Chapter 22 to relax rules for applicators.

Partly because of the volume of comments received from citizens who opposed changes to Chapter 28, the board decided to focus on a registry as a way for citizens to be notified of spraying events. Regarding Chapter 28, Spalding asked “why should we have one notification system for agricultural applications of pesticides, another for outdoor pesticide applications and a fairly lengthy list of exceptions. We feel we should move toward a simple system that requires all pesticide applicators to communicate with all local people who have expressed concern. Agricultural pesticide applications in particular should be removed from the exceptions to the Maine Pesticide Notification Registry.”

To comment on issues relating to aerial drift, visit www.thinkfirstspraylast.org or call Henry Jennings, director, Board of Pesticides Control at (207) 287-2731.

[End of BPC news]

The **European Parliament** voted to create a list of hazardous **pesticides to be eliminated** from use in food production. "After nearly three years of discussions the EU is just a heartbeat from eliminating dietary and occupational exposure to the worst carcinogenic and mutagenic pesticides," said Elliott Cannell of Pesticide Action Network (PAN) Europe. New rules would also **ban or severely restrict pesticide use near schools, parks and hospitals; would ban wholesale aerial crop-spraying; and would require buffer zones** to protect aquatic environments and drinking water from pesticides. Brian Hill of PAN North America says, "The approach that the EU is taking of eliminating groups of pesticides in entire hazard categories rather than analyzing pesticides one at a time is a great step. The main flaw is simply that not enough hazard categories were simultaneously addressed." (Pesticide Action Network North America, Jan. 15, 2009; www.panna.org)

The province of **Alberta will ban**, as of Jan. 1, 2010, the sale of granular “**weed and feed**” **lawn-care products that combine herbicide and fertilizer**. Some chemicals in these products, such as the mobile herbicide 2,4-D, are showing up in waters downstream from urban areas. (“Alberta to ban weed-and-feed for lawns,” by Sarah O'Donnell, Edmonton Journal, Nov. 13, 2008; www.edmontonjournal.com; “Popular weed killer pulled,” by Jamie Hall and Keith Gerein, The Edmonton Journal, Nov. 14, 2008; www.edmontonjournal.com)

Thirteen **Maryland hospitals**, retirement centers and health care facilities are working to **stop using toxic pesticides** to control pests. (Pesticide Action Network North America, Nov. 6, 2008; www.panna.org)

Almost half the produce and cereals sold throughout the European Union have pesticide residues – a substantial increase over the level seen five years ago. Five of the pesticides most common in the food chain are classified as carcinogenic, mutagenic or hormone disruptive. In total, 4.7% of fruits, vegetables and cereals contain pesticides at concentrations above maximum legal limits, while over 10% contain four or more different pesticide residues. Twenty-three pesticide substances were detected at levels high enough to present an acute risk to public health. Imidacloprid – banned in France due to links with mass bee deaths – is among the most common pesticide residues in foods. Worst affected foods include grapes (71% contaminated), bananas (56%) and peppers (46%). (Pesticide Action Network Europe, Oct. 15, 2008; www.pan-europe.info/)

University of Pittsburgh researchers have shown that sublethal concentrations of **malathion can hurt frog populations**. Rick Relyea and Nicole Diecks created pond ecosystems in 300-gallon tanks stocked with phytoplankton, zooplankton, and periphyton (a bottom-dwelling alga). When wood frogs and leopard frogs were placed in the ponds and exposed to small concentrations of malathion for 80 days, “nearly 40% of the leopard frog tadpoles... failed to mature... and died.” Environmental Science and Technology reports “although the concentrations did not kill the tadpoles directly, they killed most of the zooplankton.” This caused a phytoplankton bloom that blocked sunlight, so the number of periphyton, on which tadpoles feed, fell. Reylea said the results show “how seemingly harmless levels of a widely used pesticide can kill organisms by affecting interactions within food chains.” (Pesticide Action Network North America, Oct. 30, 2008; www.panna.org; and Environ. Sci. Technol., Oct. 15, 2008; ACS Pesticide Triggers Foodchain Cascade 20081015.pdf)

Double-headed fish embryos have developed at a Queensland, Australia, fish hatchery, where the foreman has bowel cancer and all households abutting the same creek as the hatchery and a macadamia plantation have had at least one cancer diagnosis or death since fish deformities were first reported four years ago. A resident reports that spray drift from the macadamia plantation washes from his roof into his drinking water. Dr. Robert Chong of Queensland's Biosecurity Sciences Laboratory reports that the fish deaths and deformities are consistent with exposure to pesticides such as organophosphate insecticides and Carbendazim (a benzimidazole fungicide).

On January 7, 2009, the 6th Circuit Court of Appeals vacated a U.S. EPA rule that has allowed **pesticides** to be applied to U.S. waters without a **Clean Water Act permit**. The rule issued by EPA in Nov. 2007 stated that pesticides are exempt from the Clean Water Act permitting

requirements. Appeals Court Judge Cole said that EPA had overstepped its authority. (Pesticide Action Network North America, Jan. 15, 2009; www.panna.org)

Summer 2009

The Good News

The New England Office of the U.S. Environmental Protection Agency (EPA) selected **Citizens For a Green Camden** to receive an **Environmental Merit Award** in recognition of its exceptional work and commitment to the environment in 2008. The annual award recognizes outstanding environmental advocates who have made significant contributions toward preserving and protecting natural resources. Citizens for a Green Camden encouraged citizens not to use toxic, synthetic chemicals on their lawns; and was instrumental in passing a no-pesticide policy for town-owned properties and all Bed and Breakfast establishments.

For the third consecutive year, the town of **Skowhegan**, with support from MOFGA, will host the **Kneading Conference**. From July 30 through Aug. 1, 2009, this farming community along the Kennebec River will be headquarters to serious home and professional bakers, millers, grain growers and people interested in ancient and modern methods of wood-fired oven construction. Some leading authorities on masonry oven construction, pre-fermented dough, bread shaping, oven management and local grain cultivation will speak and give hands-on workshops on Thursday and Friday. Throughout the conference, breads, pizzas and bagels fresh from the hearth and made from local ingredients will flavor meals. A new feature this year, the Bread Fair and Trade Show on Saturday, Aug. 1, from 10 to 5, will offer the public a free place buy traditional breads, enjoy a seed exchange, view and buy equipment, enjoy live music, and more. Children can enjoy a free pizza-making workshop.

Topics addressed at the conference will include:

- How to fashion your own portable oven;
- Maximizing the life of the fire;
- Basic techniques for artisan bread baking at home;
- Baking low cost simple flat breads;
- Organic wheat cultivation in Maine;
- Baking sourdough and yeasted breads with ancient spelt and kamut grains;
- The magic and mystery of working with slack dough;
- Running a successful baking business.

For information on registration and costs, please see <http://www.heartofmaine.org/kneading/>.

Also planned in **Skowhegan** is a **gristmill** in the former Somerset County Jail. Amber Lambke, who founded the Kneading Conference, bought the building and plans to convert it to a gristmill, bakery and other businesses. Heart of Maine Resource Conservation and Development in Bangor and the Kneading Conference received funding for various grain-related projects from the Maine Community Foundation. Lambke told the Bangor Daily News that in the mid-1800s, Somerset County fed more than 100,000 people with its wheat production; today, less than 1 percent of Maine's wheat consumption is met by Maine farmers. (“\$40,000 grant to benefit Skowhegan grain project,” by Sharon Kiley Mack, Bangor Daily News, Jan. 27, 2009; <http://bangornews.com/detail/98098.html>)

Washington, D.C., is supporting organic farming and gardening. Not only has First Lady Michelle Obama planted an organic garden at the White House, using organic seedlings produced there, but Tom Vilsack, the secretary of agriculture, dispatched pavement outside the USDA's Whitten Building off the National Mall to create an organic "People's Garden" (but he also told a meeting of the G8 countries in April that genetically engineered crops are needed to feed the world). And the Obama administration named Kathleen Merrigan of Tufts University, a longtime champion of sustainable agriculture and healthy food, as deputy secretary of agriculture. Merrigan helped craft the original federal organic guidelines when she worked for the USDA Agricultural Marketing Service. ("Is a Food Revolution Now in Season?" by Andrew Martin, The New York Times, March 22, 2009; "Obamas to Plant White House Vegetable Garden," by Marian Burros, The New York Times, March 19, 2009; www.nytimes.com/2009/03/19/dining/19garden-web.html; Organic Bytes, Organic Consumers Assoc., March 6, 2009; www.organicconsumers.org; "Vilsack: biotech will solve our ag problems," by Tom Philpott, Grist, April 21, 2009; www.grist.org/article/2009-vilsack-biotech-will-solve-our-ag-probl/)

In 2008, **the number of people growing vegetables increased** 10 percent over previous years. The National Gardening Association (NGA) anticipates that number will increase by 20 percent in 2009. The average-sized home vegetable garden (600 square feet) can generate a mean of more than \$600 of organic produce, the NGA estimates. Multiplied by the 36 million U.S. households with food gardens, home gardeners are producing more than \$21.6 billion worth of produce a year. (National Gardening Assoc. press release, March 13, 2009; www.garden.org)

Scientists participating in a Feb. 13, 2009, symposium on "Living Soil, Food Quality, and the Future of Food" at the annual meeting of the American Association for the Advancement of Science (AAAS) concluded that **organic farming can benefit soil quality and the nutritional content of food**. The scientists said that research over the past decade showed:

- increased biological diversity, greater soil organic matter and improved chemical and physical properties in organic apple orchards—which can lead to improved fruit nutritional quality, taste and storability
- more soluble solids and natural plant molecules, called secondary plant metabolites, including flavonoids, lycopene and vitamin C, in organic tomatoes. Most secondary plant metabolites are antioxidants, which are linked to improved human health in populations that consume relatively high levels of produce
- less dilution of beneficial compounds in organic tomatoes, compared with tomatoes grown with synthetic fertilizers, which grow large quickly and dilute these compounds
- more flavonoids and vitamin C and lower concentrations of nitrates in organic than conventional spinach.

The symposium presentations and conclusions are posted on The Organic Center's Web site. ("Scientists Agree That Organic Farming Delivers Healthier, Richer Soil and Nutritionally Enhanced Food," Press Release, March 3, 2009, The Organic Center, www.organic-center.org)

Research by the University of Exeter (UK), published in the journal Food Policy, says that storing, packing and **transporting a box of vegetables creates lower carbon emissions** than having each customer drive to a local farm shop, when homes are an average of 3.6 miles from

the shop. The study authors say, "Rather than focus on food miles, it would be more meaningful to look at the carbon emissions behind each food item. While the concept of food miles was useful in getting people to think about the issues around carbon emissions and food transport, it's time for a more sophisticated approach." ("Buying local isn't always better for the environment," Press release, University of Exeter, Feb. 2, 2009; www.eurekaalert.org/pub_releases/2009-02/uoebli020209.php#)

Stacy Brenner of Broadturn Farm in Scarborough and Penny Jordan of Jordan's Farm in Cape Elizabeth, are leading efforts to develop an "**online grocery store**" where customers can order produce, fish, meat, dairy and other Maine agricultural products. **The Maine Street Marketplace** would warehouse and distribute the foods and may even have a retail store and commercial kitchen. The organizers, working with the Greater Portland Council of Governments, Cape Farm Alliance, Threshold to Maine Resource Conservation and Development, and the University of Maine Cooperative Extension in Cumberland County, hope to start distribution in 2010. ("Access to local food sprouting on Web," by Beth Quimby, Portland Press Herald, <http://pressherald.maintoday.com/story.php?id=238121&ac=PHnw>)

Animal behavior expert Dr. Temple Grandin has developed a "**Dr. Temple Grandin Certified, Sustainable & Humane**" program for processors, with 21 principles relating to proper animal husbandry and sustainable agriculture. Grandin wants animals to be treated with respect and to fulfill their instinctive behaviors without damaging the environment. ("Temple Grandin unveils new sustainability and humane handling certification program, by Andy Hanacek, The National Provisioner, Feb. 9, 2009, www.provisioneronline.com)

By a 7 to 1 vote, and after receiving 150 e-mails (the most ever received on any issue), **Portland's** City Council passed an ordinance **allowing up to six hens to be raised in city yards** for an annual fee of \$25. Coops must at least 20 feet from neighboring houses and 5 feet from property lines. Hens must have rodent- and predator-proof pens providing both sun and shade; the pens must be covered with aviary netting or a solid roof. Manure must be stored in a 20-gallon, covered container. Fourteen-year-old Payson Robinson of Great Diamond Island started Portland's chicken movement with his letter to the Council. ("VICTORY: Backyard Chickens Allowed in Portland," e-mail, Feb. 19, 2009, Bob St. Peter, Food for Maine's Future; "Portland rescinds chicken ban -- but it's hens only, no roosters," by Tom Bell, Portland Press Herald, Feb. 19, 2009)

The **College of the Atlantic** has hired Heather Albert-Knopp (a MOFGA's board member) to administer its new **Sustainable Food Systems Program** and Alyssa Mack to manager its organic Beech Hill Farm. Albert-Knopp, a 1999 COA graduate, will coordinate the Food Systems Program, which includes the Trans-Atlantic Partnership in Sustainable Food Systems. This partnership links COA with two premiere European institutions in organic agriculture, the University of Kassel in Germany and the Organic Research Center (ORC) at Elm Farm in the United Kingdom. Albert-Knopp has worked on several area farms and has a decade of experience as an organizer, most recently as the Farm to School coordinator in Hancock County.

Mack, who has worked on farms in the United States and in Europe, holds a B.S. in

environmental science from Allegheny College in Pennsylvania.

As part of the Trans-Atlantic Partnership, COA faculty member Suzanne Morse and faculty from ORC and Kassel will teach *Our Daily Bread: Grains through the Food Systems*, a field-based course in Europe.

Some fellowships are available for those seeking a master's degree in International Organic Agriculture or International Food Business and Consumer Studies at the University of Kassel. ORC also offers internships.

University of Kassel graduates may study at COA; the three institutions may exchange researchers and teachers among all three institutions; and they are planning a conference in sustainable food systems for this fall. (Press release, College of the Atlantic, Donna Gold, Director of Public Relations, dgold@coa.edu)

The **United States and Canada** plan to have an **equivalency agreement** in place by June 30, 2009, the **Canadian Organic Regime** implementation date. (ATTRA Weekly Harvest Newsletter, April 8, 2009; <http://attra.ncat.org>)

On April 6, the Agriculture, Conservation and Forestry Committee of the Maine Legislature heard LD 1159, An Act Relating to **Industrial Hemp**. This bill would allow people to grow industrial hemp if they held a license issued by Maine's agriculture commissioner a federal permit. Tom Murphy of Rockport, Maine, worked on the bill with Rep. Joan Welsh, who secured the co-sponsorship of committee chairs Sen. Nutting and Rep. Pieh. MOFGA testified in support of this bill. No opposing oral testimony was offered.

Nutrition

A USDA Agricultural Research Service (ARS)-supported study involving 15 volunteers ages 50 or older suggests that consuming diets enriched with high amounts of palm oil or partially hydrogenated soybean oil would produce unfavorable levels of LDL cholesterol and apolipoprotein B (a protein attached to fat particles that carries bad cholesterol throughout the bloodstream)—compared with diets enriched with canola or soybean oils. The volunteers had moderately high “bad” cholesterol at the beginning of the study. The researchers conclude that **palm oil would not be a good substitute for trans fats**. (“Palm Oil Not a Healthy Substitute for Trans Fats,” by Rosalie Marion Bliss, USDA Agricultural Research magazine, April 2009; www.ars.usda.gov/is/AR/archive/apr09/fats0409.htm)

Legumes are rich in antioxidants, biochemicals that can attack free radicals in the body and reduce the risk of cancer and other diseases. Researchers at Colorado State University found that **consuming dry beans reduces the risk of mammary cancer**. The scientists fed lab animals cooked dry bean powder made from six kinds of beans and looked for correlations between mammary cancer and seed coat pigments or concentrations of antioxidants in the beans. Consuming any of the beans reduced the number of animals with one tumor from 95 percent in the control group to 67 percent; and reduced the number of tumors per animal from 3.2 in the control group to 1.4. The phenolic and flavonoid contents and antioxidant capacity were not

associated with the reductions, suggesting that the anticancer activity of dry beans is not related to those traits or to seed color. (“Dry Beans Inhibit Development Of Mammary Cancer,” ScienceDaily, Feb. 18, 2009; www.sciencedaily.com/releases/2009/02/090204131621.htm; Thompson et al., “Chemical Composition and Mammary Cancer Inhibitory Activity of Dry Bean,” Crop Science, 2009; 49 (1): 179 DOI: 10.2135/cropsci2008.04.0218)

Eggs from free-range hens have three to six times **more vitamin D** than typical supermarket eggs, according to a study conducted by Mother Earth News. Free-range eggs from farms were compared with USDA nutrient data on commercial eggs, which are produced indoors in factory farms. Two eggs from free-range/pastured hens could provide 63 to 126 percent of the recommended daily intake (RDI) of vitamin D. Humans can get vitamin D from certain foods or from exposing their skin to sunlight. Most people lack sufficient vitamin D, especially in winter. Insufficient vitamin D has been linked to an increased risk of osteoporosis, multiple sclerosis, high blood pressure, diabetes, cancer and other diseases. Some experts are recommending higher-than-RDI amounts. Free-range/pastured eggs also containing two-thirds more vitamin A, three times more vitamin E, seven times more beta carotene, two times more beneficial omega-3 fatty acids, one-third less cholesterol and one-fourth less saturated fat than factory farmed eggs, according to other studies by Mother Earth News. (“No yolk! Free-range eggs contain more vitamin D,” press release, Mother Earth News, March 6, 2009; www.motherearthnews.com)

Using historical data, University of Texas researcher Donald R. Davis found that **vegetables are 5 to 40 percent lower in magnesium, iron, calcium and zinc than those harvested 50 years ago**. Vitamins and protein have also declined; and fruits are less nutritious now, too. The reduction may be attributed to dilution of nutrients in vegetables that contain more water; to selection for carbohydrates over other nutrients; to faster growing crops that are harvested before they take up many nutrients; to competition for uptake from potassium in synthetic chemical fertilizers; or to depleted soils. Davis says that efforts to increase food production have actually produced food that is less nourishing. (“Declining Fruit and Vegetable Nutrient Composition: What Is the Evidence?” by Donald R. Davis, Journal of HortScience; Feb. 2009; <http://hortsci.ashspublications.org/cgi/reprint/44/1/15?ijkey=RfqpDkPqP6D3rR> (requires subscription); “Eating Your Veggies: Not As Good For You?” by M.J. Stephey, Time, Feb. 18, 2009; www.time.com/time/health/article/0,8599,1880145,00.html?xid=rss-fullhealthsci-yahoo; “Less tasty -- and not as good for you,” by Tom Philpott, Grist, Jan. 28, 2009; <http://gristmill.grist.org/story/2009/1/27/165445/631>)

A study at Tufts University in Boston suggests that neutralizing an acid-producing diet by **consuming more produce may help reduce bone breakdown**, or "turnover," in aging people. Other studies suggest that consuming more-than-recommended amounts of calcium may not be the main way to protect bone. Fruits and vegetables are metabolized to bicarbonate, so are alkali-producing; but the typical American diet is rich in protein and cereal grains, which are metabolized to acid, and so are acid-producing. With aging, such diets lead to increasing metabolic "acidosis." For three months, a group of 78 healthy volunteers, age 50 or older, received either potassium or sodium bicarbonate in an amount equal to about nine servings of produce per day, along with their usual diet and exercise regimes. Intake of key bone mineral nutrients was controlled. These volunteers had significant reductions in biomarkers associated

with bone loss and fracture than 84 volunteers in a no-bicarbonate control group. (“Neutralizing Acidosis and Bone Loss among Mature Adults, by Rosalie Marion Bliss, USDA Agricultural Research Service News Service, Jan. 30, 2009; www.ars.usda.gov/is/pr)

A Milky Situation

HP Hood won’t renew contracts for 10 Maine organic dairy farms and told several other Maine organic milk producers to cut production by 15 percent. Hood blamed the declining economy and increased transportation costs for the decision, but many dairy farmers blame the dairy pricing system, influenced by the Chicago Mercantile Exchange, and huge imports—including imports of milk protein concentrate (processed milk powder with minerals and other components removed). Proposed cuts in Maine’s price support system for dairy farmers were adding to producers’ woes as we went to press.

The Maine Farm Bureau, MOFGA, some affected farms and other businesses and farm experts were seeking funding to **plan a processing and distribution system for Maine-labeled milk** in the state. The organizations say that the national milk marketing system, which trucks Maine milk out-of-state for processing and then ships some back to Maine retailers, “is often not operating in the best interests of the Maine dairy industry.” Major Maine retailers would be asked to purchase less out-of-state milk to ensure that all the Maine-label milk has a market. The group’s efforts are posted at MaineOrganicMilk.com. (“Organic milk boom in Maine going bust, Hood drops northern, Down East dairy farms,” by Sharon Kiley Mack, Bangor Daily News, March 1, 2001; www.bangornews.com/detail/100620.html; “Hood drops two more organic farms,” Mainebiz, April 9, 2009; www.mainebiz.biz/news44422.html; “Root cause of milk price crash studied,” by Sharon Kiley Mack, Bangor Daily News, March 30, 2009; “Organic Family Dairy Farm Support Project,” Press release, Maine Farm Bureau/Maine Organic Farmers and Gardeners Assoc., March 12, 2009)

Germany scientists have developed **tests to distinguish organic from conventional milk** in order to detect fraud. Ratios of stable isotopes of carbon can determine whether milk came from cows fed higher concentrations of corn versus pasture. Also, organic milk usually has more of the healthful alpha-linolenic acid than conventional. (“New Test For Detecting Fake Organic Milk,” Medical News Today, March 2, 2009; www.medicalnewstoday.com/articles/140759.php)

Water Woes Out West

A third year of severe **drought** has hit **California’s Central Valley**, devastating environments, economies, communities and families there, and the availability of fresh produce elsewhere. The Central Valley produces over half the produce and nuts grown in the United States. (“Drought Adds to Hardships in California,” by Jesse McKinley, The New York Times, Feb. 22, 2009; www.nytimes.com/2009/02/22/us/22mendota.html?_r=1&hp; “California farms lose main water source to drought,” by Steve Gorman, Reuters, Feb. 20, 2009, www.reuters.com/article/environmentNews/idUSTRE51J6MO20090220)

Contaminated Fertility

Sludge produced by U.S. sewage treatment plants **contains a wide variety of toxic metals, pharmaceuticals, flame retardants, antibiotics** and other compounds, according to a new EPA study. Some 7 million metric tons of these “biosolids” are applied to farm fields annually for their nutrient and organic matter content. Data on contaminants, released in January, will allow the EPA to begin assessing the risks of those applications. (EPA Report: www.epa.gov/waterscience/biosolids/tnsss-overview.html; “The Dirt on Sewage Sludge,” by Erik Stokstad, Science, Jan. 22, 2009; sciencenow.sciencemag.org/cgi/content/full/2009/122/3; Organic Consumers Assoc., Jan. 26, 2009; www.organicconsumers.org/articles/article_16623.cfm)

After discovery of widespread sales in California **of organic fertilizers spiked with synthetic nitrogen** (prohibited on organic farms), the Organic Trade Association convened a task force to develop an industry standard to verify fertilizers and other products used in organic farming. The task force is expected to forward its standards in June to the National Organic Program. The California Certified Organic Farmers (CCOF) will require, as of August 15, third-party site inspection of liquid fertilizer manufacturers; and CCOF itself will test liquid fertilizers. (“USDA toughens oversight of organic fertilizer,” by Jim Downing, The Sacramento Bee, Feb. 21, 2009; California faces organic “Fertilizergate,” by Vicky Umland, naturalfoods merchandiser, Feb. 19, 2009; <http://naturalfoodsmerchandiser.com/tabId/119/itemId/3615/California-faces-organic-Fertilizergate.aspx>)

Food Safety

As the **federal** government reviewed **bills on food safety**, the Internet was flooded with e-mails claiming that those bills would end organic farming and gardening and farmers’ markets. Russell Libby, executive director of MOFGA, says those claims are not accurate. Federal regulations do need to address mounting food safety issues, and proposed changes are drafted with large, industrial-scale farming operations in mind and do not meet the needs of (and could be onerous to) small, diversified farms, he says. The bills and Libby’s responses are posted at www.mofga.org. As we went to press, Congress was expected to vote on the bills, with rule-making occurring after passage.

According to Libby, these bills will likely address which federal agency is responsibility for food safety; give the federal government recall authority when a food is contaminated (currently, the FDA and USDA can only request that processors recall suspect food); and push for better tracking of ingredients that processors use—which could involve a National Animal Identification System.

Libby says the government needs to recognize the many ways to produce safe food. Food safety issues associated with products sold at farmers’ markets differ from those of thousand-acre vegetable producers wholesaling all their product; and the tracking system used for a CSA should differ from that of a nationwide poultry processor.

Also, large farms—confined animal feeding operations (CAFOs), large wholesale producers—and large processors have different potential impacts on the food system than small family farms and food businesses. Solutions should work for farmers, fishermen and local food processors of

all sizes.

The proposed bills focus almost exclusively on potential microbial contamination and ignore other issues, such as potential health impacts of pesticides or genetically engineered products; and off-farm environmental and health impacts of CAFOs or corn monocultures.

Nine of 20 samples of commercial **high fructose corn syrup (HFCS) contained mercury**, according to an article in Environmental Health, and a study by the Institute for Agriculture and Trade Policy (IATP) detected mercury in nearly one-third of 55 popular foods and beverages where HFCS is the first or second label ingredient. Sweetened beverages, processed foods, lunch meats, yogurts, soups and condiments may all contain HFCS. Americans consume a mean of about 12 teaspoons of HFCS per day. Mercury contaminates some (but not all) caustic soda, made in industrial chlorine plants, used to make HFCS. ("Mercury from chlor-alkali plants: measured concentrations in food product sugar," Renee Dufault et al., Environmental Health, Jan. 26, 2009; www.ehjournal.net; "Much High Fructose Corn Syrup Contaminated With Mercury, New Study Finds," Institute for Agriculture and Trade Policy (IATP) press release, Jan. 26, 2009; "Not So Sweet: Missing Mercury and High Fructose Corn Syrup," by David Wallinga, M.D., Janelle Sorensen, Pooja Mottl and Brian Yablon, M.D.; www.iatp.org.)

California Senate Bill (SB) 550 would require California grocery stores using programmable **checkout scanners** to ensure that employees and customers at the check-out stand are **notified when the product being purchased is subject to a recall** by the FDA or USDA. (Food & Water Watch and Consumers Union press release, March 3, 2009; www.foodandwaterwatch.org; www.consumersunion.org)

Cattle consuming distillers grain, a byproduct of ethanol production, have elevated rates of pathogenic **E. coli**, and the grain often contains **antibiotics**. Penicillin, virginiamycin, erythromycin and tylosin are used during ethanol production to prevent lactic acid bacteria from interfering with fermenting corn into ethanol. Researchers have found some antibiotic-resistant bacteria associated with ethanol production and are concerned that the antibiotics will enter the human food chain through cattle. ("Antibiotics pose concern for MN ethanol producers," by Mark Steil, April 4, 2009; Forbes; www.forbes.com/feeds/ap/2009/04/04/ap6255845.html)

Pesticides

Maine BPC Approves Bt Sweet Corn

By Katy Green

At its March meeting, the Maine Board of Pesticides Control (BPC) voted to allow the sale of genetically engineered Bt sweet corn in Maine. Previously, Maine had been the only state where this product was not registered. The ad hoc Bt Corn Technical Committee, which released its review of the original product labels in late 2008, recommended approving the registration. In February, the BPC's Medical Advisory Committee met to discuss potential public health implications of Bt proteins from the genetically engineered product and made no conclusive recommendation because it had insufficient research data about the effects of these proteins on human health.

Throughout this process MOFGA continued to oppose registration, primarily because no comprehensive data are being collected on the health or environmental effects of these varieties or “events.” Also, tracking use of this product may be impossible if home gardeners are allowed to purchase it. The Bt field corn requires growing a reserve of non-BT corn to prevent the development of insect resistance; the sweet corn labels require mowing and incorporating the crop after harvest. There is no way to ensure that home gardeners follow this requirement.

The BPC decided not to wait for the medical evidence. Its members repeatedly stated that many people in Maine are already consuming Bt sweet corn in such foods as corn chips and canned corn grown elsewhere and shipped here.

Many BPC and staff members agreed that education about plow down requirements is essential to ensure that insect resistance does not occur. They also cited their decision to require purchase of enough seed to plant 1 acre as justification that plow down requirements will be followed. They believe that home gardeners won’t buy the large amount, so the BPC will be able to track plow down compliance among larger growers.

The Board also said that allowing Bt sweet corn to be grown will reduce applications of Lannate, a dangerous carbamate commonly used to control insects on corn. It did not consider the alternative of simply having farmers apply Bt to their sweet corn, and forgoing both genetic engineering and Lannate.

Board member Chuck Ravis opposed approving the registration, saying that he felt uncomfortable with the decision.

In its approval, the Board modified Chapter 41 of its rules to incorporate the sweet corn label restrictions and to limit sales to farmers who have been trained regarding insect resistance. Garden size packets will not be allowed.

This means that consumers of fresh, Maine-grown sweet corn can no longer assume that the product is not genetically engineered, unless they purchase organically grown sweet corn.

Pesticide Application Rule Violations

David Charlesworth of Bedford, N.H., was fined \$500 for applying glyphosate adjacent to the shoreline on Spruce Creek in Kittery.

John Tibbets of Lyman was fined \$100 for purchasing and using Atrazine 4L, a restricted use pesticide, with an expired private applicator license.

Mike Rowell of Levant was fined \$100 for purchasing and using two restricted use pesticides with no private applicator license.

Scott’s Lawn Service was fined \$1,200, with \$600 suspended because he reported the violation himself. The violation occurred when a Scott’s employee applied insecticides to the wrong lawn on two consecutive days to a Kennebunk residence. The company has since revised its written

policy to require the applicator to read the electric meter to identify the correct property. Label rate violations occurred as well.

Plants Unlimited of Rockport was fined \$200 for failing to keep pesticide application records for 2007 and 2008. Additionally, workers were not trained as required by the federal Worker Protection Standard, and no central display gave pesticide application and safety information. Plants Unlimited was also fined in 2003 for some of the same violations. Some BPC members said this fine seemed too lenient for this type of repeated violation; they would like to see higher penalties in the future.

Adam Patterson of Augusta was fined \$350 after applying insecticides without a private applicator's license to an apartment building that he owns.

Sugarloaf Golf Course was fined \$250 for failing to have a licensed commercial master applicator on staff for three months in 2008.

Orkin Exterminating Co. was fined \$1,000 for applying insecticides to the wrong property in Hartford. The property treated was an Orkin customer. The property that was supposed to be treated was a rental property of the customer. Orkin was asked to submit to the BPC a written policy for positive site identification.

Pesticide Registrations—and Refusals

At its January 2009 meeting, the BPC approved a Special Local Need [24(c)] registration for Ethrel brand Ethephon plant regulator. This Bayer Cropscience product will be used on greenhouse tomatoes to accelerate ripening and minimize crop loss. However, the EPA replied, saying it had already determined that Ethephon was not going to be approved for this use, and denying the local need registration.

In March 2009, the BPC approved a Special Local Need [24(c)] registration request from Dow AgriSciences for its GoalTender herbicide (oxyfluorfen) to control post-emergent weeds in broccoli.

[End of BPC news]

When UCLA researchers studied 25 years worth of public records of pesticide applications in California's Central Valley, they found that people living next to fields where the **fungicide maneb or the herbicide paraquat** had been sprayed were 75 percent more likely to develop **Parkinson's disease** than a control group that lived farther from the fields. Previous studies with animals reached the same conclusion. ("Pesticides linked to Parkinson's, UCLA researchers find, Chicago Tribune, April 20, 2009; www.chicagotribune.com/health/chi-parkinsonsapr20,0,594513.story)

The EPA will for the first time require that **pesticide manufacturers test 67 chemicals** in their products **for effects on hormone systems**. ("EPA Will Mandate Tests On Pesticide Chemicals,"

by Juliet Eilperin, Washington Post, April 16, 2009; www.washingtonpost.com/wp-dyn/content/article/2009/04/15/AR2009041501960.html)

Children living where their parents used **pesticides, including lawn and garden pesticides and especially herbicides**, were twice as likely to develop **brain cancer** as those living where pesticides were not used. Researchers asked more than 1,300 parents about their exposure to pesticides at home and work over two years before their child was born. They found that "parental exposures may act before the child's conception, during gestation, or after birth to increase the risk of cancer." Children's cancer risk decreased significantly if fathers wore protective clothes or washed immediately after exposure to pesticides. ("Pesticides blamed for some childhood brain cancers," by Heather Hamlin, Environmental Health News, April 7, 2009; www.environmentalhealthnews.org/ehs; Original article: Shim Y., S.P. Mlynarek and E. van Wijngaarden, "Parental exposure to pesticides and childhood brain cancer: United States Atlantic Coast Childhood Brain Cancer Study," Environmental Health Perspectives, Feb. 8, 2009)

The **Ontario** government has **banned 85 lawn and garden pesticides, including 2,4-D** in its concentrated form—despite a NAFTA challenge from 2,4-D manufacturer Dow AgroSciences. Retailers must now store and display pesticides behind the counter, and by 2011 they will have to notify customers of new limitations on use. The ban does not apply to golf courses, farms or managed forests. In December 2008, Beyond Pesticides and the Natural Resources Defense Council petitioned the EPA to cancel registration of 2,4-D, found in "**weed and feed**" products across North America. (Pesticide Action Network North America, March 5, 2009; www.panna.org)

Michigan State University researchers have found that prenatal exposure to a breakdown product of **DDT** may contribute to **obesity** in women. The study tracked 20- to 50-year-old daughters of 250 western Michigan mothers who, in the 1970s, ate fish contaminated with DDT and its breakdown products. Daughters with intermediate levels of the breakdown product DDE in their bodies gained a mean of 13 pounds of excess weight. Women with more DDE gained more than 20 excess pounds. (Pesticide Action Network North America news update, March 26, 2009; www.panna.org)

Four **Monsanto Roundup formulations** of the herbicide glyphosate are **highly toxic to human cells** at concentrations far below recommended agricultural use levels, according to researchers at the Institute of Biology in Caen, France. The mixtures use different adjuvants—chemicals that boost the effects of glyphosate. Roundup formulations are the top non-selective herbicides worldwide and are used increasingly, as more than 75 percent of genetically engineered crops are Roundup tolerant. The predominant adjuvant is polyethoxylated tallow amine (POEA), a surfactant that improves solubility and penetration of glyphosate into plants. The researchers found that the presence of adjuvants amplified the toxic effects of glyphosate. The toxicities of the Roundup formulations were not proportional to their concentration of glyphosate and are most likely due to adjuvants or other, undisclosed ingredients. All cells from three human cell lines died within 24 hours of exposure to the Roundup formulations. The formulations were tested at concentrations from 10 parts per million to 2 percent (the recommended agricultural usage level). ("Death by Multiple Poisoning, Glyphosate and Roundup," by Dr. Mae-Wan Ho and Brett Cherry, ISIS Press Release, Feb. 11, 2009; Original study: Benachour, N. and Séralini

G-E., "Glyphosate formulations Induce Apoptosis and Necrosis in Human Umbilical, Embryonic, and Placental Cells," *Chem. Res. Toxicol.* , 2009, 22 (1), pp 97-105)

Genetic Engineering (GE)

Roundup Ready crops have simplified weed control for farmers—in the short term. Bill Johnson, a Purdue University associate professor of weed science, says farmers who plant **Roundup Ready crops** and spray Roundup or glyphosate-based herbicides almost exclusively are finding that **weeds have developed resistance**. "We have weeds that have developed resistance, including giant ragweed, which is one of the weeds that drove the adoption of Roundup," Johnson says. "It's a pretty major issue in the Eastern Corn Belt. That weed can cause up to 100 percent yield loss." ("Farmers relying on Roundup lose some of its benefit," by Brian Wallheimer; Purdue Univ., April 14, 2009; <http://news.uns.purdue.edu/x/2009a/090414JohnsonSurvey.html>)

According to "Failure to Yield," a report by Union of Concerned Scientists expert Doug Gurian-Sherman, **genetic engineering has failed to significantly increase U.S. crop yields**. Gurian-Sherman reviewed two dozen academic studies and concluded that engineering herbicide-tolerant soybeans and corn had not increased yields, while insect-resistant corn improved yields only marginally. The increase in yields for both crops over the last 13 years was largely due to traditional breeding or improvements in agricultural practices. The report found that Bt corn likely provides a marginal operational yield advantage of 3 to 4 percent over typical conventional practices. Since Bt corn became commercially available in 1996, its annual yield advantage averages 0.2 to 0.3 percent, while overall U.S. corn yields over the last several decades increased approximately 1 percent annually—considerably more than the contribution from Bt traits. The report suggests that it makes little sense to support GE at the expense of technologies proven to increase yields substantially, especially in many developing countries. In addition, recent studies have shown that **organic and similar farming methods that minimize the use of pesticides and synthetic fertilizers can more than double crop yields** at little cost to poor farmers in some developing regions. "Traditional breeding outperforms genetic engineering hands down," says Gurian-Sherman. ("Failure to Yield—Evaluating the Performance of Genetically Engineered Crops," Union of Concerned Scientists, April 14, 2009, www.ucsusa.org/food_and_agriculture/science_and_impacts/science/failure-to-yield.html)

South African farmers lost 80,000 to 150,000 tons of **GE corn** when plots of three varieties of the product **suffered little or no pollination**, reports The Times in Johannesburg. According to Marian Mayet of the Africa Centre for Biosecurity in Johannesburg, some farms had up to 80 percent crop failures. (Pesticide Action Network North America News, April 9, 2009; www.panna.org)

Monsanto's Bt Cotton is harming soil life. A study by the Indian research foundation Navdanya found that soil from fields in India where Monsanto's Bt-cotton had been planted for three years had a 17 percent smaller actinomycete bacteria population than adjoining fields with non-GE cotton or other crops. Actinomycetes are vital for breaking down cellulose and creating humus. Bacteria in the GE fields were reduced by 14 percent; and the total microbial biomass was reduced by 8.9 percent. Soil enzymes that make nutrients available to plants were also reduced. Acid phosphatase, which contributes to phosphate uptake, was reduced by 26.6 percent;

and nitrogenase enzymes, which help fix nitrogen, were reduced by 22.6 percent. (Press release, Institute of Science in Society, Feb. 23, 2009; www.i-sis.org.uk/BtCottonKillsSoilandFarmers.php. See also www.navdanya.org)

The Organic Consumers Association has collected several quotes promoting gene mapping to help with traditional plant breeding—a process that may make gene splicing and GE crops obsolete, say some. This new era of genomics uses genetic markers, genomics (studying an organism's genes) and proteomics (studying an organism's proteins) to complement and enhance conventional breeding through **marker-assisted selection (MAS)**, in which molecular markers and other high-tech tools help enhance traditional crop breeding. Because novel genes aren't actually engineered into crops, the process is also called nontransformational biotech. (Organic Consumers Assoc., Jan. 29, 2009; www.organicconsumers.org/articles/article_16650.cfm)

In March, European Union environment ministers voted to allow **Austria and Hungary to maintain national bans on growing genetically engineered (GE) crops** from Monsanto. The only GE crop currently grown in Europe is MON 810 corn, produced by Monsanto and other companies. ("Europe to Allow Two Bans on Genetically Altered Crops," by James Kanter, The New York Times, March 2, 2009; www.nytimes.com/2009/03/03/business/worldbusiness/03biotech.html?_r=3&ref=worldbusiness) And in April, **Germany banned Monsanto's MON810 GE corn**, concerned that it could be dangerous for the environment. (Pesticide Action Network North America, April 16, 2009; www.panna.org)

USDA's Animal and Plant Health Inspection Service (APHIS) gave preliminary approval to the first of a **new generation of pesticide-promoting GE crops** designed to survive spraying with multiple herbicides. This GE corn variety was developed by DuPont's Pioneer Hi-Bred International to tolerate glyphosate (the active ingredient in Roundup) and acetolactate synthase-inhibiting herbicides (ALS inhibitors). The Center for Food Safety says that APHIS did not adequately address a range of health and environmental risks in its draft environmental assessment (EA), including novel food safety concerns, increased pesticide use and increased prevalence of weeds resistant to glyphosate, ALS inhibitors and to both herbicides. (Center for Food Safety press release, Feb. 2, 2009; www.centerforfoodsafety.org)

Are supermarket **plums genetically engineered**? If they are labeled with a five-digit number beginning with 8, they are. If the number begins with 9, they're organic. If the label has four numbers, the fruits are conventionally grown but not genetically engineered. (Ideal Bite, Jan. 30, 2009; on <http://articles.mercola.com/sites/articles/archive/2009/02/21/Are-Your-Supermarket-Plums-Genetically-Modified--Heres-How-to-Find-Out.aspx>)

Twenty-six **researchers** have filed a complaint with the EPA stating that they **cannot fully research GE crops** because biotech companies prohibit growing those crops for research without their permission—which is sometimes denied, or the companies insist on reviewing research findings before they're published. ("Crop Scientists Say Biotechnology Seed Companies Are Thwarting Research," by Andrew Pollack, The New York Times, Feb. 20, 2009)

According to **WorldWatch Institute**, in 2007, **GE crops** accounted for 9 percent of total land used for global primary crops, including soybean (51 percent), corn (31 percent), cotton (13 percent) and canola (5 percent). The United States accounts for half of all GE crop area. Beyond the four standard GE crops, U.S. farmers also grew small (and declining) amounts of GE papaya in Hawaii, and GE alfalfa, which court rulings have suspended until further environmental review. Two GE traits dominate: herbicide tolerance (63 percent) and insect resistance (18 percent); a combination of the two traits (called “stacked”) accounts for the rest. Most herbicide-tolerant crops have been engineered to tolerate glyphosate (the active ingredient in Roundup). In the United States, GE crop production increased pesticide use by more than 4 percent between 1996 and 2004, and reports of glyphosate-resistant “super weeds” now total 15 species. Some studies have shown that GE crops reduce yield, including a 5- to 10-percent yield drag in GE soy. Monsanto’s GE crop traits are in more than 85 percent of global GE crop hectares, and the company controls 23 percent of the global proprietary seed market. (“Genetically Modified Crops Only a Fraction of Primary Global Crop Production,” by Alice McKeown, WorldWatch Institute, Dec. 4, 2008; www.worldwatch.org/node/5950)

While 95 percent of U.S. **soybean** production is GE Roundup-Ready, some 5 percent will be non-GE this year. That percentage is expected to increase because of the **lower cost of non-GE seed** and the higher premium for the non-GE product. Combined, those factors can bring **an extra \$50 per acre**. The increase will be slowed by the lack of non-GE seed available this year, although seed companies are expected to increase production for 2010. In addition to getting the non-GE premium, grower may be able to save their own seed from the non-GE crop, using 1 acre of seed to plant up to 30 acres the following year. (“Interest in Non-Genetically Modified Soybeans Growing,” USAgNet, April 7, 2009; www.usagnet.com/story-national.php?Id=771&yr=2009)

Oregon farmer Don Tipping has suggested one way to increase non-GE seed production: **regional seed producing hubs** that network with one another, sharing experience, resources, tools (for printing labels, for instance), seed cleaning equipment and training. The Family Farmers Seed Cooperative is doing this in the West and the Northwest. (“Germination & the Forces of Spring,” by Don Tipping, April 1, 2009; <http://biodynamicseeds.blogspot.com/2009/04/germination-forces-of-spring.html>)

By February 2009, **73 companies had pledged not to use sugar from Monsanto’s GE, Roundup Ready sugar beets**. Companies have rejected GE sugar beets not only because they have not been proven safe but also because the EPA had increased allowable levels of herbicide residues on the roots by up to 5,000 percent when USDA approved the crop for planting. GE sugar beet farms also threaten the economic viability of non-GE and organic beet and chard farmers through cross pollination. (“Companies Vow to Reject Genetically Modified Beet Sugar,” The True Food Network, Feb. 12, 2009; <http://truefoodnow.org/2009/02/12/comapnies-vow-to-reject-genetically-modified-beet-sugar/#more-477>)

In February, the FDA approved the first pharmaceutical product made in milk of GE animals. A Massachusetts farm is raising **goats engineered** by GTC Biotherapeutics of Framingham, Mass., **to contain a human gene** that produces the human blood protein antithrombin in their milk.

The protein—otherwise obtained from human plasma, which is sometimes in short supply—can be extracted from the goat milk. The resultant drug, called ATryn, is intended for use during surgery or in childbirth by people who cannot produce antithrombin, which prevents blood clots. (“F.D.A. Approves Drug Made From Goat’s Milk,” by Andrew Pollack, The New York Times, Feb. 7, 2009; www.nytimes.com/2009/02/07/business/07goatdrug.html?ref=business)

Due to pressure from consumers and retailers, **Agri-Mark, owner of Cabot cheeses, will stop accepting milk from rBGH-treated cows** at its Middlebury and Cabot, Vermont, cheese plants and at its W. Springfield, Mass., butter plant on Aug. 1, 2009. For at least two years, most milk in New England has come from cows that were not treated with rBGH. With Agri-Mark abandoning the GE product, most New England dairy products will come from cows that did not receive rBGH. (“Bye Bye rbST?” by Steve Taylor, Lancaster Farming, Jan. 23, 2009; <http://lancasterfarming.com/node/1700>)

Fall 2009

The Good News

Volunteers have planted more than 400 native plants in the **YardScaping demonstration garden at Portland’s Back Cove**. A low-maintenance lawn will go in this fall. The plantings show that yards can be beautiful without polluting waters with fertilizers and pesticides. The demonstration gardens depict urban, urban/suburban, rural and rural/suburban designs, as well as a wildflower meadow. For a site map and plant list, see www.yardscaping.org. (“The plot thickens as demonstration garden fills up with plants,” by Tom Atwell, Portland Press Herald, June 28, 2009; <http://pressherald.maintoday.com/story.php?id=263977&ac=Home>)

Seventy-three percent of U.S. families buy organic products at least occasionally, chiefly for health reasons, according to the 2009 U.S. Families’ Organic Attitudes and Beliefs Study, sponsored by the Organic Trade Association and KIWI Magazine. Also, 31 percent of U.S. families are buying more organic foods than they did a year ago, with many parents preferring to reduce their spending in other areas before targeting organic product cuts. In fact, 17 percent of U.S. families said their largest increases in spending in the past year were for organic products. (Organic Trade Assoc. press release, June 16, 2009; www.ota.com)

U.S. sales of organic food and non-food products reached \$24.6 billion by the end of 2008, **growing 17.1 percent** over 2007, according to the Organic Trade Association. Organic food sales grew by 15.8 percent to reach \$22.9 billion, while organic non-food sales grew by 39.4 percent to reach \$1.648 billion. Organic food sales now account for approximately 3.5 percent of all U.S. food product sales. (Organic Trade Assoc. press release, May 4, 2009; www.ota.com)

As Canadian organic standards took effect on June 30, an **equivalency agreement between the USDA and the Canadian Food Inspection Agency** was implemented to ensure continued smooth flow of certified organic products between the two countries. It is the first such equivalency agreement worldwide for the organic industry. Some 70 to 80 percent of organic products sold in Canada come from the United States. (Organic Trade Assoc. press release, June

17, 2009; "New national standards for organic food take effect," CBC News, June 30, 2009; www.cbc.ca/consumer/story/2009/06/30/organic-certification-canada536.html)

Worldwatch President Christopher Flavin says that "**innovations in agriculture provide the best opportunity to remove carbon from the atmosphere.** We cannot reach 350 ppm without changing the way we grow our food and use our land." Innovations in food production and land use that are ready to be scaled-up today could reduce greenhouse gas emissions equivalent to roughly 25 percent of global fossil fuel emissions and present the best opportunity to remove greenhouse gases already in the atmosphere, according to Worldwatch Institute and Ecoagriculture Partners. More than 30 percent of human-caused greenhouse gas emissions are linked to agriculture and land use. In a new report, "Mitigating Climate Change Through Food and Land Use," the two organizations outline major strategies for reducing and sequestering greenhouse gas emissions through farming and land use:

- * Soil, the third largest carbon pool on Earth's surface, can be managed to reduce greenhouse gas emissions by minimizing tillage, cutting use of nitrogen fertilizers and preventing erosion. Soils can store a vast amount of additional carbon as organic matter and biochar (biomass burned in a low-oxygen environment).

- * Two-thirds of all arable land grows annual grains, but perennial plants can produce food, livestock feed, and fuel while storing carbon in the vegetation and soil.

- * Livestock accounts for nearly half of greenhouse gas emissions from agriculture and land use. Rotational grazing, manure management, methane capture for biogas production, and improved feeds and feed additives can reduce these emissions.

- * Deforestation, land clearing, and forest and grassland fires are major sources of greenhouse gas emissions. Incentives are needed to encourage farmers, ranchers and foresters to maintain natural habitats through product certification, payments for climate services, securing tenure rights and community fire control.

- * Restoring vegetation on vast areas of degraded land can reduce greenhouse gas emissions while making land productive again, protecting watersheds and alleviating rural poverty. ("Farmers Poised to Offset One-Quarter of Global Fossil Fuel Emissions Annually," Worldwatch Institute, June 2, 2009; www.worldwatch.org/node/6124)

A report by the University of Reading in Great Britain, funded by the Soil Association and an independent trust, shows that **organic farming** has "much to offer" and "**is, perhaps, mainstream agriculture in waiting.**" Key findings show that switching to organic farming would:

- * cut greenhouse gas emissions and water pollution
- * cut fertilizer inputs by 95 percent and sprays by 98 percent
- * support more wildlife
- * increase farm employment by 73 percent
- * supply similar volumes of food as at present, or even more
- * reduce chicken, egg and pig meat production (by eliminating factory farms) by about a quarter of current levels, making large quantities of grain available for human consumption
- * decrease dairy production by around 30 to 40 percent, unless herds were re-established and dairies re-opened in areas that have lost them
- * increase beef production by 68 percent and lamb by 55 percent.

("Organic 'mainstream agriculture in waiting,'" Soil Association press release, June 24, 2009. The findings are summarized at www.apd.reading.ac.uk/AgriStrat/projects/org_exec.html)

A study initiated by Stonyfield Farm has **cows** at 15 Vermont farms **eating more grass, alfalfa and flax, which are high in omega-3 fatty acids**, rather than corn and soy in order to **emit less methane**, a potent greenhouse gas. Cows give off methane primarily through burping. The test cows appear to be healthier, and one herd is emitting 18 percent less methane while the mean reduction is 12 percent. Groupe Danone, part owner of Stonyfield, found that higher omega-3 fatty acids in spring grasses in France seemed to improve cows' digestion and health; enable them to produce less methane; increase milk production about 10 percent; enable cows to live and produce milk longer; and result in milk with 29 percent more omega-3 fatty acid content and less saturated fat. Most people consume too much omega-6 (from eating foods made with corn, palm or soy oil; or from eating products of livestock that feed on corn and soy) and insufficient omega-3, making them vulnerable to heart disease, cancer, obesity, autoimmune diseases, allergies, diabetes and depression. While the ratio of omega-6 to omega-3 used to be about 1 to 1 or 2 to 1—it is now about 20 to 1. Nancy Hirshberg, Stonyfield V.P. of Natural Resources and director of the Stonyfield Greener Cow Project, notes the environmental costs of this imbalance: "Clearing forests for palm and soy has caused ecological devastation. For every piece of rainforest or prairie that is destroyed to grow soybean or palm, our bodies pay the price with an imbalance in the omega-6 to omega-3 ratio. If every U.S. dairy were to adopt this approach, in less than one year, the amount of greenhouse gas emissions we could reduce would be the equivalent of taking more than half a million cars off the road!" ("Greening the Herds: A New Diet to Cap Gas," by Leslie Kaufman, The New York Times, June 5, 2009; www.nytimes.com/2009/06/05/us/05cows.html?_r=1; Stonyfield Farm press release, June 8, 2009; www.stonyfield.com)

The **American Medical Association** has approved a policy resolution **supporting a healthy and ecologically sustainable food system**. The resolution calls on the AMA to help educate about the importance of healthy and ecologically sustainable systems that provide nutritious food. "[T]he role of health care providers and facilities in providing education and leadership to help the population understand the link between the way we produce food and individual health is significant and cannot be overstated," said Jamie Harvie, director of the Health Care Without Harm Sustainable Food Work Group. The AMA's Council on Science and Public Health (www.ama-assn.org/ama1/pub/upload/mm/475/refcomd.pdf) says that locally produced and organic foods "reduce the use of fuel, decrease the need for packaging and resultant waste disposal, preserve farmland ... [and] the related reduced fuel emissions contribute to cleaner air and in turn, lower the incidence of asthma attacks and other respiratory problems," while industrial agriculture contributes significantly to antibiotic resistance, climate change, and air and water pollution. ("American Medical Association Passes Resolution Supporting Sustainable Food System," PRNewswire-USNewswire, June 17, 2009)

The mainstream business magazine **Forbes** says eating low- or no-sugar, minimally processed, whole, **"real" foods**, including nuts, berries, beans, **raw milk** and grass-fed meat, is "almost always healthy, regardless of how many grams of carbs, protein or fat it contains." An article in the magazine notes the fiber, vitamins, minerals, antioxidants, anti-inflammatory and other properties of such foods, as well as their healthful fats, as contributing to a long, healthy life. It

promotes grass-fed meat, raw milk, wild salmon, vegetables, eggs, teas and more. (“The Healthiest Foods On Earth,” by Jonny Bowden, Ph.D., CNS, Forbes, July 7, 2009; www.forbes.com/2009/07/07/healthiest-foods-nutrition-lifestyle-health-healthiest-foods.html)

A fascinating article in Growing magazine tells how a Wisconsin couple is reclaiming 106 acres of worn out pasture by creating a **permaculture** farm. Mark and Jen Shepard sell hazelnuts, chestnuts and apples; fruit tree scions; cut flowers, asparagus, raspberries, grapes, morels, dried comfrey leaves, hard cider and more instead of the typical Midwest crops of corn and soy. They are grazing cattle and pigs among some woody plants. The farm has inspired research at Cornell on hazelnut-based polycultures. (“The Power of Nuts,” by Tina Wright, Growing, May 2009; www.growingmagazine.com/article.php?id=3438)

The **Knox County Farmer’s Alliance** meets monthly at the Union Town Office to share information and ideas. The group planned to start a new farmers’ market at the Union Fair and is encouraging regular local newspaper features on farms and farmers. For more information, contact Ron Howard, general manager, Aldemere Farm, 70 Russell Ave., Rockport, ME 04856; 207-236-2739; RHoward@MCHT.org. (Aldemere Farm Bulletin, Spring 2009; www.aldemere.org)

Urban fruit foraging is taking off. A neighborhood fruit exchange in Oakland, California, has 200 people sharing fruit from their home trees. The Portland [Oregon] Fruit Tree Project lists more than 300 trees available for picking. Elsewhere, the Web sites neighborhoodfruit.com, veggietrader.com and fallenfruit.org, as well as Facebook pages, list people who have fruit to share. Sometimes pickers share a percentage of their foraged fruit with low-income people or food banks. (“Neighbor, Can You Spare a Plum?” by Kim Severson, The New York Times, June 10, 2009; www.nytimes.com/2009/06/10/dining/10Fruit.html)

York County Cooperative Extension’s “**Kids Can Grow**” program, started by extension educator Frank Wertheim, **links 7- to 12-year-old children with mentors from Extension’s master gardener program**. The children’s families pay \$20 to participate; in return, they get wood for a raised bed, soil, plants and help. The mentors meet with children monthly at a garden in Sanford run by Extension, giving advice and caring for vegetables that will be donated to needy residents; and mentors visit the children’s home gardens about once a week. (“Way to Grow,” by Ray Routhier, Portland Press Herald, June 7, 2009; <http://pressherald.maintoday.com/story.php?id=260365&ac=Home>)

Middle Eastern farmers, with help from the Israeli government, Jordanian and Palestinian scientists and conservation charities, are putting up nesting boxes to encourage **owls and kestrels to hunt rodents on farms in the Middle East**. Participants hope to stop the poisoning of hundreds of birds of prey that consume rodents that have eaten rodenticides applied to crop fields by using the birds themselves to control pest populations. Encouraging kestrels, which hunt by day, and barn owls, which hunt by night, gives 24-hour protection and less crop damage from rodents. (“Owls replace pesticides in Israel, BBC News, May 20, 2009; <http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8004426.stm>)

Rob Evans of Hugo's restaurant in Portland is the 2009 James Beard Foundation's **best chef in the Northeast**; and Sam Hayward's Fore Street was one of five restaurants nominated for the national Outstanding Restaurant Award by the Foundation. Hayward (who serves on MOFGA's board of directors) received the Best Chef award for the Northeast in 1994. Chefs Clark Frasier and Mark Gaier of Arrows Restaurant in Ogunquit were also nominated for Best Chef: Northeast this year. ("James Beard 2009 Awards: Congratulations Maine!" Maine Food and Lifestyle, May 5, 2009; mainefoodandlifestyle.com)

The Good Life Center at Forest Farm, the historic homestead of Helen and Scott Nearing on Cape Rosier, Maine, welcomed hundreds of visitors again this summer, and the Nearing tradition of Monday Night Meetings continued, with programs held at the Reversing Falls Sanctuary in Brooksville.

A long-time Nearing friend, with volunteers and an intern, planted the stone-walled vegetable garden and donated the produce to food pantries. Visitors were able to tour the grounds, garden and greenhouse with volunteer guides.

The house is now closed for renovations, and the Center's board of directors and a building committee are developing plans to stabilize, restore and preserve the buildings, books, grounds and garden to reflect their appearance when the Nearings lived there.

The organization is raising funds, seeking grants and planning a capital campaign for building maintenance and to protect the valuable book collection. Following Scott Nearing's precept, "Pay as you go," work will proceed as funds are available.

To learn more, contact The Good Life Center, 372 Harborside Rd., Harborside, ME 04642; 207-326-8211; information@goodlife.org; or www.goodlife.org.

Bad Irradiation

When a company tested the effects of **irradiated foods on cats**, some developed **severe neurological problems**, including movement disorders, vision loss and paralysis, after three to four months on the diet. Returned to a normal diet, the cats slowly recovered. Researchers at the University of Wisconsin-Madison found that the myelin sheath around nerves of the central nervous system of affected cats was degraded; the normal diet restored the sheath somewhat. In humans, a degraded myelin sheath is associated with multiple sclerosis and other central nervous system disorders. The researchers do not know why cats fed irradiated foods suffered from demyelination. ("Nine Lives: Cats' Central Nervous System Can Repair Itself And Restore Function," ScienceDaily, March 31, 2009; www.sciencedaily.com/releases/2009/03/090330200722.htm; original study, "Extensive remyelination of the CNS leads to functional recovery," by Duncan I.D., Brower A., Kondo Y., Curlee J.F. Jr., Schultz R.D., published in Proc. Natl. Acad. Sci. U.S.A., April 2, 2009; www.ncbi.nlm.nih.gov/pubmed/19342494?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum)

Feeding 9 Billion

A June 2009 National Geographic report, “The Global Food Crisis, The End of Plenty,” by Joel K. Bourne Jr., describes how hunger is hitting people worldwide, despite attempts by multinational food conglomerates, pesticide corporations, the Gates and Rockefeller Foundations and others to promote a “new green revolution” with synthetic fertilizers, pesticides, irrigation and genetically engineered seeds. “Last year a massive study called the ‘International Assessment of Agricultural Knowledge, Science and Technology for Development’ concluded that the immense production increases brought about by science and technology in the past 30 years have failed to improve food access for many of the world’s poor. The six-year study, initiated by the World Bank and the UN’s Food and Agriculture Organization and involving some 400 agricultural experts from around the globe, called for a paradigm shift in agriculture toward more sustainable and ecologically friendly practices that would benefit the world’s 900 million small farmers, not just agribusiness.” Along those lines, Bourne’s article describes the Soils, Food and Healthy Communities project in Malawi, which distributes seeds, recipes and advice for growing nutritious, leguminous food crops, which add nitrogen to the soil while enriching diets. By rotating corn with legumes, farmers there have increased corn yields while reducing fertilizer inputs; improved their homes; and been able to buy livestock. Children in the project, who were languishing on the corn monoculture diet, had significant weight gains. The benefits of such systems are discussed in the article, which also notes that neither “green revolution”-type solutions nor the more ecological methods may be sufficient to feed 9 billion people by 2050—especially if climate-change predictions of increased heat and drought in populous areas occur. Bourne quotes Tim Dyson of the London School of Economics: “Ultimately there has to be a balance between population and resources. And this notion that we can continue to grow forever, well it’s ridiculous.” Bourne points out that delaying marriage reduces fertility rates and was “the basic mechanism that regulated population growth in western Europe for some 300 years before the industrial revolution.” (Pesticide Action Network North America news update, May 21, 2009; www.panna.org; and National Geographic, <http://ngm.nationalgeographic.com/2009/06/cheap-food/bourne-text>)

Organic

A Cornucopia Institute report, *Beyond the Bean: The Heroes and Charlatans of the Natural and Organic Soy Foods Industry*, **rates brands** according to company ownership structure, percentage of organic soybeans purchased, disclosure of sourcing information, whether the company tests for contamination of soybeans by genetically engineered soy, and more. Cornucopia notes, for example, that Dean owns the Silk brand of soy milk—much of which is no longer made from organic soybeans. Companies that do work with North American organic farmers include Eden Foods, Small Planet Tofu and Vermont Soy. *Behind the Bean* also exposes the “natural” (nonorganic) soy industry’s widespread use of the chemical solvent hexane to process conventional soy protein ingredients and edible oils. Hexane is prohibited when processing organic foods. Hexane, says Cornucopia, is a neurotoxin that poses serious occupational hazards to workers, is an environmental air pollutant, and can contaminate food. (Cornucopia Institute press release, May 18, 2009; full report at www.cornucopia.org)

Manufacturers of **liquid fertilizers with more than 3 percent nitrogen** for use on organic farms must submit their products for third-party review in order to meet an October 1 approval

deadline set by the USDA National Organic Program in a directive issued to USDA NOP Accredited Certifiers on February 20, 2009. (Organic Trade Assoc. press release, July 17, 2009; www.ota.com)

In August, the British Food Standards Agency (FSA) released a study claiming that **organic** and conventional foods essentially have the same **nutritional benefits**. The Soil Association (U.K.; www.soilassociation.org) noted, however, that the FSA rejected almost all existing studies comparing nutrition in organic and non-organic foods; and that environmental and human health problems associated with synthetic chemical pesticides and fertilizers and with antibiotics were not compared. The FSA study even contradicted itself, as it found the following higher percentages of nutrients in organic foods:

- protein 12.7
- beta-carotene 53.6
- flavonoids 38.4
- copper 8.3
- magnesium 7.1
- phosphorus 6
- potassium 2.5
- sodium 8.7
- sulfur 10.5
- zinc 11.3
- phenolic compounds 13.2

The researchers also found 2.1 to 27.8 percent more beneficial polyunsaturated fatty acids in organic than in non-organic meat and dairy products.

The FSA failed to include results of a major European Union-funded study that found more nutritionally desirable compounds (e.g. antioxidants, vitamins, glycosinolates) and lower levels of nutritionally undesirable compounds (e.g. mycotoxins, glycoalkaloids, cadmium and nickel) in organic crops; more beneficial fatty acids in organic dairy products; and up to 90 percent more vitamin C in organic fruits and leafy vegetables.

Dr. Charles Benbrook of The Organic Center (www.organic-center.org) states that the FSA downplayed its own positive findings in favor of organic food; and that The Organic Center's own study found greater concentrations of several nutrients, concluding "that the consumption of organic fruits and vegetables, in particular, offered significant health benefits, roughly equivalent to an additional serving of a moderately nutrient dense fruit or vegetable on an average day."

Dr. Margaret Reeves of the Pesticide Action Network North America (www.panna.org) says, "Organic agriculture not only delivers better nutrition, but also an array of indirect benefits for farmers, farmworkers, and the planet. Any comprehensive—or as FSA claims, 'systematic'—evaluation must account for organic's indirect benefits as well."

Genetic Engineering

In June, the United States Court of Appeals for the Ninth Circuit reaffirmed its previous decision upholding a **nationwide ban on the planting of genetically engineered (GE) Roundup Ready alfalfa** pending a full Environmental Impact Statement. The Court determined that planting GE alfalfa could result in potentially irreversible harm to organic and conventional varieties of crops, damage to the environment, and economic harm to farmers. (“Federal Court Upholds Ban on Genetically-Engineered Alfalfa,” press release, June 24, 2009; www.centerforfoodsafety.org/)

Monsanto Co. is collaborating with Dole Fresh Vegetables Inc., because of its marketing expertise, to develop new vegetables—initially broccoli, cauliflower, lettuce and spinach. (“Monsanto Teams With Dole,” Fresh Cut, June 23, 2009; www.freshcut.com/pages/news.php?ns=2621)

A USDA survey says that **40 percent of Maine’s 2008 field corn** acreage (29,000 acres, total) was **genetically engineered**—half the national rate. This corn is used primarily to feed livestock. (“40 percent of Maine field corn called modified,” by The Associated Press, Bangor Daily News, June 8, 2009; www.bangordailynews.com/detail/107889.html)

Scientists have long been perplexed by intergenic DNA—DNA that is located between genes. Some intergenic DNA physically protects and links chromosomes, but leftover or “**junk**” DNA seemed to have no purpose. Now, using the model plant *Arabidopsis thaliana*, researchers have found short, repeating segments within this junk DNA, and 50 percent of *Arabidopsis* genes have the same molecular patterns as the junk DNA. These linked patterns shared by “junk” DNA and coding DNA are called **pyknons**, and **they may be evidence of something that drives genome expansion in plants**. Pyknons are also the same in sequence and size as small segments of RNA that regulate gene expression through a method known as gene silencing. This suggests that these RNA segments are converted back into DNA and are integrated into the intergenic space. Over time, these sequences repeatedly accumulate. Previously, pyknons were known to exist only in the human genome. Discovering them in plants suggests a universal genetic mechanism that is not yet fully understood. Scientists may be able to use this information to determine which genes are regulated by gene silencing. (“Junk’ DNA Proves to be Highly Valuable,” by Alfredo Flores, USDA Agricultural Research Service News Service, June 2, 2009; www.ars.usda.gov/is/pr)

In May, **Monsanto’s Roundup Ready sugarbeets were found in a soil mix** being sold to gardeners by a Corvallis, Oregon, business near organic plant breeder Frank Morton’s fields. Morton, who owns Wild Garden Seeds of Philomath, worries that beets that escaped may flower and introduce windborne pollen to his organic chard seed crop, ruining his market for the seed and destroying years of breeding for his very cold-hardy line. They may also contaminate crops of other local chard growers who sell to bagged-salad distributors in California. A lawsuit filed by the Center for Food Safety, now before a federal judge in California, argues that the USDA violated federal law when it deregulated GE sugarbeets; the lawsuit seeks to stop their planting, sale or distribution. (“Battle over beets,” by Bennett Hall, Corvallis Gazette-Times, May 30, 2009; www.gazettetimes.com/articles/2009/05/31/news/top_story/1aaa01_beets053109.txt)

More than 70 companies, listed at http://www.seedsofdeception.com/includes/services/nongm_sugar_beet_registry_display.cfm,

have pledged to avoid using sugar from **GE sugar beets** "wherever possible." The first crop of GE Roundup Ready (herbicide-tolerant) beets was harvested in the fall of 2008, so sugar from those beets is now on the market. ("More Than 70 Companies Vow to Avoid Genetically Modified Sugar Beets," by David Gutierrez, May 27, 2009; NaturalNews.com)

In the late 1990s, molecular biologist Arpad Pusztai found that potatoes engineered to produce lectins, natural insecticides that combat aphids, damaged rats' organs and immune system. In an interview with The Non-GMO Report, he says that the damage was not from the transgene and its expressed product but from the damage—"probably due to **insertional mutagenesis**"—caused by inserting the transgene in the potato genome. Because genes cannot be inserted into known locations, Pusztai says they can cause the plant's own genes to become more active or silent, sometimes damaging the genome irreparably. Pusztai also mentioned Australian and Italian studies in which GE peas and corn, respectively, damaged the immune system of mice, and Austrian and Russian studies in which mice fed GE corn had reduced fertility. He says that GE foods should be independently tested for nutritional/toxicological, metabolic, cancer, immunological and reproductive effects. ("Arpad Pusztai and the Risks of Genetic Engineering," by Ken Roseboro, The Organic and Non-GMO Report, June 2009; <http://www.non-gmoreport.com/>; posted at Organic Bytes, Organic Consumers Assoc., June 3, 2009; http://www.organicconsumers.org/articles/article_18101.cfm)

The **American Academy of Environmental Medicine (AAEM)** is **calling for a moratorium on genetically engineered foods**. Citing several animal studies, the AAEM concludes "there is more than a casual association between GM [genetically modified] foods and adverse health effects" and that "GM foods pose a serious health risk in the areas of toxicology, allergy and immune function, reproductive health, and metabolic, physiologic and genetic health." The AAEM urges physicians to consider the role of GE foods in patients' disease processes and calls for more independent, longterm scientific research on the role of GE foods on human health. The most common GE foods consumed in North America are corn, soy, canola and cottonseed oil. ("The American Academy Of Environmental Medicine Calls For Immediate Moratorium On Genetically Modified Foods," AAEM press release, May 19, 2009; <http://www.aaemonline.org/pressrelease.html>)

Of the 114.3 million hectares (282.4 acres) growing GE crops worldwide in 2007, 70 percent grew **Roundup Ready (RR) soybeans**—much of the crop grown in South America for biodiesel production and for animal feed exported to China and Europe. These large-scale monocultures are heavily sprayed with herbicides, displace forests and small farmers, mine soil fertility, and lead to food insecurity. Transporting the crop requires additional roads, rail lines and industrial waterways, which destroy natural habitats. Soy cultivation has deforested 21 million hectares in Brazil, 14 million in Argentina, 2 million in Paraguay and 600,000 in Bolivia. Argentina lost 60,000 dairy, corn, wheat, fruit and other farms while its GE soy land almost tripled. For every kilogram of non-glyphosate herbicide that was not used in southern Brazil as GE soy cultivation expanded, 7.5 kilograms of glyphosate (including Roundup) were used—often sprayed aerially. This herbicide can harm other organisms (some beneficial), including spiders, mites, carabid and coccinellid beetles; detritivores such as earthworms; mycorrhizae and other microfauna; and aquatic organisms including microbes, frogs and fish. Impaired nitrogen fixation has also occurred when glyphosate was used. Thirteen Brazilian weed species are now resistant to

glyphosate and are being treated with other herbicides, such as 2,4-D, a carcinogen. (“Poisoning The Planet,” by Miguel A. Altieri, Resurgence, May/June 2009; <http://resurgence.org/magazine/article2803-Poisoning-The-Planet.html>)

Whole Foods Market Inc., working with the nonprofit Non-GMO Project, says it will have its private label **products tested for GE ingredients** and will begin labeling its compliant products by the end of this year. Other grocers working with the Non-GMO Project include The Natural Grocery Co., The Big Carrot Natural Food Market and Good Earth Natural Foods. (“Whole Foods adopts new verification standard for private label products,” Austin Business Journal, July 7, 2009; www.bizjournals.com/austin/stories/2009/07/06/daily16.html)

Pesticides

Busy Months for Maine BPC
By Katy Green

The Maine Board of Pesticides Control (BPC) has for the past few months continued to address rule changes, legislation, and the ever-present rule violations and product registrations.

In June the BPC unanimously approved language changes in Chapters 10 (Definition and Terms) and 22 (Standards for Outdoor Application of Pesticides by Powered Equipment in Order to Minimize Off-Target Deposition) to create a new definition for a Sensitive Area Likely to be Occupied (SALO) and to create new standards for outdoor applications of pesticides. Both rule changes strengthen protections regarding citizens’ exposure to pesticides. They also help define special protections for areas where people are likely to be present and strengthen standards for determining when drift has occurred.

The new SALO definition, posted at www.maine.gov/agriculture/pesticides/laws/regs.htm, includes areas likely to be occupied by humans, such as residential buildings and associated maintained areas (lawns, gardens, recreational areas and livestock management and housing areas); school buildings and associated maintained areas (playgrounds, athletic fields or courts); commercial, institutional or other structures and associated maintained areas (lawns, gardens, parking and recreational areas); maintained recreational areas (campgrounds, picnic areas, marked roadside rest areas, marked hiking trails, park and recreation facilities, athletic fields, and other areas for organized sports or recreation). Trails located on privately owned lands used by permission of the landowner are not included.

Also in June, the Maine Legislature passed LD 1293—An Act to Require Citizen Notification of Pesticide Applications Using Aerial Spray or Air-carrier Application Equipment (posted at www.maine.gov/agriculture/pesticides), sponsored by Rep. Seth Berry (D-Bowdoinham). This legislation was modeled after changes in Chapter 28 that the BPC had considered last year but abandoned after some Maine groups vociferously opposed them.

The Act will establish more rights for neighbors of people using aerial and air carrier spray equipment to learn what will be sprayed and when it will be sprayed. The legislation is a stand-alone document and does not require that the BPC initiate rulemaking for

Chapter 28. Technically, the bill will go into effect this September and will require all land managers using aerial or air-blast sprayers to notify abutters of the spray area at least 90 days before the first date of pesticide application. Abutters must be notified once every three years unless a significant change occurs in the method of application and chemicals used.

This has sparked discussion about emergency or “pop-up” work such as mosquito spraying for which applicators don't know who their customers will be until just before they are called to spray. No language in the rule as currently written would allow this to happen while maintaining notification compliance.

The bill also requires that the BPC create a free registry that will allow people to sign up if they'd like to be notified of specific pesticide applications within 1320 feet (1/4 mile) of their homes. The BPC is drafting a letter with its concerns and proposed amendments to Chapter 28 to address this and other issues. Discussions are ongoing about the form of the registry, how much information it will contain, and possible amendments.

The BPC is considering how school farms and greenhouses are regulated under Chapter 27, Standards for Pesticide Application and Public Notification in Schools. When BPC staff visited a school greenhouse, an insect problem was present that school personnel did not think they could deal with without violating Chapter 27. The BPC has decided that some flexibility in the rule should be allowed for farms and/or greenhouses located away from the school buildings. They cite this as an opportunity to teach children about the proper use of pesticides. This discussion may result in proposed rule changes, which MOFGA will track closely.

The summer's rainy weather and the emergence of late blight in Long Island prompted the BPC to hold an emergency meeting in early July to amend Chapter 31 to allow aerial pesticide applicators from outside Maine to spray potatoes in Maine to guard against late blight. The amendment passed. MOFGA raised concerns about making sure those applicators have specific training about Maine's regulations about notification and drift, which the Board agreed to try to provide.

The BPC has tentatively scheduled an obsolete pesticide collection for fall 2009. Please check www.thinkfirstspraylast.org for the list of obsolete products and a collection date and location.

Pesticide Application Rule Violations

Kezar Falls Hardware of Parsonsfield sold general use pesticides without a license from 2003 through August 2008. Members of the BPC staff visited the store in 2005 and 2008 and provided the dealer with a license renewal packet each time. The fine levied for nearly five years of noncompliance was \$200.

The BPC fined DSS Lawn Care & Maintenance of Skowhegan \$450 for an August 18, 2008, incident at the Kennebec Shopping Center in Skowhegan. A passerby observed two people spraying herbicide in the cracks and alongside the curbs in the parking lot. Donald Wing, owner of DSS, told BPC staff that the substance sprayed was vinegar, but lab tests of the dead vegetation revealed that glyphosate, the active ingredient in Roundup, was present.

Pesticide Registrations

Recommendations from University of Maine cranberry specialist Charles Armstrong and requests from growers led the BPC to approve a Special Local Need [24(c)] Application to use chemigation to apply Callisto herbicide. Cranberry growers will use Callisto, a product of Syngenta Crop Protection Inc., to control broadleaf weeds. The BPC unanimously approved the request because growers will save significant time, labor and money by applying the herbicide in irrigation water compared with current methods of application.

Urban Tree Service of Rochester, New Hampshire, requested a variance to Chapter 29, Section 6, which requires a 25-foot untreated buffer zone for outdoor pesticide applications near surface waters. The request was made in order to apply dormant oil to woolly adelgid-infested hemlock trees along a stream. In April the BPC considered this request and asked the staff to determine if this was part of a larger plan with the Maine Forest Service to control this insect—which it was not, hence the approval in May. This pest cannot be controlled with dormant oil but can be slowed. The BPC likely will face this issue repeatedly in years to come.

A variance was granted to Green Thumb Lawn Service of Brewer for vegetation management on roadway curbing, sidewalks and median strips in Brewer and Veazie.

For questions or comments about BPC work, contact BPC director Henry Jennings at henry.jennings@maine.gov or 207-287-2731.

[End of BPC news]

On-the-job **exposure to insecticides, fungicides and herbicides**—especially to organochlorine insecticides—was **linked with Parkinson's** disease in a French study of nearly 800 adults. The longer workers were exposed to pesticides, the greater the likelihood of having Parkinson's. (“More evidence links pesticides to Parkinson's,” by Amy Norton, Reuters Health, June 19, 2009; www.reutershealth.com/archive/2009/06/19/eline/links/20090619elin001.html. Original study in *Annals of Neurology*, June 4, 2009) A U.S. study also found that exposure to common agricultural pesticides may increase the risk of developing Parkinson's disease, particularly among people with certain gene types. (“Dopamine Transporter Genetic Variants and Pesticides in Parkinson's Disease,” by Beate R. Ritz et al., *Environmental Health Perspectives*, June 2009)

In June, **Congress wrote to Dow Chemical** Company CEO Andrew Liveris and Dow's Board of Directors, urging the company to face its **criminal and civil liabilities** for the explosion at a Union Carbide pesticide plant in **Bhopal**, India, in December 1984. The letter endorsed survivors' demands for remediation—chiefly that Dow provide medical and economic rehabilitation and clean up the factory and groundwater contamination. Nearly a quarter-century after the initial disaster, the factory sits in ruins, with toxic chemicals strewn about the grounds, just yards from the homes of thousands of Bhopali families. (Pesticide Action Network News Update, June 18, 2009; www.panna.org)

Children whose **mothers were exposed to pesticides** at work while pregnant have double the risk of developing **childhood leukemia**, according to a recent study. (“Mom's pesticide exposure

at work increases her child's leukemia risk,” by Negin P. Martin, Ph. D., and Kim Harley, Ph.D., Environmental Health News, June 17, 2009; www.environmentalhealthnews.org/ehs/newscience/moms-pesticide-contact-at-work-increases-childs-leukemia-risk; original report: Wigle, D.T., M.C. Turner and D. Krewski, 2009. A systematic review and meta-analysis of childhood leukemia and parental occupational pesticide exposure. Environmental Health Perspectives doi:10.1289/ehp.0900582)

A May 2009 teleconference organized by the Collaborative on Health and the Environment suggested that environmental stressors can affect metabolism, leading to inflammation, oxidative stress and changes in insulin signaling, which can then cause diabetes, obesity, cardiovascular disease and lipid abnormalities. Dr. Bruce Blumberg of the University of California, Irvine, and coworkers have suggested an “**obesogen hypothesis.**” Obesogens are “chemicals that inappropriately stimulate adipogenesis and fat storage...and contribute to the **obesity epidemic.**” Examples may include chemicals in **pesticides, plastics and flame retardants.** Exposing rats to chronic, low amounts (similar to amounts people commonly encounter) of the common herbicide atrazine, for example, decreases their metabolism, adds fat and weight, and increases their insulin resistance. A high-fat diet amplifies these effects. Likewise, tests by the Centers for Disease Control show that people with high amounts of persistent organic pollutants in their blood suffered from diabetes more frequently than those with low levels of these chemicals. Teleconference participants suggested adopting the Mediterranean diet (eating mostly plant foods, with whole grains, fish and olive oil, and minimizing processed food and red meat); avoiding exposure to toxic chemicals; and exercising. (“Is the Environment Making Us Fat and Sick?” by Shelby Gonzalez; www.healthandenvironment.org/articles/doc/6145)

New Brunswick is banning the use and sale of 200 lawn-care pesticides representing some 70 percent of retail cosmetic pesticides that are available to homeowners and are commonly overused. Some exemptions will exist for agriculture, forestry and golf courses. The ban will take effect this fall and will include products for domestic lawns containing 2,4-D; combination fertilizer and pesticide products; granular spreadable weed killers; hose-end spray products; and lawn care pesticides that homeowner must measure, mix or dilute. (“Sale and use of 200 pesticides to be banned in N.B.,” CBC News, June 18, 2009; www.cbc.ca/consumer/story/2009/06/18/nb-pesticide-ban-210.html#socialcomments)

According to the Maine Board of Pesticides Control, more than 6 million pounds of lawn care pesticides were used in Maine in 2007, nearly eight times more than in 1995. The use of pesticides threatens the health of children and pets—and pollutes waters, as storm water carries these chemicals downstream. **Friends of Casco Bay** sampled 19 storm water sites in neighborhoods from Cape Elizabeth to Harpswell and **detected six toxic pesticides in local waters:**

- 2, 4-D: Banned in five countries, this herbicide is toxic to aquatic invertebrates and may be linked to non-Hodgkins lymphoma in humans,
- Clopyralid: an herbicide linked to birth defects in animals
- Diazinon: Banned from being sold to U.S. consumers but still legal for use, this insecticide has a high aquatic toxicity and is linked to reproductive problems.
- Dicamba: Found in groundwater throughout the United States, this herbicide is toxic to fish and zooplankton.

- MCPP: This herbicide is highly toxic to bay shrimp.
- Propiconazole: This fungicide is a possible carcinogen. [SEP] [SEP]

To learn about alternatives, such as using beneficial nematodes against grubs, visit <http://friendsofcasco bay.org/bayscaping.aspx>. (Friends of Casco Bay, email, June 5, 2009)

Seventy-one of 94 samples of **infant formula bought in Canada** were contaminated with traces of **melamine**, a kidney toxin—possibly a breakdown product of the insecticide cyromazine. Concentrations were below the 0.5 micrograms per gram set by Health Canada for infant formula. Melamine was also in most of the 19 samples of soy-based formula that Health Canada tested. (“Pesticide may seed American infant formulas with melamine,” by Janet Raloff, June 3, 2009, Science News, www.sciencenews.org/view/generic/id/44307/title/Pesticide_may_seed_American_infant_formulas_with_melamine)

Studies have reported excess risks of **pancreatic cancer** related to exposure to organochlorines such as DDT. Now the National Cancer Institute, in studying 57,000 private, licensed pesticide applicators and some 32,000 wives of applicators, all living in Iowa or North Carolina, has linked the disease to the **weed killers** pendimethalin and EPTC—possibly because both weed killers can form N-nitroso compounds, which are suspected human carcinogens affecting tissues, including the pancreas. Pendimethalin is sold in "weed and feed" products such as Scott's Hyponex and under brand names including Accotab, Go-Go-San, Herbadox, Magic Carpet, Penoxalin, Prowl, Sipaxol, Stomp and Way-Up. EPTC is sold under brand names including Eptam, Powerplay, Doubleplay and Eradicane. (Pesticide Action Network North America news update, June 11, 2009; www.panna.org; “Pancreatic cancer linked to herbicides; Some weed killers may need to be treated with more respect,” by Janet Raloff, Science News, May 28, 2009; www.sciencenews.org/view/generic/id/44163/title/Pancreatic_cancer_linked_to_herbicides_)

California beekeeper Gene Brandi has seen up to 40 percent of his **bees** vanish each year, apparently due to **Colony Collapse Disorder (CCD)**, but his bees that did not work a watermelon field treated with Bayer CropScience’s insecticide **imidacloprid** didn’t succumb to the disorder. The National Honeybee Advisory Board has asked the EPA to ban imidacloprid, after hearing many similar stories about bee deaths after exposure to the insecticide (and the related Bayer product, clothianidin). Bayer scientists themselves found enough imidacloprid in the nectar and pollen of treated flowering trees and shrubs to kill a honeybee in minutes, yet Bayer denies that its pesticides cause CCD. Imidacloprid (sold under such trade names as Gaucho, Confidor and Admire) and clothianidin contain nicotine and chlorine, which attack insects’ nervous systems. Imidacloprid can persist in plants for more than a year. It is used on more than 140 crop varieties worldwide and against termites, in flea collars, in home landscaping and on golf courses. Its patent has expired, so smaller companies can now sell it as a generic insecticide. Entomologists believe that while these pesticides may play a role in CCD, other factors are probably involved as well. Meanwhile, the European beekeeping group Apimondia said in April that its industry could be eliminated in less than a decade due to disease, insecticides and intensive farming. Last year, about 30 percent of European hives died, and losses reached 80 percent in southwest Germany. Insecticides and the parasitic Varroa mites are thought to weaken hives there, which then become susceptible to other diseases. (“Pesticides indicted in bee deaths,” by Julia Scott, May 18, 2009;

www.salon.com/env/feature/2009/05/18/bees_pesticides/; “Group Sounds Alarm on European Bee Industry,” Reuters, April 28, 2009;
www.nytimes.com/2009/04/28/world/europe/28bees.html)

On May 12, the U.S. EPA confirmed its 2008 ruling that **carbofuran residues will no longer be allowed on domestic or imported food**. Infamous for killing millions of birds worldwide, the acutely toxic insecticide is also contributing to the decline of salmon in the Pacific Northwest. It is highly toxic to mammals, including people. A 60 Minutes program reported on March 29 that Furadan, FMC's brand of the pesticide, is used illegally by Kenyan herders to kill lions. Carbofuran's active ingredient, also called furadan, can still be produced at the Bayer CropScience plant in Institute, West Virginia. Carbofuran is a classic example of the "Circle of Poison," wherein products banned or restricted for use in their country of origin are still exported and may return on imported foods. Carbofuran is commonly used in coffee production in Costa Rica and on bananas, rice and sugar cane in many developing countries. (Pesticide Action Network North America News, May 14, 2009; www.panna.org)

Herbicides can drift as far as a mile on a calm morning, according to Eric Webster, Louisiana State University AgCenter weed specialist. While wind may not be detected at ground level, it may exist a few feet above ground. "The worst times are when the wind is zero to 2 miles an hour," Webster said. "That's when you get those inversion layers built up." A field surrounded by tall vegetation increases the variation of wind direction. Using a ground sprayer can help avoid drift, but it is not a guarantee. Last year, he said, drift from an airplane was evident on rice 150 yards away, but the highest concentration was a mile away. (“Herbicide drift can occur in calm weather,” by Bruce Schultz, winter 2009, Louisiana Agriculture; www.lsuagcenter.com/en/communications/publications/agmag/Archive/2009/winter/Herbicide+drift+can+occur+in+calm+weather.htm)

Research by Argentinean embryology professor Dr. Andres Carrasco shows that low concentrations of the pure herbicide **glyphosate (the active ingredient in Roundup)** may cause **brain, intestinal and heart defects in fetuses**. Carrasco exposed amphibian embryos to the herbicide and said the results are comparable to what would happen in developing human embryos. He said the herbicide “could be interfering in some normal embryonic development mechanism having to do with the way in which cells divide and die.” An article in the Argentine press says that after Carrasco discussed his study, four men arrived at his laboratory and aggressively demanded to see his work. Carrasco also said he received offensive phone calls and that his research has been disparaged in newspapers linked to agribusiness. (Organic Bytes, Organic Consumers Assoc., April 29, 2009; www.organicconsumers.org; “Herbicide Used in Argentina Could Cause Birth Defects,” Latin American Herald Tribune, April 13, 2009; <http://www.laht.com/article.asp?CategoryId=14093&ArticleId=331718>; “Scientist Warning of Health Hazards of Monsanto's Herbicide Receives Threats,” GM Watch, April 27, 2009)

“Inert” ingredients found in Roundup can kill human embryonic, placental and umbilical cord cells, even at concentrations much lower than those used on farms and lawns. The ingredient polyethoxylated tallowamine (**POEA**) was deadlier to human embryonic, placental and umbilical cord cells than the herbicide itself, say scientists from France’s University of Caen. The research suggests that Roundup may affect hormones, and thus possibly cause pregnancy

problems and problems with fetuses. Used as a surfactant, POEA comes from animal fat and is allowed in some certified organic products. The EPA says it is not dangerous to human health. In the French study, glyphosate (the active ingredient in Roundup), POEA and four Roundup formulations all harmed three cell types, and umbilical cord cells were especially sensitive to POEA. POEA was more harmful than glyphosate alone, and it increased the effects of glyphosate when the two were combined. Monsanto debates the validity of the study. (“Weed killer kills human cells. Study intensifies debate over 'inert' ingredients,” by Crystal Gammon, Environmental Health News, June 22, 2009; <http://www.environmentalhealthnews.org/ehs/news/roundup-weed-killer-is-toxic-to-human-cells.-study-intensifies-debate-over-inert-ingredients>; original report in Chemical Research in Toxicology, January 2009.)

Korean researchers, noting an overlap in U.S. locations where the herbicide **atrazine** is heavily used and locations where **obesity** is prevalent, studied the effects of chronic exposure to low concentrations of atrazine on rats. Treated rats had decreased basal metabolism and greater body weight, intra-abdominal fat and insulin resistance than control rats. A high-fat diet exacerbated insulin resistance and obesity. Mitochondria were affected, causing decreased oxygen consumption. Previous studies using higher doses of atrazine did not find these effects—possibly because acute exposure to the herbicide at high concentrations is toxic and prevents weight gain, say the authors. They believe that humans may be exposed to atrazine or its metabolites through air, water and and/or corn products (e.g., high fructose corn syrup or corn oil), and the contaminants can accumulate in tissues. (Lim S., et al., 2009, “Chronic Exposure to the Herbicide, Atrazine, Causes Mitochondrial Dysfunction and Insulin Resistance,” PLoS ONE 4(4): e5186. www.plosone.org/article/info:doi/10.1371/journal.pone.0005186)

Food Safety?

Food safety czar Michael Taylor has gone through the revolving door again. A lawyer and former Monsanto executive, Taylor has been named “senior advisor to the commissioner” of the FDA, charged with implementing new food safety legislation. Taylor was, among other positions, deputy commissioner for policy at FDA when Monsanto’s recombinant Bovine Growth Hormone was approved for dairy cows; and vice president for public policy at Monsanto. (“Monsanto’s man Taylor returns to FDA in food-czar role,” by Tom Philpott, Grist, July 8, 2009; www.grist.org/article/2009-07-08-monsanto-FDA-taylor/)

Legislation

Maine’s 124th Legislature on Organic Farming and Gardening

By Heather Spalding

The first session of Maine’s 124th Legislature had our state’s economic health at the forefront of its activities. Going into the session, most policy advocates understood that bills with fiscal notes attached were likely going nowhere. While we believed that promoting healthy, local, organic foods could only benefit the economic health of Maine, we were prepared to focus on bills with little or no immediate financial implications for the state.

Members of the Joint Standing Committee on Agriculture, Conservation and Forestry (ACF), chaired by Sen., John Nutting, D-Leeds, and Rep. Wendy Pieh, D-Bremen, had a huge slate of agricultural legislation to consider. Despite some challenging and complicated bills and debates, this was, overall, a successful session. We appreciate the leadership and support from the ACF, and are especially impressed by the dedication, creativity and vision shown by freshmen legislators Jeff McCabe, D-Skowhegan, Andy O'Brien, D-Lincolnton, and Peter Kent, D-Woolwich, and the continued support of Ben Pratt, D-Eddington, Nancy Smith, D-Monmouth, and Leila Percy, D-Phippsburg. **We also are grateful to Rep. Seth Berry, D-Bowdoinham, who sponsored the successful and pioneering pesticides notification bill.**

For the first time in many years, MOFGA took the lead on several bills presented to the ACF. We increased our presence in Augusta and dedicated more time in the Capitol. We contracted with Logan Perkins, who had spent the past couple of years lobbying against the proliferation of genetically engineered (GE) organisms in Maine agriculture and is now in law school in Oregon. She did a wonderful job. We miss her, wish her the best, and hope she returns to Maine in three years!

We also led on a major bill of Maine's Environmental Priorities Coalition—a group of 27 conservation and public health organizations representing more than 100,000 members in Maine. The Coalition's Common Environmental Agenda included seven priorities: to clean up Maine rivers, prevent exposure to dangerous chemicals, build greener energy and transportation systems, create a legacy for today and future generations, and prevent rollbacks on any existing environmental regulations. MOFGA's role in the Coalition was to organize constituents around LD 1293: An Act To Require Citizen Notification of Pesticide Applications Using Aerial Spray or Air-carrier Application Equipment.

Below is a recap of the legislative session.

New Laws/Rules That MOFGA Supports

LD 708: An Act To Create a Moratorium on the Open-air Production of Genetically Engineered Pharmaceutical Crops in Maine. **Description:** This bill defines "pharmaceutical or industrial crop" and restricts production to indoor laboratory and research settings to prevent release of GE material from these crops. It requires the Commissioner of Agriculture, Food and Rural Resources to monitor and report changes in federal regulation of these crops. **Significance:** Maine led in establishing environmental and human health protections for farmers, gardeners and consumers. This law places a three-year moratorium on biopharmaceutical/industrial GE crops grown outdoors. It also protects our agricultural economy. Genetic contamination could devastate farmers, food processors and manufacturers, harming both domestic and overseas markets. These industries are proven economic drivers in our state. Maine products fetch a premium in the marketplace due to our reputation for quality, safe, healthy food. We should keep it that way. We all want safe, effective, lower-cost drugs. More than 100 new drugs have been developed using biotech techniques in contained, controlled facilities, but not one from 14 years of biopharm crop testing. We can have the benefits of biotechnology in drug and chemical production without undue risk.

LD 965: An Act To Establish Annual Reporting for Genetically Engineered Crops. **Description:** This bill requires a manufacturer to report annually to the Commissioner of Agriculture, Food and Rural Resources an estimate of the potential acreage of GE crops that could be planted based on sales. **Significance:** This reporting will provide policymakers with baseline information and the ability to track trends in the use of this technology. Currently, no data exist to show how much or what kind of GE crops are grown in Maine. Farmers, consumers and policymakers need this basic information to make good decisions. This technology has been debated in Maine for more than 10 years, and the Department of Agriculture has never presented policymakers with this basic information.

Appropriations Bill: Dairy Funding. **Description:** The Appropriations Bill changed the formula for dairy price support. Because of low dairy prices and high support payments, the Legislature approved changes that will limit the amount of money paid to dairy farmers over the next two years. **Significance:** MOFGA deferred to the Maine Organic Milk Producers and other farmers who supported a system that maintained payments as high as possible as long as possible. The Legislature passed a changed funding formula and established a study commission to look at options for the future.

LD 1460: Resolve, Regarding Legislative Review of Portions of Chapter 41: Special Restrictions on Pesticide Use, a Major Substantive Rule of the Department of Agriculture, Food and Rural Resources, Board of Pesticides Control. **Description:** This bill added certain restrictions to crops that contain plant incorporated protectants. **Significance:** We were dismayed that the Board chose to approve GE Bt sweet corn for commercial production before the Board's Medical Advisory Committee had adequate time to review it and make a decision. Maine farmers have planted GE Bt sweet corn for sale and consumption this year.

LD 495: Resolve, Regarding Legislative Review of Portions of Chapter 10: Definitions and Terms, a Major Substantive Rule of the Department of Agriculture, Food and Rural Resources, Board of Pesticides Control. **Significance:** The Board of Pesticides Control (BPC) established the concept of a "Sensitive Area Likely To Be Occupied" (SALO). This presents an important distinction among areas in which pesticide spraying and drift should be avoided. "Sensitive Areas" are areas where pesticides shouldn't drift. "SALOs" are areas where pesticides shouldn't drift because people are in them. The BPC used this term in proposed amendments to another rule (see next summary) and is considering using it in proposed amendments to its spray notification rule in the next legislative session.

LD 494: Resolve, Regarding Legislative Review of Portions of Chapter 22: Standards for Outdoor Application of Pesticides by Powered Equipment in Order To Minimize Off-target Deposition, a Major Substantive Rule of the Department of Agriculture, Food and Rural Resources, Board of Pesticides Control. **Significance:** Passage of this resolve establishes better protections for people concerned about pesticides drifting onto their properties. The amendments add specificity about what applicators must do ensure familiarity with sensitive areas in the spray zone. They also establish stricter standards for aerial spray applications including: positive identification of the target site; site plan requirements; and a site-specific application checklist. The ACF rejected a proposed 200-foot buffer zone around SALOs, opting instead for site-specific buffer zones around SALOs sufficient to prevent unlawful pesticide drift. In other

words, the buffer could be more or less than 200 feet, depending on the site. MOFGA advocated for establishing a clear and consistent buffer zone and pointed out that 200 feet should be an absolute minimum. The ACF expressed unanimous concern about the existing evidence of drift rule, which allows 20 percent of an intended application rate to fall on a neighboring property without violation. MOFGA supported the BPC's recommendation to shift the policy to any detectable residue as evidence of drift, but the ACF majority voted for 1 percent detection. This is a vast improvement over 20 percent but, ironically, will result in much greater testing requirements and expense for the state than the proposed "detectable pesticide residue."

LD 1293: An Act To Require Citizen Notification of Pesticide Applications Using Aerial Spray or Air-carrier Application Equipment. **Description:** This bill requires land managers to notify neighbors before applying pesticides using aircraft or air-carrier equipment. It requires the BPC to establish a registry for persons desiring additional information when pesticides are being applied using aircraft or air-carrier equipment within 1,320 feet of land owned, leased or resided upon by those persons. **Significance:** This common sense, right-to-know law will help Maine citizens learn about and protect themselves from pesticides that may drift onto their properties. Under existing rules, Maine citizens seeking that information have to make the initial effort to determine who owns the land being sprayed, and then request information from the landowners. LD 1293 puts the onus of initial notification on the persons causing the spray to happen. This law also will help protect Maine citizens from drift from air carrier (air blast) applications of pesticides. This was a priority bill of Maine's Environmental Priorities Coalition. A special thank you goes to Rep. Seth Berry, D-Bowdoinham, who sponsored the bill, to Rep. Andy O'Brien, D-Lincolntonville, who offered important amendments that strengthened and clarified the bill for advocates on all sides, to Peter Edgecomb, R-Caribou, who offered a motion leading to unanimous support from the Joint Standing Committee on ACF, and to all the members of the ACF who carefully considered the interests of different farmers, gardeners and the general public. This is a precedent-setting bill for other states across the nation!

LD 692: Resolve, Directing the Commissioner of Agriculture, Food and Rural Resources To Develop Best Management Practices for Poultry Production. **Description:** This resolve directs the Commissioner of Agriculture, Food and Rural Resources to develop best management practices for poultry production and adopt rules to allow the Maine Quality trademark to be used on poultry products. **Significance:** This is a first-level attempt to improve the welfare of chickens raised for egg production. It also seeks to leverage the use of the Maine Quality seal to indicate that farmers using the seal meet a higher humane management standard. Proposed standards still need to be developed and put out for public comment. We will follow this closely.

LD 1034: An Act To Create Regulatory Exemptions for Poultry. **Description:** This bill allows a poultry producer to sell uninspected poultry at the producer's farm, at farmers' markets, or to members of the producer's CSA. It also allows a producer to deliver the poultry to a customer's home. It establishes labeling requirements for uninspected poultry. **Significance:** Maine has extremely limited processing facilities for poultry, making it difficult for producers to have birds slaughtered and taken to market. For producers with fewer than 1,000 birds, it is logistically challenging and can be cost prohibitive to take birds to a licensed poultry processing plant. This law, while requiring producers to meet standards for physical facilities and sanitary processes, will make it much easier for small scale producers to bring their poultry to market. Compliance

regulations include: obtaining a license from the Department of Agriculture, Food and Rural Resources, which would be allowed to inspect the facility at the time of licensing and periodically thereafter; labeling whole birds through the point of sale with the producer's name and name and address of the farm, as well as safe handling instructions; and keeping records of and labeling each bird with the lot number of the processing event and point of sale of that lot. This system of labeling, record keeping and local sales creates a traceable and safe local food system. Producers have an enormous incentive to deliver a clean, safe, quality product to the consumer because their reputation, and ultimately their business, is at stake. Consumers have the right to make an educated and clear choice about where their food comes from and how it is produced.

LD 557: Resolve, Directing the Department of Agriculture, Food and Rural Resources To Study Potential Uses of a Potato Plant That Is Toxic to the Colorado Potato Beetle. **Description:** This resolve directs the Department of Agriculture, Food and Rural Resources to examine potential uses of a locally developed potato plant that is toxic to the Colorado potato beetle, a significant pest of potato crops. Before conducting the study, the department must obtain the appropriate approval, names or other legal permission from the developer. The department shall report its findings and recommendations to the Joint Standing Committee of the ACF by Dec. 15, 2009. **Significance:** Many MOFGA farmers are very interested in varieties that have potential to repel Colorado potato beetles. The Prince Harry variety, developed by Cornell, has demonstrated strong resistance. Finding another with commercial potential would be a big step forward for Maine's potato industry. If the variety also meets the needs and standards of our major processors, it could help the entire industry. Developing this product also fits the parameters of the Maine Technology Institute's Seed Grant program for new product commercialization. MOFGA supported this legislation with one caveat—that the potato variety is not a remnant of, or cross with, the GE New Leaf potato, a restricted propriety variety.

LD 1159: An Act Relating to Industrial Hemp. **Description:** This bill allows a person to grow industrial hemp if that person holds a license issued by the Commissioner of Agriculture, Food and Rural Resources, and the hemp is grown under a federal permit in compliance with the conditions of that permit. Except for employees of the Maine Agricultural Experiment Station and the University of Maine System involved in research and related activities, a criminal history record check must be completed on an applicant for licensure. A person with a prior criminal conviction is not eligible for licensure. Industrial hemp is subject to being tested during its growth, and growing and harvesting industrial hemp is subject to supervision. **Significance:** Seven of the eight G8 countries produce and export industrial hemp; only the United States does not. Allowing Maine farmers to grow industrial hemp under a license from the Commissioner of Agriculture, Conservation and Forestry and under a federal permit would give Maine farmers one more crop with which to diversify their farms. The industrial hemp crop is relatively environmentally friendly to grow and has many potential uses that fit with Maine's increasing interest in producing healthful, organic grains and oils and in fabricating biologically-based products, such as bioplastics.

LD 1140: Resolve, Directing the Department of Education and the Department of Agriculture, Food and Rural Resources To Convene a Work Group To Strengthen Farm-to-school Efforts in the State. **Description:** This resolve requires the Departments of Education and of Agriculture,

Food and Rural Resources to convene a work group consisting of agencies, groups and organizations involved in supporting Maine agriculture, public health, the environment and the Maine economy to study farm-to-school initiatives and programs in Maine and develop recommendations for strengthening Maine's farm-to-school efforts. **Significance:** This Resolve basically blessed the work of the Maine Farm to School Work Group. The group's duties include: assessing the status of regional and statewide farm-to-school efforts throughout Maine, including policies, practices and curricula; reviewing barriers to purchasing and using local products; reviewing the networking channels that connect Maine's farm-to-school efforts; reviewing best practices and evaluating methods from out-of-state farm-to-school programs; and preparing recommendations for strengthening Maine's farm-to-school initiatives and programs. The group believes this will advance Maine's farm-to-school efforts and will help get healthier local produce into our schools while supporting local farms.

LD 1133: An Act To Implement the Recommendations of the Commission To Study the Protection of Farms and Farmland. **Description:** This bill establishes a process for voluntarily designating "Farming for Maine" farms. The Commissioner of Agriculture may establish a pilot program to examine the effectiveness of agricultural districts in keeping farmland in agricultural production and enhancing the profitability of farming. "Pilot program" means an agricultural districts program that allows farmers to propose that the department designate their farmland as an agricultural district where commercial agriculture is encouraged and farmland is protected through collaborative state and local efforts. **Significance:** Maine has preserved about 2 percent of its farmland through easements. This law will encourage farmers to join together to create voluntary agricultural districts, and will try to give the farmers special recognition and incentives in return. Unfortunately, financial incentives will be limited while the state budget is under pressure.

Bills That Failed or Died in Committee

LD 804: An Act To Ensure the Integrity of Organic Agricultural Crops. **Description:** This bill would have required all producers engaged in organic crop production to file an organic system plan within 30 days of planting. The plan would have included evidence that sufficient buffer zones were incorporated into the operation to ensure the integrity of the organic crop operation. If the Commissioner of Agriculture, Food and Rural Resources were to find that an organic system plan did not provide evidence of sound measures to ensure the integrity of the organic crop operation, the Commissioner would have been authorized to report inadequate buffer zones to the USDA National Organic Program. If the commissioner found that a farmer using GE plant parts, seeds or plants was not using best management practices or that the organic system plan filed by a producer did not ensure the integrity of the organic crop operation, the commissioner would be directed to recommend best management practices to the farmer or the producer. **MOFGA stance:** This was a mischief bill that attempted to insinuate the Maine Department of Agriculture into the already complex process of organic certification. At its heart was the idea that organic farmers should have to prevent the drift of genetic material or pesticides onto their property by establishing large buffers. MOFGA identified nine specific objections to the bill, but the bill was intended to muddy the waters for organic growers by creating unenforceable guidelines and putting an unnecessary burden of proof on growers who don't use pesticides or GE organisms. **What happened:** The bill died quickly in Committee.

LD 1202: An Act To Establish a Farmer's Rights in an Investigation of Intellectual Property Theft of Genetically Engineered Material. **Description:** This bill would have provided for a process by which a manufacturer of a GE plant part, seed or plant could investigate a violation of a technology use agreement and the rights of a farmer during an investigation. Further it would have created a right of action and damages for a private nuisance against a manufacturer of a GE plant part, seed or plant that cross-contaminates a person's land and limits the liability of knowing and unknowing users and possessors of a GE plant part, seed or plant. **MOFGA stance:** MOFGA supported LD 1202 and saw it as an important way to protect farmers in Maine from the kinds of legal conflicts that have accompanied the use of biotech crops in other states. Through 2007, Monsanto filed more than 112 lawsuits against farmers in 29 states and maintains an annual budget of more than \$10 million and a fulltime staff of 75 dedicated to investigating and prosecuting farmers. While none of those lawsuits have been filed in Maine yet, given the proliferation of this technology, including the recent licensing of Bt field and sweet corn in Maine, these kinds of actions could be taken against Maine farmers. This bill was designed to protect Maine's farmers from unreasonable search and seizure, and to confine investigators to basic courtesies and fair practices. Giving notice, allowing a neutral party to observe the investigation, and providing for third-party verification of test results would ensure that investigations would be respectful, fair and accurate. **What happened:** The Legislature killed the bill when three versions were proposed: one that we supported, one we strongly opposed, and a third that made only minor changes to existing laws. The Legislature was unable to resolve the different perspectives.

LD 972: Resolve, Regarding Legislative Review of Portions of Chapter 28: Notification Provisions for Outdoor Pesticide Applications, a Major Substantive Rule of the Board of Pesticides Control. **Description:** The BPC presented amendments to Chapter 28 that would increase from 500 feet to 1500 feet the distance within which one may reside and request general and specific information about aerial spraying. The BPC also proposed to establish a Maine Aerial Pesticide Application Notification Registry for individuals wishing to receive advance notice of pending aerial applications. **MOFGA stance:** MOFGA supported this bill, while advocating for the much stronger LD 1293 (see above). **What happened:** The ACF Committee reviewed this resolve at the same time it considered LD 1293 and decided to go with the stricter provisions of LD 1293. LD 972 died in Committee.

LD 68: An Act Regarding the Composition of the Board of Pesticides Control. **Description:** This bill would have added a representative of a statewide organization of organic farmers and gardeners to the Department of Agriculture, Food and Rural Resources, Board of Pesticides Control. It also would have increased from four to five the number of members that constituted a quorum. **MOFGA stance:** While MOFGA appreciated the gesture from bill sponsor Sen. Nutting, D-Leeds, chair of the ACF Committee, we believed that it was more important to fill the existing, almost two-year vacancy in one of the environmental expertise seats. We expressed reservations about increasing the size of the Board, which could complicate decision-making. **What happened:** The bill died in Committee.

LD 559: An Act To Update the Board of Pesticides Control. **Description:** This bill proposed to clarify and make consistent language describing qualifications for BPC members. It also

proposed to require that the commercial applicator member have expertise in structural pest management. Finally, it would have prohibited the BPC from advocating for or against nominees to the BPC. **MOFGA stance:** We believed that the bill was unnecessary and unconstitutional. **What happened:** The bill died in Committee.

LD 1294: An Act To Amend the Laws Governing the Public Hearing Process for the Board of Pesticides Control. **Description:** This bill would have required that the BPC hold a public hearing on the application for registration of certain pesticides and on the application for registration of a product that contains a plant-incorporated protectant (PIP). **MOFGA stance:** While MOFGA regularly advocates for freedom of information, we recognize that holding a public hearing for some 2,500 products annually would create an unrealistic burden and exorbitant expenses for the BPC. We suggested that, instead, the BPC hold public hearings for restricted use chemicals and for PIPs up for new or re-registration. Generally, the BPC does hold a public hearing when companies apply to register PIPs. **What happened:** The bill died in Committee.

LD 351: An Act Regarding the Regulation of Agricultural Composting Operations. **Description:** This bill would have required commercial agricultural composting operations to register with the Department of Agriculture, Food and Rural Resources, and directed the Commissioner of Agriculture, Food and Rural Resources to adopt rules concerning best management practices for commercial agricultural composting operations. It would have authorized the commissioner or the commissioner's designee to enter the premises of a commercial agricultural composting operation to inspect it for compliance with best management practices. It would have removed commercial agricultural composting operations from regulation by the Department of Environmental Protection (DEP) as waste facilities but would not have exempted commercial agricultural composting operations from state or federal environmental laws. **MOFGA Stance:** Legislative attempts to move regulation of commercial composting operations from the DEP to the Department of Agriculture have been underway for several years. MOFGA is most concerned about environmentally responsible composting and strong enforcement when violations occur. Because this seemed to be centered on a conflict around one compost facility, MOFGA did not testify on the bill. We continue to support efforts to help create more composting facilities in Maine. **What happened:** The bill died in Committee.

LD 75: Resolve, Directing the Department of Agriculture, Food and Rural Resources To Streamline Agricultural Regulation. **Description:** This resolve would have directed the Department to review regulatory processes affecting agricultural businesses and to examine the feasibility of developing a one-stop, streamlined regulatory process and publicly accessible Web site portal. **MOFGA stance:** While we supported the concept, the cost of this project makes it infeasible right now. **What happened:** The bill died in Committee.

Bills Carried Over to the Next Session

Natural resource agencies consolidation: **Description:** The Legislature considered three proposals for merging or rearranging the four natural resource agencies. The Governor proposed putting all four into one; another would have merged Inland Fisheries and Wildlife and Marine Resources; a third would have moved Forestry from Conservation to Agriculture. **MOFGA**

stance: We opposed the specific proposals because none would provide overall focus to the natural resource sector. **What happened:** The Legislature held over one bill as a vehicle to continue these discussions in the next session.

LD 628: An Act To Allocate Prospective Federal Funding To Support Maine's Dairy Industry.

Description: This bill, an emergency measure, proposes to allocate prospective federal funding to support Maine's dairy industry. **MOFGA stance:** We viewed this bill as a placeholder in case federal policy changed and led to funding. **What happened:** This bill was held over in case federal dairy policy changes during the coming year.

LD 1238: An Act Concerning the National Animal Identification System. **Description:** This bill would require the Commissioner of Agriculture, Food and Rural Resources to adopt rules to implement a national animal identification system ONLY if federal law makes the system mandatory, and the rules should inform farmers of their right to opt out of the system if the system has an opt-out provision. If the national identification system is voluntary, this bill prohibits the commissioner from forcing participation in the system, withholding indemnity from a person who does not participate in the system or denying or revoking permits, licenses, services, grants or other benefits or incentives to a person who does not participate in the system. The bill prohibits a municipality or political subdivision from enacting or maintaining an ordinance requiring participation in an animal identification system except to conform to a state requirement, and prohibits the commissioner from disseminating any confidential information to the national animal identification system unless to prevent or control a disease or to protect the public health, safety or welfare. This bill does not prohibit the Commissioner of Agriculture, Food and Rural Resources from participating in a disease control program or implementing an animal identification system or prohibit a private agricultural industry organization from establishing a voluntary source verification program. **MOFGA stance:** MOFGA supported this bill as a way to limit the Department's ability to force an NAIS system unless federally-mandated. **What happened:** Because USDA announced a series of public hearings on NAIS around the country to review the program, the bill was held pending a decision about the program's continuance.

LD 1239: An Act To Establish a Revenue Source for the Maine Pesticide Education Fund.

Description: This bill would establish a 15¢ per container fee on the retail sale of pesticides. The proceeds of the fee would be deposited in the Maine Pesticide Education Fund, which is used to fund the Integrated Pest Management Fund, the Board of Pesticides Control and the University of Maine Cooperative Extension for pest management education programs. **MOFGA stance:** We have supported this approach to supplementing funding for these important state bodies. **What happened:** This bill was carried over.

LD 993: An Act To Implement the Recommendations of the Commission To Study the Protection of Farms and Farmland Pertaining to Taxation. **Description:** This bill would provide that amounts used to demonstrate eligibility under farm and open space tax laws would be from the sale of agricultural products as defined in the Maine Revised Statutes, Title 7, section 152. It also would provide for towns to be reimbursed 90 percent of the revenue lost for farmland classified under the farm and open space tax laws. It also would provide a transferable income tax credit for voluntary contributions of farmland for conservation and for conservation easements of

farmland that qualify as charitable donations under the federal income tax. The credit would be equal to 15 percent of the value of the donation up to \$250,000 for corporate donors and \$100,000 for other donors. The credit would be refundable up to 20 percent per year. **MOFGA stance:** Russell Libby served on the Task Force that created these recommendations, and we generally support their enactment. **What happened:** The bill was carried over because of its potential fiscal impact. It may be narrowed before a final decision is made during the second session.

Winter 2009-2010

Good News

In the wake of H. P. Hood's surprise pullout of the organic milk market in Maine, 10 Maine organic dairy farmers formed their own brand, **Maine's Own Organic Milk** (MOO Milk, <http://MainesOwnOrganicMilkCompany.com>), with help from MOFGA, Maine Farm Bureau and the Maine Department of Agriculture. Stonyfield Farms provided some startup funds. MOO Milk is trucked by Schoppee Milk Transport to Smiling Hill Farms in Westbrook, where it is processed; then it's distributed by Oakhurst Dairy and Crown of Maine Coop to Hannaford and independent stores in Maine and New Hampshire. The milk, available in half-gallon cardboard cartons, is pasteurized (but not ultrapasteurized) and homogenized. When fully operational, the farms will be paid a base price of \$24/cwt. a week after they ship milk and an additional payment the month following shipment after all expenses have been paid, with a long-term goal of \$40/cwt. In all, 90 percent of profits will go directly to the farms. The remaining 10 percent will be used for expansion, maintenance and balancing cash flow. ("Farm Bureau, MOFGA, get MOOMilkCo off to a good start," by David Bright, Maine Farm Bureau e-Newsletter, Oct. 2009)

The **Maine School Garden Network's (MSGN)** Educators' Resource Tent was a new feature at MOFGA's 2009 Common Ground Fair. The recently re-organized MSGN worked with MOFGA's educational programs director Andrew Marshall, UMaine Cooperative Extension, and others to create a center for educators to get ideas about bringing information and inspiration from the Fair back to the classroom. Located at the school group entrance on Friday, the tent was well received by fairgoers and provided a place for home-schooling parents, educators and leaders of educational food system initiatives to meet and share resources. MSGN publicized its Web site, www.msgn.org, which it redesigned through funds from Maine Agriculture in the Classroom Grants—funding resulting from the Maine agricultural license plate program. The site enables educators, school nutrition workers and students to connect, ask gardening and coordinating questions, register their gardens, and learn about resources ranging from grants to curriculum. The MSGN is promoting youth educational gardening and healthy eating initiatives, encouraging farm to school connections, and developing a coalition of organizations to support these efforts. Educators and interested organizations and individuals are invited to visit the site or email info@msgn.org for more information.

The **USDA** took several actions this fall to **promote organic agriculture**. Agriculture Secretary Tom Vilsack announced \$230,000 in funding for studies to assess the capacity of the Northeastern United States to produce enough food locally to meet market demands. This is part of USDA's "Know Your Farmer, Know Your Food" initiative to connect people more closely

with farmers who supply their food, and to increase the production, marketing and consumption of fresh, nutritious food that is locally and sustainably grown. (USDA Agricultural Research Service press release, Sept. 17, 2009)

On October 30 in Portland, Maine, Agriculture Deputy Secretary **Kathleen Merrigan announced more than \$19 million in grants to U.S. universities to solve critical organic agriculture issues**—including \$1.3 million, one of the largest grants, to the University of Maine.

"Organic agriculture is one of the fastest growing segments of U.S. agriculture and USDA and Congress, through the 2008 Farm Bill, are committed to helping this industry succeed by addressing critical organic agriculture issues through the integration of research, education and extension projects," Merrigan said. "These grants are an important part of USDA's new "Know Your Farmer, Know Your Food" initiative," said Merrigan. (See www.usda.gov/knowyourfarmer)

Merrigan announced the funding at Jim Amaral's Borealis Breads, where representatives from the University of Maine, which is researching producing quality organic bread wheat, joined her.

In addition to several awards to agricultural universities, \$46,281 went to the Organic Seed Alliance of Port Townsend, Washington, which is helping save and improve the seed resources on which organic farmers depend.

For more information, visit www.nifa.usda.gov.

Vilsack announced that **Miles McEvoy will head the National Organic Program (NOP)**, which will become an independent program area within the Agricultural Marketing Service. McEvoy has overseen Washington state's organic certification program since 1988.

Vilsack also appointed five **new members to the National Organic Standards Board (NOSB)**: Joe Dickson of Whole Foods Market; Jay Feldman of Beyond Pesticides; John Foster of Earthbound Farms; and organic farmers Wendy Fulwider of Wisconsin and Annette Riherd of Oklahoma. The NOSB makes recommendations to the NOP. (Organic Farming Research Foundation, SCOAR Bulletin, Sept. 25, 2009; www.ofrf.org)

Molly Jahn, dean of the University of Wisconsin-Madison College of Agricultural and Life Sciences (CALS), was **appointed USDA deputy undersecretary of research, education and economics**. As a professor of plant breeding and genetics and plant biology at Cornell University from 1991-2006, Jahn bred vegetable varieties used around the world and identified genes responsible for important crop traits. She directed the Public Seed Initiative and the Organic Seed Partnership, an outreach activity based on an alliance of public sector researchers, seed companies and nonprofit groups that worked to improve the use of public plant varieties and promote genetic diversity.

USDA ordered an **audit of the National Organic Program** to improve its transparency and the integrity of the USDA organic label. (Organic Farming Research Foundation Policy Update, Sept. 14, 2009; www.ofrf.org)

On the other hand, Vilsack appointed **Roger Beachy as director of the National Institute of Food and Agriculture (NIFA)**, formerly the USDA Cooperative State Research, Education and Extension Service (CSREES). Previously Beachy was president of the Danforth Plant Science Center in St. Louis, Mo., which is heavily invested in researching GE crops and seeds and has close ties with Monsanto Corporation. NIFA will house the Organic Agriculture Research and Extension Initiative and the Organic Transitions Research Program. Also nominated: Islam Siddiqui, VP of Science and Regulatory Affairs at CropLife America (which supports GE and synthetic chemical use in agriculture), for Chief Agricultural Negotiator for the U.S. Trade Representative's office. CropLife's regional partner, the Mid America CropLife Association, chided the First Lady for refusing to use pesticides on the White House garden. And former Monsanto lobbyist Michael Taylor was appointed senior adviser to the FDA Commissioner on food safety. Other bureaucrats with strong ties to the GE industry have also been appointed or nominated. ("Agriculture Secretary Vilsack Launches National Institute of Food and Agriculture, Announces Vision for Science and Research at USDA," press release, USDA, Oct. 8, 2009; www.nifa.usda.gov/newsroom/news/2009news/10081_nifa_launch.html; Organic Farming Research Foundation Policy Update, Oct. 15, 2009; www.ofrf.org; Organic Bytes, Organic Consumers Assoc., Oct. 15, 2009; www.organicconsumers.org; "And All We Get Is the White House Garden?" by Alexis Baden-Mayer, CommonDreams.org, Oct. 24, 2009; www.commondreams.org/view/2009/10/24-3)

In an **Organic Market Overview** released on Sept. 1, 2009, the USDA said that consumer demand for organically produced goods has shown double-digit growth for well over a decade. The USDA, using information from industry sources, said that U.S. sales of organic products were \$21.1 billion in 2008—over 3 percent of total food sales—and will reach \$23.0 billion in 2009, according to the Nutrition Business Journal. Produce accounted for 37 percent of U.S. organic food sales in 2008, followed by dairy (16 percent), beverages (13 percent), packaged and prepared foods (13 percent), bread and grains (10 percent), snack foods (5 percent), meat, fish and poultry (3 percent) and condiments (3 percent).

Most U.S. organic food sales (93 percent) are through conventional and natural food supermarkets and chains, says the Organic Trade Association (OTA); the remaining 7 percent are through farmers' markets, foodservice and marketing channels other than retail stores. The number of farmers' markets in the United States has grown steadily from 1,755 in 1994, when USDA began to track them, to over 4,685 in 2008. Demand for organic products was strong or moderate in most farmers' markets surveyed, and managers felt more organic farmers were needed to meet consumer demand in many states. The overview includes price comparisons for organic and conventional products.

Generally, consumers prefer organically produced food because of concerns regarding health, the environment and animal welfare. Organic products have shifted from being a lifestyle choice for a small share of consumers to being consumed at least occasionally by a majority of Americans. ("Marketing U.S. Organic Foods—Recent Trends from Farms to Consumers," by Carolyn Dimitri and Lydia Oberholtzer, USDA Economic Information Bulletin No. 58, Sept. 2009; www.ers.usda.gov/Publications/EIB58/EIB58.pdf)

The French Agency for Food Safety (AFSSA) published an article in *Agronomy for Sustainable Development* showing that **organic foods have higher concentrations of mineral nutrients and antioxidants**; organic animal products have more polyunsaturated fatty acids than conventional; 94 to 100 percent of organic foods do not contain pesticide residues; organic vegetables contain about 50 percent lower concentrations of nitrates; and organic cereals contain similar concentrations of mycotoxins as conventional ones. (Foodmagazine, Sept. 3, 2009; www.foodmag.com.au/Article/Organic-is-more-nutritious-according-to-the-French/496876.aspx; full report at http://swroc.cfans.umn.edu/organic/ASD_Lairon_2009.pdf)

Infants raised on **organic dairy** products are 36 percent **less likely to suffer from allergies** and eczema in the first two years of life, according to a Dutch study published in the *British Journal of Nutrition* (www.anthromed.org/Article.aspx?artpk=216) that followed 2,500 pregnant women and their children.

In June, Maine Governor John Baldacci signed **the Maine hemp farming bill**, LD 1159, into law. The bill establishes a licensing regime for farming industrial hemp, although the licensing is contingent upon federal government action. Maine had previously passed a study bill that also defined industrial hemp. In August, Oregon Governor Ted Kulongoski signed a bill that permits the production, trade and possession of industrial hemp commodities and products. In 2009, Montana, New Mexico, North Dakota and Vermont passed pro-hemp laws, resolutions or memorials. Sixteen states have passed pro-hemp legislation to date, and eight have removed barriers to its production or research. Like North Dakota, where farmers are in a federal court battle over their rights to grow hemp under state law without fear of federal prosecution, the new law in Oregon does not require a federal DEA permit to grow hemp. The Hemp Industries Association estimates that the growing hemp food and body care markets are currently \$113 million in North American annual retail sales and that 2008 annual retail sales of all hemp products in North America were about \$360 million. (Press release, Vote Hemp, August 4, 2009; www.votehemp.com/PR/08-04-09_vh_oregon_hemp_farming_bill_becomes_law.html)

Canadian scientists who tested many **plant essential oils** diluted in water, including cinnamon and peppermint, found that some **kill or repel pests**, including aphids and mites on strawberries, spinach and tomato plants; mosquitoes, flies and roaches in homes; and ticks and fleas on cats and dogs. The oils evaporate and degrade quickly in sunlight, so may have to be reapplied often. (“Killer Spices' Provide Eco-friendly Pesticides For Organic Fruits And Veggies,” *ScienceDaily*, Aug. 18, 2009, [www.sciencedaily.com- /releases/2009/08/090816170910.htm](http://www.sciencedaily.com/releases/2009/08/090816170910.htm))

Organic

Emerging issues in the U.S. organic industry, a report issued by USDA’s Economic Research Service in June, explores the effects of the economic downturn on organic sales and how the 2008 Farm Bill has affected the organic industry. Top findings include:

- Organic sales quintupled since 1997, from \$3.6 billion to \$21.1 billion in 2008.
- While U.S. organic acreage has doubled since 1997, the rate of transition has slowed in some sectors.
- Low supply of organic raw materials, particularly of domestically grown feed grain and soybeans, has constrained growth.

- Organic imports have increased as organic demand has exceeded domestic supply.
- Organic dairy and soybean production costs are higher than conventional.
- Organic agriculture provides measurable ecosystem services, including reduced pesticide residues in water and food, reduced nutrient pollution, improved soil quality, lower energy use, carbon sequestration potential and enhanced biodiversity.
- Frequent organic consumers have not decreased organic purchases but infrequent organic consumers have.
- The “locally grown” label competes with the organic label for sales, although they are not always mutually exclusive. (Greene, C., et al., 2009. Emerging issues in the U.S. organic industry. USDA-ERS Economic Information Bulletin No. 55. www.ers.usda.gov/Publications/EIB55/)

The Cornucopia Institute filed formal complaints in October with the USDA organic program and with Wisconsin and Minnesota officials **alleging that Target Corporation misled consumers** into thinking some conventional food items it sells are organic. The Wisconsin-based farm policy research group discovered that Target nationally **advertised Silk soymilk in newspapers with the term "organic"** pictured on the carton’s label, when in fact the manufacturer, Dean Foods, had shifted its products away from organics. (Press Release, Cornucopia Institute, Oct. 20, 2009) USDA’s Animal and Plant Health Inspection Service (APHIS) invites amateur and professional photographers of all ages to enter **bird photos** in the Biosecurity For Birds **calendar photo contest** by Jan. 31, 2010. APHIS is interested in photos of all kinds of poultry, gamebirds, wild birds, shorebirds and pet birds shown in a clean environment and without people in the pictures. Winning photos will be featured in the 2011 Biosecurity For Birds calendar, on the Biosecurity For Birds Web site, and some may be featured as screen savers on the site. To participate, visit <http://healthybirds.aphis.usda.gov>.

Fertilizers

Researchers at Rhode Island Hospital have **correlated** age adjusted increases in death rates from **Alzheimer’s, Parkinson’s and diabetes** with increases in exposure to **nitrates, nitrites and nitrosamines** through processed and preserved foods as well as nitrogen (N) fertilizers. Lead researcher Suzanne de la Monte says our diet is rich in amines and nitrates, which lead to increased nitrosamine production. Our abundant use of nitrate-containing fertilizers, which contaminate groundwater, also contributes to our exposure. The researchers found that N fertilizer consumption increased by 230 percent between 1955 and 2005 and doubled between 1960 and 1980—just before insulin-resistant epidemics began. Also, sales of fast foods and processed meats increased more than eight-fold from 1970 to 2005, and grain consumption increased five-fold. The rapid increase in prevalence of Alzheimer’s, Parkinson’s and diabetes cannot be explained by gene mutations but mirrors classical trends of exposure-related disease. (de la Monte, Suzanne M., Alexander Neusner, Jennifer Chu and Margot Lawton, “Epidemiological Trends Strongly Suggest Exposures as Etiologic Agents in the Pathogenesis of Sporadic Alzheimer’s Disease, Diabetes Mellitus, and Non-Alcoholic Steatohepatitis.” J. Alzheimer’s Disease, 17:3, July 2009, p. 519-529. www.j-alz.com/press/2009/20090706.html)

When farmers apply N to fields, up to 5 percent enters the atmosphere as nitrous oxide—the prime ozone layer depletor and a powerful **greenhouse gas** contributing to climate change. **Synthetic nitrogen fertilizers** also contaminate waterways and contribute to creating dead zones

where ocean life is killed. (“Feeding the world’--or consuming it?” by Tom Philpott, Grist, Aug. 31, 2009; www.grist.org/article/2009-08-31-food-system-ecosystem-nitrogen/)

Dairy

The U.S. **Justice Department's** antitrust division is **investigating Dean Foods Co.** Vermont Senator Bernard Sanders says Dean controls up to 80 percent of many U.S. milk markets; Dean claims less than 15 percent. Raw milk prices dropped almost 50 percent in the past two years. (“Justice Department to investigate plight of dairy farmers,” AP report and Tom Bell, Sept. 20, 2009, Portland Press Herald; <http://pressherald.maintoday.com/story.php?id=284411&ac=PHnws>)

Genetic Engineering

The **Justice Department** antitrust division is **investigating Monsanto Co.** regarding its dominance of the GE crop market.

Monsanto’s crop genes are in about 96 percent of U.S. soy and 80 percent of corn crops. This is part of a broader investigation by the Justice Department into consolidation in the seed industry. The states of Iowa and Texas are also conducting antitrust investigations of Monsanto. (“Monsanto a Focus of US Antitrust Investigation,” by Christopher Leonard, ABC News, The Associated Press, Oct. 8, 2009) <http://abcnews.go.com/Business/wireStory?id=8784859>)

In an article about constraints that researchers face when trying to study GE crops, writer Emily Waltz cites an anonymous source who told her that a corn variety engineered by Pioneer to contain the **corn rootworm toxin Cry34Ab1/Cry35Ab1 killed 100 percent of ladybeetles** fed on the crop for eight days. Pioneer forbade publicizing the results, then gave EPA its own data showing no harm to lady beetles—when they were fed purified toxins for seven days, or when they were fed half prey and half pollen from the crop. Pioneer says the corn that was eventually released has the same toxin but with genes integrated into a different place in the genome. (“Under wraps,” by Emily Waltz, Nature Biotechnology 27, 880-882 (2009) doi:10.1038/nbt1009-880; www.nature.com/nbt/journal/v27/n10/full/nbt1009-880.html)

Canadian **flax** exported to Europe and used in cereals and baked goods there was **contaminated with GE** Triffid flax, which has been illegal to grow in Canada since 2001. Canadian growers had forced the GE flax, developed at the University of Saskatchewan, off the market, because they knew it would destroy their European markets. The source of the current contamination is unknown. (“Illegal GM Flax Contaminates Canadian Exports,” CNW, Sept. 10, 2009; www.newswire.ca/en/releases/archive/September2009/10/c3959.html)

In a case brought by the Center for Food Safety and Earthjustice representing a coalition of farmers and consumers, a Federal Court ruled in September 2009 that **USDA’s approval of GE RoundUp Ready sugar beets was unlawful.** The Court ordered USDA to rigorously assess the environmental and economic impacts of the crop on farmers and the environment. The federal district court for the Northern District of California ruled that USDA’s Animal and Plant Health Inspection Service violated the National Environmental Policy Act when it failed to prepare an

Environmental Impact Statement (EIS) before deregulating sugar beets engineered to resist glyphosate herbicide, marketed by Monsanto as Roundup. Sugar beet seed is grown primarily in Oregon's Willamette Valley—an important seed growing area for crops closely related to sugar beets, such as organic chard and table beets. GE sugar beets are wind pollinated and will cross with related crops growing in the same area, which could harm organic growers' markets, limit consumers' choices and harm the environment. Beets supply about half the U.S. sugar. Two years ago, another judge in the same court prohibited farmers from growing GE alfalfa because it had not had an adequate EIS. No EIS has yet been conducted for that crop either. (Press release, Earthjustice and other groups, Sept. 22, 2009; "Judge Rejects Approval of Biotech Sugar Beets," by Andrew Pollack, The New York Times, Sept. 23, 2009; www.nytimes.com/2009/09/23/business/23beet.html?_r=1)

The United States and Canada have **approved SmartStax GE corn**, produced collaboratively by Monsanto and Dow Chemical Company, that **combines eight genes for herbicide tolerance and insect protection**. Farmers growing SmartStax must set aside only 5 percent of the crop area as a refuge to limit development of insect resistance to the pesticides, rather than the 20 percent required for earlier GE corn crops. Regulators believe that insects will not develop resistance to the combined traits as fast as to individual traits. In the refuges, farmers can use GE Roundup Ready corn without GE insecticide traits. ("US and Canada approve new multi-trait GM corn," by Caroline Scott-Thomas, FoodNavigator-USA.com, July 21, 2009)

Monsanto, which stopped work on herbicide tolerant wheat in 2004 because of consumer opposition, is again researching **drought tolerance and nitrogen fixation for GE wheat**. The company says it believes that consumer support for the technology has increased. Critics say that conventional breeding works better for such multigene traits. ("Monsanto says industry wants GM wheat," by Karen Hunt, July 17, 2009; ABC Rural Victoria; www.abc.net.au/rural/vic/content/2009/07/s2628988.htm)

Pesticides

Maine Board of Pesticides Control News

By Katy Green

Free Pesticide Spray Notification Registry Up and Running—Despite Issues

At its October meeting the Maine Board of Pesticides Control (BPC) held a public hearing to gather comments about its approach to rulemaking on LD 1293, An Act to Require Citizen Notification of Pesticide Applications Using Aerial Spray or Air-Carrier Application Equipment. The BPC determined that some changes to Chapter 28 should be made to clarify and adapt to provisions required by LD 1293.

Growers and industry representatives who oppose LD 1293, but not necessarily the actions of the board, provided much of the testimony at the meeting. In many cases the comments were not pertinent to the goals of the public hearing but did give people an outlet to express their frustrations with the legislation. Many—especially those who operate in densely populated parts of Maine—noted the complexity and administrative burden that LD 1293 will place on them. This includes people in the pest control industry who spray for mosquitoes in urban areas. Board

members responded that since the legislation is already written and has become law, it is not their job to change what is in place but to try to cover its responsibilities as required by the law and to make the requirements easiest for everyone involved.

All attendees agreed that the legislation is unclear in spots and parts of the rule need to be simplified. For example, who should be notified in new construction situations, large apartment buildings or complexes, campgrounds or schools within 1/4 mile of spray operations? Heather Spalding, MOFGA's associate director, offered to work with growers and with Rep. Seth Berry (D-Bowdoinham), who sponsored LD 1293, to propose changes that would clarify and simplify the legislation.

Another issue that warrants further discussion is the way the legislation relates to Integrated Pest Management (IPM). Growers use IPM to minimize the need for pesticides by considering several factors and spraying only when it is most advantageous or necessary. Some growers believe that provisions of LD 1293 will make them miss brief opportunities that arise for spraying, or that they will risk being in non-compliance with notification requirements. This is another area where more work and cooperation among stakeholders will be needed.

Board member Curtis Bohlen summed up the BPC's long-term, extensive conversation about notification in general by noting that neighbors just don't know neighbors anymore. Growers should be able to notify neighbors about spraying in a positive way, and those working on LD 1293 and Chapter 28 will strive to ensure this.

The registry that the BPC created as a result of LD 1293 is up and running. This free registry is for people who wish to be notified about pesticides applied by aerial or air-carrier equipment near their homes. The sign-up deadline is March 15, 2010, for the next growing season. To sign up, visit www.thinkfirstspraylast.org or call the BPC at 207-287-2731.

Pesticide Application Rule Violations

C&D Corporation of Deblois was fined \$1,000 for applying herbicide on property belonging to another landowner. This violation occurred after the person applying the herbicide for C&D Corporation was given insufficient instructions on the boundary line of the property and continued his application onto the neighboring property. The owner of the adjacent property discovered the error as he began to treat his own field. He reported the violation to the BPC.

Pesticide Registrations

At its October meeting the BPC approved a Special Local Need (SLN) registration for Ethrel® Brand Ethephon Plant Regulator on greenhouse tomatoes at Backyard Farms in Madison. The board approved the same registration last January, but later withdrew it after EPA revoked all ethephon SLN registrations because worker safety and crop residues had not been fully reviewed. EPA has since completed the review and approved ethephon SLN registrations.

[End of BPC news]

On July 31 the **High Court in Bhopal, India, ordered** the Central Bureau of Investigation to **arrest Warren Anderson**, former chair of Union Carbide Corporation, and bring him before the court "without delay." Anderson was proclaimed an absconder from justice in 1992 after he ignored a summons to appear in court in India. Union Carbide and Anderson are charged with "culpable homicide not amounting to murder," "grievous assault" and other serious crimes in relation to the 1984 Bhopal pesticide plant explosion. An application to summon Dow Chemical Company, which acquired Union Carbide in 2001, is pending before the High Court. (Pesticide Action Network News Update, Aug. 6, 2009; www.panna.org)

According to [Environmental Health News](#), UCLA researchers who studied more than 700 people from California's Central Valley found that those consuming well water that was likely contaminated with agricultural **pesticides**, including propargite, methomyl and chlorpyrifos, had a higher rate of **Parkinson's disease**. Likelihood of well water contamination was extrapolated from historical use records kept by a state agency. Residents with wells near fields sprayed with these chemicals had a 90, 67 and 87 percent higher risk of developing the diseases, respectively. Residential uses of chlorpyrifos (sold as Dursban by Dow) were banned in 2001 due to health risks for children, but it remains widely used on a variety of U.S. crops. (Pesticide Action Network News Update, Aug. 6, 2009; www.panna.org)

Georgetown University researchers who compared urine samples from 41 children with acute lymphoblastic **leukemia** (ALL) and their mothers with those from 41 healthy children and their mothers found elevated levels of common **household pesticides** more often in the mother-child pairs affected by cancer. More than half the study participants had pesticides in their urine, but children with ALL had higher concentrations of two organophosphate metabolites—diethylthiophosphate (DETP) and diethyldithiophosphate (DEDTP). ("Study finds pesticide link to childhood leukemia," AFP, Google News, July 29, 2009; www.google.com/hostednews/afp/article/ALEqM5gojVCT1jBhMitQovIkW5fEup2E1Q; and Therapeutic Drug Monitoring, Aug. 2009)

An increasing number of studies **link human and ecological health problems with atrazine**, including hormonal disruption, neural damage, reproductive disorders, spontaneous abortion and cancers. Concentrations that meet federal standards may be linked to birth defects, low birth weights and menstrual problems; and very low concentrations at certain times of fetal development may cause skull and facial malformations and misshapen limbs. Most atrazine is produced and marketed by Swiss-based Syngenta, but the herbicide is banned in the European Union, including Switzerland, due to its potential contaminate groundwater. Atrazine, the second most widely used pesticide in the United States, is used on farms, lawns, athletic fields and golf courses. Syngenta and other atrazine manufacturers are being sued for drinking water contamination. Syngenta says concentrations in drinking water are safe, but The New York Times reviewed Syngenta's data and found spikes in atrazine concentrations in drinking water, sometimes lasting months. Pesticide Action Network North America's online tool^[1][WhatsOnMyFood?](#) finds atrazine in 70 percent of U.S. drinking water, with highest levels in the Midwest. Local water systems are required to test for atrazine on no more than a quarterly basis, but EPA requires that Syngenta test 150 vulnerable watersheds weekly. Local water systems generally find concentrations below the legal limit of 3 parts per billion (ppb), but Syngenta sometimes finds concentrations far above the legal limit. For instance, residents in

McClure, Ohio, were told that the highest concentration there in 2008 was 3.4 ppb, but EPA/Syngenta data for June 2008 showed 33.83 ppb. In October, the EPA, in a reverse from the Bush years, said it would study the potential health effects of atrazine. (Pesticide Action Network News Update, July 30 and Aug. 27, 2009; www.panna.org; "Debating How Much Weed Killer Is Safe in Your Water Glass," by Charles Duhigg, The New York Times, Aug. 23, 2009; www.nytimes.com/2009/08/23/us/23water.html?pagewanted=1&hp&adxnnl=1&adxnnlx=1251032406-h/vzVxAlnHBvIgu2Vi/o0Q; Foradori, C.D., L.R. Hinds, W.H. Hanneman and R.J. Handa. 2009. Effects of atrazine on GnRH neuroendocrine function after its withdrawal in the adult female Wistar rat. *Biology of Reproduction* doi:10.1095/biolreprod.109.077453; "Regulators Plan to Study Risks of Atrazine," by Charles Duhigg, The New York Times, Oct. 7, 2009; www.nytimes.com/2009/10/07/business/energy-environment/07water.html)

EPA administrator Lisa Jackson announced in September that **EPA is eager to work with congress to reform U.S. policies governing toxic chemicals.** Jackson stated, "Our oversight of the 21st century chemical industry is based on the 1976 Toxic Substances Control Act (TSCA)... Over the years, not only has TSCA fallen behind the industry it's supposed to regulate—it's been proven an inadequate tool for providing the protection against chemical risks that the public rightfully expects." The EPA identified an initial list of chemicals for possible action and anticipates completing a set of four action plans in December. It will complete and post additional chemical action plans in four-month intervals thereafter. (Pesticide Action Network North America, news update, Oct. 1, 2009; www.panna.org)

The **EPA** also said in September that it plans **to disclose the identities of so-called "inert" ingredients in pesticides.** Inert ingredients, found in most pesticide products, can comprise up to 99.9 percent of the final product. They make the "active" ingredient more effective, potent or easier to use. They are not necessarily benign; many are hazardous to health or the environment. (Pesticide Action Network North America News Update, Oct. 1, 2009; www.panna.org)

Spring 2010

The Good News

The **2010 Northeast Permaculture Convergence**, co-sponsored by Newforest Institute and MOFGA with support from Portland Maine Permaculture, Penobscot Valley Permaculture and other local groups, is a place for permaculture practitioners, organizers and teachers to gather, cross-pollinate, have fun and re-energize their work. It will take place on **July 2 to 4, 2010, at MOFGA's Common Ground Education Center in Unity, Maine.** The convergence is open to permaculture designers, practitioners and teachers from the northeastern United States and eastern Canada, and to farmers, gardeners, green builders and members of the public who want to learn about permaculture and building resilience into communities. It will include workshops, field trips, home-cooked food, entertainment and camping; sessions for practicing permaculturists and those new to permaculture; a woodland wellness tent, vendor area, design clinic and designers lounge, regional updates, permaculture basics, forest gardening, resilient agriculture and more. The event will be affordable, with a sliding scale, an opportunity for work trade, and day passes. Volunteer team leaders are sought, as are fresh food donations and

creative energy. For information, contact neconvergence@gmail.com or [twitter@neconvergence](https://twitter.com/neconvergence).

Of Farms and Fables, a community-based theater project under the direction of lead artist Jennie Hahn, is a three-year project involving extensive **collaboration between performers, farmers and farm workers**. The project will culminate with an outdoor performance in summer 2011. Three farms--Wm. H. Jordan Farm in Cape Elizabeth, Kay-Ben Farm in Gorham and Broadturn Farm in Scarborough--have signed on. Penny Jordan, co-owner with her siblings of Wm. H. Jordan Farm, says, "My willingness to collaborate goes back to my passion for live theater. Theater tells a story, and what better story to tell than how your food is produced, than about the people who produce it and what it takes to produce it." Several community partners--R.O.I.L., Cape Farm Alliance, the Scarborough Land Conservation Trust, Cultivating Community, and Threshold to Maine--are also supporting the project, as is the Ella Lyman Cabot Trust in Holliston, Mass., which awarded Hahn a one-year grant for Of Farms and Fables. Hahn, a Maine native and South Portland resident, and her advisory board hope the project will provide an opportunity for community dialog about food and the future of family farms in Maine. Readers can follow the project at <http://farmsandfables.blogspot.com/> and may contact Hahn at info@open-waters.org for additional information or to support the project.

The selectmen of **Harpswell, Maine**, have adopted a policy of exercising "**green garden practices**" on public lands and encouraging residents to do the same. Principles include replacing water soluble "weed and feed" chemicals with slow release organic nutrients that feed the soil and plants without runoff; favoring native species for resilience against disease, climate and soil constraints; promoting diverse plant species; and seeking alternative design solutions for lawns when hostile factors of grade, shade and drainage exist. The Harpswell Conservation Commission will provide information to landowners. Harpswell joins Camden, Rockport, Castine, Brunswick and Kennebunkport in passing such resolutions. (www.harpswell.maine.gov)

College of the Atlantic has hired Dr. Molly Anderson to hold the Partridge Chair in Food and Sustainable Agriculture Systems. Anderson co-founded and directed the Agriculture, Food and Environment graduate degree program at Tufts University; directed Tufts Institute of the Environment; founded Food Systems Integrity to consult on science and policy for social justice, ecological integrity and community-serving food systems; and was senior program officer and interim director of the U.S. regional office of Oxfam America. Anderson said of COA, "No other college or university has demonstrated the same commitment to interdisciplinary collaboration and 'walking the talk' on sustainability--from its zero-carbon policy, to its commitment to purchase a significant proportion of campus food from the college farm, to its partnership with innovative European research and educational programs." As part of its Sustainable Food Systems program, COA has partnered with the Organic Research Centre at Elm Farm in the United Kingdom and Germany's University of Kassel. Anderson will help foster international collaborations in teaching, research and action. (COA press release, Jan. 19, 2010)

The USDA-Natural Resource Conservation Service (NRCS) in Maine has received more than \$480,000 to help organic farmers and agricultural producers **transitioning to organic farming** compete for Environmental Quality Incentives Program (EQIP) funds. Successful applicants will

receive funding to implement conservation practices designed to improve natural resource conditions. Five priority conservation practices have increased payment rates based on organic production costs and practices: crop rotation, cover cropping, nutrient management, pest management and mulching. Applications are accepted continuously. The deadline for 2010 applications has not been established. For information, visit a local USDA Service Center, listed at <http://offices.usda.gov> and in the phone book under United States Government, Agriculture Department, or visit www.me.nrcs.usda.gov. (From Christopher Jones, USDA NRCS, Bangor)

Through a \$1.2 million, three-year USDA grant, plant breeders at **North Carolina State University are developing corn, peanut, soybean and wheat varieties adapted to organic growing**, according to Chris Reberg-Horton of the College of Agriculture and Life Sciences at NC State (and formerly with the University of Maine). Reberg-Horton said North Carolina has become a center for organic field crop production in the Southeast. A number of organic crop processors have located in the state. North Carolina also is home to the largest U.S. organic egg producer; to two mills that produce organic flour and to an organic soybean crusher. Reberg-Horton adds that NC State has one of the largest if not the largest public plant breeding programs in the world. Soybean breeding will likely focus on developing varieties that compete better with weeds. Corn breeding will focus on preventing contamination with genetically engineered corn. Pollen from fields in which GE corn grows can drift for several miles and cross pollinate organic corn. Reberg-Horton said **corn that contains gametophytic genes cannot be pollinated by non-gametophytic corn types**, so breeding will focus on developing organic varieties with gametophytic genes. Early maturity will also be important so that organic corn growers can plant later in the season to avoid seed diseases that occur in cold soil. Wheat breeding will focus on developing allelopathic wheat plants, which produce biochemicals that discourage the growth of other plants, such as weeds. Reberg-Horton and growers will work with the Rural Advancement Foundation International to connect the broader farming community to public breeders and to ensure that the needs and concerns of organic farmers are addressed. (“Plant breeders focus on organic crops,” by Dave Caldwell, Perspectives On Line, Winter 2009, North Carolina State University, www.cals.ncsu.edu/agcomm/magazine)

Research from Britain’s Soil Association shows that if all UK farmland was converted to **organic farming**, at least 3.2 million tons of **carbon (C) would be sequestered** by the soil each year--the equivalent of taking nearly 1 million cars off the road. According to the Intergovernmental Panel on Climate Change, 89 percent of agriculture’s global greenhouse gas mitigation potential is from C sequestration.

The key research findings are:

- Widespread adoption of organic farming practices in the UK would offset 23 percent of UK agricultural emissions through soil C sequestration alone, more than doubling the UK government’s low target of a 6 to 11 percent reduction by 2020.
- A worldwide switch to organic farming could offset 11 percent of all global greenhouse gas emissions. Raising soil C levels would also make farming worldwide more resilient to such climate extremes as droughts and floods, leading to greater food security.
- On average organic farming produces 28 percent more soil C than non-organic farming in Northern Europe, and 20 percent more for all countries studied.
- In the UK, soil C in grasslands and mixed farming systems may go a long way in offsetting methane emissions from grass-fed cattle and sheep.

(“Soil Carbon and organic farming. A review of the evidence of agriculture’s potential to combat climate change,”

www.soilassociation.org/Whyorganic/Climatefriendlyfoodandfarming/Soilcarbon/tabid/574/Default.aspx)

The International Panel on Climate Change estimates that developed countries need to reduce greenhouse gas emissions 25 to 40 percent below 1990 levels by 2020. **The World Bank and United Nations** International Assessment of Agricultural Knowledge, Science and Technology for Development concluded that a fundamental overhaul of the current food and farming system is needed to get us out of the increasing food and fuel crisis. They **recommend that small-scale farmers and agro-ecological methods, not industrialization, are keys to food security.**

“Rich-soil” farming and gardening can mitigate 6 to 10 billion tons of CO₂ equivalent per year, or 20 to 35 percent of current annual global emissions (29 billion tons per year). To mitigate all current global emissions, the world’s agricultural land would need to sequester a mean of 6 tons of CO₂ per hectare per year, which some systems can achieve. Anything above that would begin to reduce atmospheric CO₂ to levels of consecutive previous years. The nonprofit Climate Friendly Food has a prototype carbon calculator for growers (www.climatefriendlyfood.org.uk/carboncalc) and the world’s first low-carbon food certification program. (“Global Climate Negotiators Are Ignoring What’s On Their Plates,” Center for Food Safety, Countdown to Copenhagen, Nov. 2009 Update, e-mail Dec. 9, 2009; www.foodsafetynow.org; “Climate Friendly Farming,” by Mukti Mitchell, Resurgence, Nov.-Dec. 2009, www.resurgence.org/magazine/article2955-Climate-friendly-Farming.html)

Food Safety

Rules being drafted by the Maine Department of Agriculture concerning **poultry slaughter and processing on small farms** would allow small producers to sell uninspected poultry from the farm and farmers’ markets; establish labeling requirements for the meat; and direct the Maine Department of Agriculture to create rules for slaughtering and processing. The proposed rules result from a bill sponsored by state Rep. Jeff McCabe and passed unanimously by the Legislature to exempt farms with fewer than 1,000 birds from larger producers’ more stringent rules. However, some opposed the proposed requirement that small producers, who commonly slaughter outdoors, do so in two separate enclosed rooms with washable walls and floors, stainless cutting surfaces and a water heater. Russell Libby, MOFGA’s executive director, estimates such a building would cost more than \$20,000. Even without the new law, small producers were supposed to have slaughtering and processing facilities attached to septic systems and equipped with restrooms, but the law was not enforced. (“Farmers: Fowl law not fair,” by Beth Quimby, MaineToday Media, Dec. 21, 2009; <http://pressherald.mainetoday.com/story.php?id=304074>)

Consumer Reports has found that almost all of the 19 **canned foods** it tested had measurable levels of **bisphenol A (BPA)**--including some labeled “organic” and some packaged in “BPA-free” cans. Dr. Urvashi Rangan of Consumers Union, said, “Children eating multiple servings per day of canned foods with BPA levels comparable to the ones we found in some tested products could get a dose of BPA near levels that have caused adverse effects in several animal studies.” BPA has been linked to many problems, including reproductive abnormalities, heightened risk of breast and prostate cancers, diabetes and heart disease. In most items tested,

such as canned corn, chili, tomato sauce and corned beef, BPA ranged from trace amounts to about 32 ppb. Canned Del Monte Fresh Cut Green Beans Blue Lake had 35.9 to 191 ppb, the highest amount for a single sample in these tests; Progresso Vegetable Soup, 67 to 134 ppb; Campbell's Condensed Chicken Noodle Soup, 54.5 to 102 ppb; Similac Advance Infant Formula liquid concentrate in a can, 9 ppb; Nestlé Juicy Juice All Natural 100% Apple Juice in a can, 9.7 ppb (but no measurable BPA in samples of the same product in juice boxes); Vital Choice's tuna in "BPA-free" cans, 20 ppb; and Eden Baked Beans in "BPA-free" cans, 1 ppb. Several animal studies show adverse effects, such as abnormal reproductive development, at exposures of 2.4 micrograms of BPA per kilogram of body weight per day, a dose that could be reached by eating one or a few servings daily or an adult daily diet that includes multiple servings of canned foods containing BPA levels comparable to some of the foods tested. Bills are pending in Congress to ban BPA in all food and beverage containers. Meanwhile, consumers can choose fresh food and consider alternatives to canned whenever possible; and use glass containers when heating food in microwave ovens. (Source: "Tests find wide range of bisphenol A in canned soups, juice, and more," Consumer Reports press release, Nov. 2, 2009; www.consumerreports.org)

Consumers Union recently found that of 382 fresh, whole **broilers** bought at 100 stores nationwide, **two-thirds harbored salmonella and/or campylobacter**, the leading bacterial causes of foodborne disease. So consumers must cook chicken to at least 165 F and prevent raw chicken or its juices from touching any other food, says Consumers Union. Each year, salmonella and campylobacter from chicken and other foods infect 3.4 million Americans, send 25,500 to hospitals, and kill about 500, according to estimates by the national Centers for Disease Control and Prevention. The problem may be more widespread: Many who get sick don't seek medical care, and many who do aren't screened for foodborne infections. Also, says the CDC, in about 20 percent of salmonella and 55 percent of campylobacter cases, the bacteria are resistant to at least one antibiotic, so victims may have to try two or more before finding one that helps. Among the cleanest broilers were air-chilled broilers. About 40 percent harbored one or both pathogens. Store-brand organic chickens had no salmonella, but 57 percent harbored campylobacter. Of Perdue chickens, 56 percent were free of both pathogens, while more than 80 percent of Tyson and Foster Farms chickens tested positive for one or both pathogens. Among all brands and types of broilers tested, 68 percent of the salmonella and 60 percent of the campylobacter organisms analyzed showed resistance to one or more antibiotics. ("How safe is that chicken?" Consumers Union, Jan. 2010, www.consumerreports.org/health/healthy-living/health-safety/chicken-safety/overview/chicken-safety-ov.htm)

Michael R. Taylor has been appointed **deputy commissioner for foods at the Food and Drug Administration**, to oversee FDA's food and nutrition programs. Taylor has repeatedly gone through the revolving door at FDA, beginning as a lawyer there in 1976, working there as a commissioner and administrator in the 1990s (when the FDA approved use of Monsanto's recombinant Bovine Growth Hormone and sales of unlabeled products from treated cows); and working as vice president for public policy at **Monsanto Corp.** from 1998 to 2001. He promoted favorable U.S. policies toward agricultural biotechnology during the Clinton administration. He has also been working to open Africa to GE seeds and agrichemicals. Russell Libby, MOFGA's executive director, told The New York Times that Taylor reflects the view "that everybody's going to eat food from large corporations and we need someone from that world to solve these problems." ("New Official Named with Portfolio to Unite Agencies and Improve Food Safety,"

by Gardiner Harris, The New York Times, Jan. 14, 2010; www.nytimes.com/2010/01/14/health/policy/14fda.html; “The Return of Michael Taylor--Monsanto’s Man in the Obama Administration,” by Isabella Kenfield, Food First, Aug. 12, 2009; www.foodfirst.org)

Wasted Food

The Economist calculated total food intake among Americans and total U.S. food available (minus exports, plus imports) and found that **40 percent of our food supply is wasted**. Producing these wasted calories takes more than one-quarter of the U.S. consumption of fresh water and about 300 million barrels of oil per year. (“A hill of beans,” The Economist, Nov. 26, 2009; www.economist.com/sciencetechnology/displaystory.cfm?story_id=14960159; “‘Food Insecurity’ and Massive Food Waste, The New York Times, Dec. 1, 2009; <http://ideas.blogs.nytimes.com/2009/12/01/food-insecurity-and-massive-food-waste/?hp>)

Organic

The U.S. Department of Agriculture's **National Organic Program** (NOP) has published **proposed amendments to the National List** of Allowed and Prohibited Substances for crop production. The proposed rule addresses the addition of sulfurous acid for use in organic crop production to the list of NOP allowed materials following evaluation and recommendation by the National Organic Standards Board. It also proposes to amend the annotation for tetracycline for use in organic crop production. The comment period for the proposed rule closes on March 15, 2010. View the proposed rule and comment at www.regulations.gov. (ATTRA Weekly Harvest Newsletter, Jan. 20, 2010; www.ncat.org)

In November 2009, **Target Corp.** said it **advertised non-organic Silk soy milk in newspapers as organic**, according to the USDA. The Wisconsin-based Cornucopia Institute filed a complaint about the issue with USDA in October 2009. Target blamed its use of an outdated photo showing a soy milk carton with the term “organic” on it in an ad. Dean Foods has been using conventional soy in its WhiteWave milk for several months. (“Target admits to error in advertising organic milk,” by Scott Bauer, AP, Dec. 14, 2009)

Unless it appeals the ruling, **Promiseland Livestock, LLC**, one of the largest U.S. organic cattle producers, along with its owner and key employees has been **suspended from organic commerce** for four years per a November 25, 2009, order from Washington, D.C., administrative law judge Peter Davenport. The multimillion dollar operation with facilities in Missouri and Nebraska, including over 13,000 acres of crop land, and managing 22,000 head of beef and dairy cattle, had been accused of multiple improprieties in formal legal complaints, including not feeding organic grain to cattle, selling fraudulent organic feed and “laundering” conventional cattle as organic, according to Mark Kastel of Cornucopia Institute. Promiseland sold thousands of dairy cows to factory dairy farms owned by Dean Foods (Horizon Organic), Natural Prairie Dairy in Texas and Aurora Dairy based in Colorado. Aurora and Natural Prairie supply private-label, store-brand milk for Wal-Mart, Costco, Target and major supermarket chains such as HEB, Safeway and Harris Teeter. Judge Davenport ruled that Promiseland violated USDA rules by refusing to provide records to inspectors visiting its facilities in Nebraska and Missouri; he did not rule directly on whether Promiseland's practices violated

organic standards. (“Giant Organic Livestock Operation Decertified by USDA,” press release, Cornucopia Institute, Dec. 2, 2009; www.cornucopia.org/USDA/Promiseland_Judgement.pdf; “Neb. company poised to lose organic certification,” by Josh Funk, AP, Dec. 3, 2009)

Pesticides

Board of Pesticides Control on Notification, New Genetically Engineered Corn

By Katy Green

Maine’s Board of Pesticides Control (BPC) has been focusing on rule changes to Chapter 28 to accommodate LD 1293, An Act to Require Citizen Notification of Pesticide Applications Using Aerial Spray or Air-Carrier Equipment.

After its October 2009 public hearing, the board, at its December meeting, agreed to draft a memo to the Joint Standing Committee on Agriculture, Conservation and Forestry stating its concerns with LD 1293. These included the 90-day notification window, the fact that notification must be written, variation in the forms of pesticide application in the bill (air carrier versus air blast equipment) and alternative methods of notification. The board also asked the agriculture committee to clarify the broad policy issues it would like to have addressed. The BPC unanimously approved drafting the memo and, by a 4 to 3 vote, agreed to provisionally pass its changes to Chapter 28 based on the memo. Board members Simonds, Jemison, Bohlen and Eckert voted for the changes, and Ravis, Stevenson and Qualey opposed them.

On January 22, the proposed changes in Chapter 28 as well as LD 1547, An Act to Revise Notification Requirements for Pesticides Applications Using Aircraft or Air-carrier Equipment, went before the Joint Standing Committee on Agriculture, Conservation and Forestry for public comments. LD 1547 addresses issues in 1293 that needed clarification and is similar to the BPC rule changes.

Many at the January 22 hearing opposed both notification bills and suggested that the legislature repeal LD 1293 and have the BPC start over.

Others spoke in favor of LD 1547, emphasizing the importance of communication to protect people from exposure to harmful chemicals and to mitigate conflict that arises from off-site drift.

In addition to MOFGA, proponents included organic farmers, citizens with serious illnesses that have been linked to pesticides exposure, citizens who have experienced off-site drift from nearby pesticide applications, and many organizations, including the Maine Chapter of the American Lung Association; the Alliance for a Clean and Healthy Maine, which includes MOFGA, the Environmental Health Strategy Center, the Learning Disabilities Association of Maine, Maine Council of Churches, Maine Labor Group on Health, Maine People's Resource Center, Maine Women's Policy Center, Natural Resources Council of Maine, Physicians for Social Responsibility/Maine Chapter, Planned Parenthood of Northern New England, and Toxics Action Center; Citizens for a Green Camden; and the Environmental Priorities Coalition, which includes many groups named above as well as the Appalachian Mountain Club, Atlantic Salmon Federation, Bicycle Coalition of Maine, Conservation Law Foundation, Environment Maine,

Friends of Casco Bay, Maine Audubon, Maine Center for Economic Policy, Maine Congress of Lake Associations, Maine Council of Trout Unlimited, Maine Rivers, Northern Forest Alliance, RESTORE: The North Woods, Maine Chapter of the Sierra Club, Ocean Conservancy, and The Wilderness Society.

Most who testified seemed happy with a free registry for notification and hope that a unified registry will be in place in the future.

The Joint Standing Committee will determine how it wants move forward on notification.

MOFGA continues to advocate for clear, concise and easily implemented rules on pesticide spray notification. We are working with Rep. Andy O'Brien (D-Lincolntonville), sponsor of LD 1547, to streamline notification laws so that they work for landowners who spray, for citizens who live near spray areas and need to be notified, and for public officials who have to implement and enforce the rules and regulations.

Meanwhile, those who want to be notified of aerial or air-carrier pesticide applications near their homes this year can still sign up for the free registry by March 15 at www.thinkfirstspraylast.org or by calling the BPC at 207-287-2731.

Bt Corn Safety Questioned but Varieties Approved

Another ongoing BPC discussion involves genetically engineered Bt sweet corn. At its December meeting, BPC staff toxicologist Lebel Hicks updated findings of the Bt corn Medical Advisory Committee (MAC). Board member Dr. Carol Eckert and Hicks, both on the MAC, think the health effects of Bt corn consumption seem minimal or nonexistent and not worth worrying about, but noted that they are mostly in the minority at the MAC, and the committee in general does not seem to think that enough scientific evidence exists to determine the health effects, if any, of Bt corn consumption. The board asked Hicks to continue to monitor and report on scientific articles about Bt corn consumption.

The board approved registration of three new genetically engineered Bt field corn varieties at its December meeting. These are Syngenta's Vegetative Insecticidal Protein (VIP)-containing Bt cultivars MIR 162 Maize (EPA# 67979-14), Agrisure 2100 (EPA# 67979-12) and Agrisure 3100 (EPA# 67979-13). Board members Simonds, Jemison, Eckert, Stevenson and Qualey approved the registration, while Bohlen and Ravis opposed.

Pesticide Application Rule Violations

Sterling Insect-Lawn Control Inc. of Gorham was fined \$200 after an employee failed to wear proper personal protective equipment while applying Q4 Turf herbicide. The label requires that the applicator wear a long sleeved shirt, chemical-resistant gloves made of any waterproof material, and protective eye wear. This is the second time that this type of violation was noted at this company.

The board unanimously approved a consent agreement including a \$500 fine with Commercial Properties Real Estate Management Company Inc. of Portland. The violation occurred when an unlicensed pesticide applicator treated a parking lot at the Mill Creek Mall. The company owner acknowledged that this type of application had happened before.

Ralph Boynton of Lincoln was fined \$150 for applying Roundup herbicide to his neighbor's land without permission. Boynton believed he had received permission from the neighbor to apply the herbicide, but the neighbor disagreed. A BPC inspector determined that Boynton did not have the permission.

[End of BPC news]

A pesticide that could be toxic to America's honey bees must be pulled from store shelves as a result of a suit filed by the Natural Resources Defense Council and the Xerces Society. In December 2009, a federal **court in New York invalidated EPA's approval of spirotetramat** (manufactured by Bayer CropScience under the trade names Movento and Ultor) and ordered the agency to reevaluate the chemical in compliance with the law. The court's order went into effect on January 15, 2010, and made future U.S. sales of Movento illegal. The EPA had approved the pesticide for use on hundreds of fruit and vegetable crops--but without the advance notice and opportunity for public comment required by federal law and EPA regulations. In addition, EPA failed to evaluate fully the potential damage to bee populations or conduct the required analysis of the pesticide's economic, environmental and social costs. Beekeepers and scientists are concerned about Movento's potential impact on beneficial insects such as honey bees. The pesticide impairs the insects' ability to reproduce. EPA's review of Bayer's studies found that trace residues of Movento brought back to the hive by adult bees could cause "significant mortality" and "massive perturbation" to honeybee larvae. ("Big Win for Bees: Judge Pulls Pesticide," press release, Natural Resources Defense Council, Dec. 29, 2009; www.nrdc.org/media/2009/091229.asp)

On January 11, **USDA** released results of tests conducted in 2008 as part of its **Pesticide Data Program**. Among the findings: Atrazine was in 5.2 percent of water samples from private wells, down from 9.2 percent the previous year; but atrazine was detected in 93.9 percent of municipal water supplies tested, up from 70.7 percent in 2007. Also, DDE, a breakdown product of DDT, was in 84.6 percent of catfish sampled. And nearly 500 "presumptive tolerance violations" were detected--e.g., samples with residues of one or more pesticides that exceed EPA's legal limit or for which EPA has not set a legal limit. (Pesticide Action Network News Update, Jan. 22, 2010; www.panna.org; www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELPRDS5081750)

Genetic Engineering (GE)

The **Irish Government will ban cultivation of GE crops** and will introduce a voluntary GE-free label for food. The effort began in June 2004, when the Irish Cattle and Sheep Farmers Association called for an all-Ireland GE-free policy as part of a strategy to leverage Ireland's green image and boost its farm exports. ICSA Rural Development chairman John Heney said, "Our island status provides a unique opportunity for a credible GM-free policy for high value

beef and lamb export markets." ("Ireland Adopts GM-Free Zone Policy," GM-free Ireland Network press release, Oct. 10, 2009, Michael O'Callaghan; www.gmfreeireland.org)

American **farmers have fewer and more expensive seed options**, according to "Out of Hand: Farmers face the consequences of a consolidated seed industry." Report author Kristina Hubbard of the Farmer to Farmer Campaign on Genetic Engineering, a Wisconsin-based national network of farm organizations that serves as a voice for family farmers on agricultural biotechnology issues, examines these trends.

Monsanto, for example, accounts for 60 percent of the corn and soybean seed market through seed sales and seed trait licensing agreements. Its biotechnology traits grow on more than 90 percent of U.S. soybean acreage and more than 80 percent of U.S. corn acreage.

The report cites weak antitrust law enforcement and Supreme Court decisions that allowed GE crops and other plant products to be patented as factors that created unprecedented ownership and control over genetic resources in major field crops. Farmers note that conventional seed is now more difficult to locate, as are single trait GE crops, now that companies are stacking many GE traits into single varieties. Few public plant breeding programs focus on good genetics for yield and disease resistance in conventional varieties, but instead work only on expensive GE traits.

Congress argued for decades that patents on sexually reproducing plants would curtail innovation, threaten the free exchange of genetic resources, and increase market concentration. These problems are now being realized, notes the report.

"Out of Hand" recommends that the U.S. Department of Justice examine anticompetitive conduct in the industry, enforce antitrust law, engage the public in assessing proposed and pending mergers, and revamp patent law related to crops. The USDA, says Hubbard, should reinvigorate public breeding and cultivar development programs to ensure that the needs of farmers and the general public are met and that research is conducted in an open and honest way. In fact, **the Justice Department is investigating Monsanto** for possible antitrust violations. (Farmer to Farmer Campaign press release, Dec. 9, 2009; www.farmertofarmercampaign.org; for details on Monsanto's control over the seed industry, see "Monsanto towers above seed rivals," by Christopher Leonard, *Kennebec Journal*, Dec. 14, 2009; <http://kennebecjournal.mainetoday.com/news/local/7221006.html>; "Feds step up antitrust investigation into Monsanto," by Christopher Leonard, AP, Jan. 14, 2010; <http://finance.yahoo.com/news/Feds-step-up-antitrust-apf-563776984.html/print?x=0>; "Monsanto GMO Ignites Big Seed War," by Frank Morris, National Public Radio, Jan. 17, 2010; www.npr.org/templates/story/story.php?storyId=122498)

In response to a January 2008 lawsuit filed by the Center for Food Safety, Organic Seed Alliance, Sierra Club and High Mowing Seeds, federal Judge Jeffery White in September 2009 ordered USDA's Animal and Plant Health Inspection Service to produce an environmental impact statement (EIS) to support its deregulation of **Monsanto's Roundup Ready beet seeds**. On December 4, 2009, White set a June 11, 2010, hearing date regarding the case. Since this is after the planting date for beets, activists asked on January 20, 2010, that the court bar

production or use of the seeds until a permanent injunction is in place, fearing that pollen from GE beets will contaminate organic beet and chard seed crops in Oregon's Willamette Valley. Some 95 percent of the 2009 U.S. sugar beet crop was from Roundup Ready beets. ("Plaintiffs to Demand Immediate Seed Ban," by Wes Sander, Capital Press, Dec. 12, 2009; www.capitalpress.com/oregon/ws-Sugar-Beets-121109; "Beet Growers Eager to Plant Before Hearing," by Dave Wilkins, Capital Press, Dec. 12, 2009; www.capitalpress.com/idaho/dw-beet-hearing-side-w-art-p-8-121109)

After a December 2009 trial in a federal court in St. Louis, **Bayer CropScience** has been ordered to pay almost \$2 million to two farmers whose **rice was contaminated with GE herbicide-tolerant Liberty Link (LL) rice**. Bayer may also be liable for losses suffered by some 3,000 other rice farmers in the South. In 2006, rice contaminated with Bayer's LL genes appeared on supermarket shelves worldwide even though the GE rice had not been approved, causing the EU and Japan to halt rice imports from the United States. Contamination occurred after Bayer and Louisiana State University began testing the GE rice in 2002, and rice from experimental plots cross pollinated with non-GE rice, allegedly contaminating some 30 percent of rice land in the South. The jury rejected the farmers' request for a punitive reward. The USDA later approved Bayer's LL rice for growth and human consumption. (Press Release, Dec. 16, 2009, Coalition against Bayer Dangers; www.cbgnetwork.org/3169.html; "\$2 million verdict against Bayer CropScience," Dec. 05, 2009, St. Louis Post-Dispatch)

Researchers at the University of Guelph in Ontario found **transgenic DNA from Roundup Ready corn in all animal groups** they sampled from soils where the crop was grown, including microarthropods, nematodes, macroarthropods and earthworms, and at rates significantly greater than background rates in soils. The authors say the results are the first to demonstrate the persistence of transgenic crop DNA residues within a food web. ("Detection of transgenic cp4 epsps genes in the soil food web," by Miranda M. Hart et al., *Agron. Sustain. Dev.* 29 (2009) 497-501, DOI: 10.1051/agro/20090209; July 2009; www.agronomy-journal.org/index.php?option=article&access=doi&doi=10.1051/agro/2009020)

Researchers in France analyzed data from trials with **rats fed three main commercialized GE corn varieties**, NK 603, MON 810, MON 863, for five to 14 weeks. NK 603 is a Roundup Ready corn; MON 810 and MON 863 synthesize two different insecticidal Bt toxins. Parameters measured in serum and urine were compared in GE-fed rats and non-GE equivalent control groups. **Effects linked with GE corn consumption** were sex- and often dose-dependent, and were mostly **associated with the kidney and liver, although the heart, adrenal glands, spleen and hematopoietic systems** (formation of blood cellular components) were also affected. The authors say that the liver and kidney toxicity may be due to the new pesticides in the GE corn and/or the genetic modification itself. ("A Comparison of the Effects of Three GM Corn Varieties on Mammalian Health," by de Vendômois J.S., Roullier F., Cellier D., Séralini G.E. *Int J Biol Sci* 2009; 5:706-726; www.biolsci.org/v05p0706.htm)

A Monsanto/Cargill joint venture has withdrawn its application for **high-lysine transgenic corn** after European Food Safety Agency **regulators questioned its safety** for human consumption. Made by Renessen LLC, LY038 would have been the only high-lysine corn available and has been approved for food use in Japan, S. Korea, Canada, Australia and New Zealand, and for cultivation in the United States, although it has never been grown. Although LY038 is not

intended for human consumption, the likelihood of genetic cross-contamination means that EU food approval was necessary to grow the crop commercially. LY038 corn contains the enzyme dihydrodipicolinate synthase from *Corynebacterium glutamicum*, which leads to accumulation of about 50-fold more free lysine in the corn kernel. It is intended as an alternative to lysine supplementation, especially for pigs on a corn/soymeal-based diet. Regulators questioned the safety of LY038 when cooked. Lysine reacts on heating with sugars to form advanced glycoxidation end products that are linked to diabetes, Alzheimer's disease, cancer and other diseases. They also questioned unexplained chlorosis (yellowing) in experimental trials; poor performance of chickens fed LY038; and whether appropriate controls were used by the applicant. Codex Alimentarius guidelines indicate that a genetically identical cultivar, minus the transgene, is the appropriate control for a GE safety experiment. Jack Heinemann, director of the The Centre for Integrated Research in Biosafety and an author of a critique of LY038, said, "I have not seen an application since 2002 that met the Codex comparator standard." ("Transgenic high-lysine corn LY038 withdrawn after EU raises safety questions," The Bioscience Research Project News Service, Nov. 10, 2009; www.biosciencesource.org/news/article.php?id=43)

The Center for Science in the Public Interest says that up to 25 percent of U.S. **farmers growing GE Bt corn fail to comply with federal rules aimed at slowing development of insect resistance** to GE insecticide-containing crops. Growers are supposed to plant 20 percent of their corn fields with non-Bt corn. ("Rules on Modified Corn Skirted, Study Says," by Andrew Pollack, The New York Times, Nov. 6, 2009; www.nytimes.com/2009/11/06/business/06corn.html?_r=1)

After the National Association of Wheat Growers asked Monsanto to research GE wheat, three Washington state wheat growers started a **petition drive against GE wheat** due to concerns about potential health risks from the product and Japan's potential refusal to buy the wheat. The petition asks national and state associations to warn farmers about these issues and to ask for safety testing on the crop. ("Trio fights GMO wheat," by Dan Wheat, Capital Press, Dec. 19, 2009; www.capitalpress.com/washington/djw-GMOwheat-121809)

In 2006, after the Center for Food Safety (CFS) took legal action against USDA's illegal approval of Monsanto's GE **Roundup Ready alfalfa**, federal courts banned the crop until the USDA prepared an Environmental Impact Statement (EIS) on effects of the crop on the environment, farmers and the public. USDA released its draft EIS on December 14, 2009. CFS says the USDA did not take concerns of non-GE alfalfa farmers or organic dairy farmers seriously: It dismissed the fact that contamination will threaten export markets and domestic organic markets; and it dismissed the significant adverse economic effects that GE contamination will have on non-GE conventional alfalfa seed or hay growers (e.g., export markets) and dairy producers who rely on non-GE and organic alfalfa hay for forage. The comment period on the draft EIS closed in February 2010. Meanwhile, after two higher courts upheld the ruling that USDA's approval of GE alfalfa was illegal, Monsanto took the case to the U.S. Supreme Court. On January 15, 2010, **the Supreme Court decided to hear its first case about the risks of GE crops** in the case *Monsanto v. Geertson Seed Farms*, No. 09-475. Alfalfa, the fourth most widely grown U.S. crop and a key source of dairy forage, is the first GE perennial crop. Bees can carry its pollen several miles, potentially contaminating organic farms.

("The Return of Monsanto's Roundup Ready Alfalfa," by Zelig Golden, Civil Eats, Dec. 24, 2009;

<http://civileats.com/2009/12/24/the-return-of-monsanto's-roundup-ready-alfalfa-share-your-concerns-with-usda/>; "Supreme Court to Hear First Genetically Engineered Crop Case," The Center for Food Safety, Jan. 15, 2010; <http://truefoodnow.org/2010/01/15/supreme-court-to-hear-first-genetically-engineered-crop-case/>)

Nine weed species in the United States are resistant to glyphosate, including strains of common ragweed (*Ambrosia artemisiifolia*), common waterhemp (*Amaranthus rudis*), giant ragweed (*Ambrosia trifida*), hairy fleabane (*Conyza bonariensis*), horseweed (*Conyza canadensis*), Italian ryegrass (*Lolium multiflorum*), johnsongrass (*Sorghum halepense*), Palmer amaranth (*Amaranthus palmeri*) and rigid ryegrass (*Lolium rigidum*). The consequences of resistance are particularly troublesome for farmers who grow soybean, corn, cotton and sugar beets engineered to tolerate glyphosate. Using a single herbicide increases the odds that the weed population will shift to resistant plants. (Source: Nine Weeds Resistant to Glyphosate, press release, Weed Science Society of America, Nov. 23, 2009; www.growingproduce.com/news/avg/?storyid=2970#)

A new study entitled "Gene amplification confers **glyphosate resistance in Amaranthus palmeri**" from a research team including Monsanto scientists echoes conclusions from a report by The Organic Center (TOC). The Monsanto-funded research states that "evolution of resistance to the widely used, nonselective herbicide glyphosate in weedy species endangers the continued success of transgenic glyphosate-resistant crops and the sustainability of glyphosate as the world's most important herbicide." Similarly, TOC's report demonstrates evidence linking the increase in herbicide use on GE, herbicide-tolerant crops to the emergence and spread of glyphosate-resistant weeds including *Amaranthus palmeri*. Using USDA data, Dr. Charles Benbrook showed that glyphosate-based, **herbicide-tolerant corn, soybeans and cotton increased U.S. herbicide use** by 318 million pounds from 1996 to 2008, with 46 percent of the increase occurring in 2007 and 2008. In 2008, GE crops required more than 26 percent more pounds of pesticides per acre than acres planted to conventional varieties. This trend is expected to continue as a result of the rapid spread of glyphosate-resistant weeds. ("Monsanto-Funded Research Echoes Organic Center's 'Impacts of Genetically Engineered Crops on Pesticide Use ...' Report, Concluding that Glyphosate-Resistant Weeds Threaten Future of Herbicide-Tolerant, Genetically Engineered Crops," press release, The Organic Center, Jan. 18, 2010; www.organic-center.org; "Gene amplification confers glyphosate resistance in *Amaranthus palmeri*," Proceedings of the National Academy of Sciences, Dec. 2009; www.pnas.org/content/early/2009/12/10/0906649107; "Impacts of Genetically Engineered Crops on Pesticide Use in the United States: The First Thirteen Years," The Organic Center; www.organic-center.org/science.pest.php?action=view&report_id=159

In "Loss of Glyphosate Efficacy: A Changing Weed Spectrum in Georgia Cotton," Theodore M. Webster and Lynn M. Sosnoskie examine how increased acreage of **GE herbicide-tolerant cotton is changing the most prevalent weeds**, which now include varieties that tolerate or resist glyphosate. The two most troublesome in Georgia cotton are Benghal dayflower, which is tolerant to glyphosate and many herbicides used in agronomic crops, and Palmer amaranth, which has developed resistance to many classes of herbicides, including glyphosate. "Because herbicide resistance can spread quickly, indiscriminate use of glyphosate may result in a loss of

weed susceptibility for all growers, a tragedy of the commons,” say the authors. (“Herbicide-tolerant cotton creates growing weed-control issues for farmers,” press release, Allen Press, Jan. 21, 2010; full text article: www2.allenpress.com/pdf/WEES_58.1_73-79.pdf)

Legislation

Update On MOFGA’s Toxics Policy Work – State and Federal

By Heather Spalding

MOFGA is busy with public policy work on toxics this year. In addition to our efforts to develop a practical and effective pesticides spray notification system (see BPC report above), we continue to partner with the Alliance for a Clean and Healthy Maine (www.cleanandhealthyme.org) and Maine’s Environmental Priorities Coalition.

This year, the Alliance is focusing one toxics campaign on federal efforts to overhaul the Toxic Substances Control Act (TSCA, developed to regulate introduction of new or existing chemicals), and another on priority toxics bills under consideration by Maine’s Legislature.

Maine has been a national leader in developing models for phasing out unnecessary toxic chemicals in everyday consumer products. The Alliance seeks to bring Maine’s successes to Washington, D.C., and ensure that Congress creates common sense limits on toxic chemicals. The Alliance is a key partner in a national Safer Chemicals, Healthy Families (www.saferchemicals.org) campaign working to reform TSCA. A reformed TSCA would serve as the backbone of a sound and comprehensive chemicals policy that protects public health and the environment while restoring the luster of safety to U.S. goods in the world market. Any effective reform of TSCA should take immediate action on the most dangerous chemicals; hold industry responsible for the safety of its chemicals and products; and use the best science to protect all people and vulnerable groups.

Since President Gerald Ford signed TSCA into law in 1976, the U.S. Environmental Protection Agency has required testing on just 200 of the 83,000 chemicals in common use and issued regulations for only five; and 60,000 chemicals received "grandfathered" approval with no government testing. The need to overhaul TSCA is widely recognized. Even the American Chemistry Council recognizes that the public lacks confidence in the way the United States regulates chemicals. EPA administrator Lisa Jackson recently released core principles for strengthening the federal toxics law and emphasized scrutiny of four particular classes of chemicals: phthalates; short-chain chlorinated paraffins; polybrominated diphenyl ethers (PBDEs); and perfluorinated chemicals including PFOAs. By the time this issue of The Maine Organic Farmer & Gardener goes to press, congressional discussions about TSCA reform may be under way.

Please urge members of Maine’s Congressional Delegation to co-sponsor legislation to reform the Toxic Substances Control Act and ensure safe products for American families.

Senator Olympia Snowe, 154 Russell Senate Office Bldg., Washington, DC 20510-0001; Phone: 202-224-5344; Fax: 202-224-1946; <http://snowe.senate.gov>

Senator Susan Collins, 413 Dirksen Senate Office Bldg., Washington, DC 20510; Phone: 202-224-2523; Fax: 202-224-2693; <http://collins.senate.gov>

Representative Michael Michaud, 1724 Longworth House Office Bldg., Washington, DC 20515; Phone: 202-225-6306; Fax: 202-225-2943; <http://michaud.house.gov>

Representative Chellie Pingree, 1037 Longworth House Office Bldg., Washington, DC 20515; Phone: (202) 225-6116; Fax: (202) 225-5590; <http://pingree.house.gov/>

Closer to home, MOFGA has been working on priority bills with the Alliance for a Clean and Healthy Maine and on the Common Environmental Agenda of Maine's Environmental Priorities Coalition (EPC).

Toxics bills prioritized by both the Alliance and the EPC:

LD 1547, An Act to Revise Notification Requirements for Pesticides Applications Using Aircraft and Air Carrier Equipment, would make the pesticide spray notification system more manageable, consistent and easier to understand for land managers; easier to enforce for Maine's Board of Pesticides Control; and easier to access and understand for neighbors of land managers who spray. (See details in the BPC report above.)

LD 1631, An Act to Provide Leadership Regarding the Responsible Recycling of Consumer Products, would expand partnerships with manufacturers to increase collection and recycling of consumer products.

LD 1568, An Act to Clarify Maine's Phase-out of Polybrominated Diphenyl Ethers (i.e. the toxic flame retardant DECA), would close DECA loopholes in Maine law so that we don't have to guess where this toxic chemical will turn up next. Specifically, it would ban the use of DECA in plastic shipping pallets.

Other priority bills of Maine's EPC:

LD 891, An Act to Amend the Site Location of Development Law to Include Consideration of Greenhouse Gas Emissions, would guide new development to encourage clean and energy-efficient design that reduces carbon dioxide pollution and creates new jobs for Maine.

LD 1538, An Act to Close Loopholes in Environmental Laws, would protect water quality, wildlife habitat, and their economic value by closing loopholes that allow road development without review.

LD 1662, An Act To Improve Maine's Air Quality and Reduce Regional Haze at Acadia National Park and Other Federally Designated Class I Areas, would reduce sulfur pollution and its dangerous health effects while improving visibility at Maine's scenic parks and public lands.

LD 1725, Resolve, Regarding Legislative Review of Portions of Section 10: Stream Crossings within Chapter 305 Permit by Rule Standards, a Major Substantive Rule of the Department of

Environmental Protection. This bill would ensure the sustainability of Maine fisheries, aquatic wildlife and recreational and commercial fishing industries by adopting important rules regarding stream crossings.

The EPC also advocates for no roll-backs of existing environmental protections. Legislators will receive a report card from the Maine League of Conservation Voters based on votes cast in favor of or against these priority bills.

As this is the short session of the 124th Legislature, some or possibly all the bills may have been voted on by the time this issue of the paper goes to print. We will provide a policy update in our summer newspaper and more frequent reports in MOFGA's weekly email Bulletin. To sign up, visit www.mofga.org.

Summer 2010

The Good News

Maine Farmland Trust (MFT) has launched a Farm Viability Program, designed to help farms become more successful and to help new farms get established. MFT will draw on a network of agricultural experts and resources to help participating farmers initiate new operations, reach new markets, and take other steps to enhance success. A Quality of Place grant from the Environmental Funders Network and a USDA Community Food Projects grant will support these efforts. Mike Gold coordinates the program from a new MFT office in Unity, in the heart of the region where many of the initial projects will be focused. This program seeks not just to preserve farmland but to revitalize village centers, boost local farming and use community-based strategies to improve food security. The project will take advantage of increasing interest in local farm products, while responding to a surging local demand for emergency food assistance. For more information, visit www.maineFarmlandtrust.org or call 207-948-6575.

Several Maine landscapers have joined more than 500 professionals **accredited by the Northeast Organic Farming Association (NOFA) Organic Land Care (OLC) Program** after taking NOFA's five-day course in January. They are:

- Paul Lorrain and Alice Dunworth, Sunset Farm Organics, Lyman
- Jaime Critchley, Alyssa Lynch and Mike Veazey, Piscataqua Landscaping, Eliot
- Pamela Durack, JNL Inc., Eliot
- Marjorie Peronto and Diana Hibbard, UMaine Cooperative Extension, Ellsworth and Portland
- Carol Laboissonniere, Kennebunk
- Justin Nichols, Coastal Maine Botanical Gardens, Boothbay
- Robert Carr, Keystone Horticulturist, Buxton

All will be listed at www.organiclandcare.net and in NOFA's Guide to Organic Land Care, with a free circulation of 15,000 in the Northeast.

Accreditation offers networking with others who follow NOFA's Standards for Organic Land Care: Practices for Design and Maintenance of Ecological Landscapes; discounts on OLC educational events and workshops; publicity and marketing support; use of the NOFA

Accredited Professionals logo on marketing materials; and access to NOFA staff for referrals, teaching/speaking opportunities and transitional assistance.

Course faculty include respected scientists and experienced organic land care practitioners who teach principles and procedures; site analysis, design and maintenance; rain gardens/storm water infiltration; soil health; the soil food web; fertilizer and soil amendments; composting; lawns; lawn alternatives; planting and plant care; wetlands; water conservation and management; pest and wildlife management; disease control; mulches; invasive plants; client relations and running a business. Four hands-on case studies are included in the course.

For information on the January 2011 course, contact Kathy Litchfield, NOFA/Mass OLC course coordinator, (413) 773-3830, kathy@nofamass.org, or visit www.organiclandcare.net.

University of Michigan researchers Ivette Perfecto and John Vandermeer say that **small, family farms may produce as much or more food and preserve more diversity in remaining tropical forests than industrial agriculture**. Small farms using sustainable practices favor migration of species among fragmented areas of forests better than large monocultures of industrial crops, helping to maintain that biodiversity of species. ("Small Family Farms in Tropics Can Feed the Hungry and Preserve Biodiversity," ScienceDaily, Feb. 24, 2010; www.sciencedaily.com/releases/2010/02/100222161858.htm; Feb. 22 in the Proceedings of the National Academy of Sciences)

The **USDA** announced on February 5, 2010, that it is **suspending its controversial National Animal Identification System (NAIS)** for tracking animal disease and food contamination and is refocusing its efforts on "a new, flexible framework" with lower cost and only for animals moved in interstate commerce. ("USDA Drops 'Big Brother' National Animal ID Program," Feb. 5, 2010; http://organicconsumers.org/nais_faqs.cfm)

Pesticides

Board of Pesticides Control: Notification Details; Another Bt Corn Approval; Repeated Rule Violations and Fines

By Katy Green

On April 1, 2010, LD 1547, An Act To Revise Notification Requirements for Pesticides Applications Using Aircraft or Air-carrier Equipment, was signed into law. This new legislation revised LD 1293, which was passed last year and dealt with notifying neighbors about certain pesticide uses. The new legislation loosened some restrictions on regulated applicators and charged the Maine Board of Pesticides Control (BPC) with new tasks, including developing recommendations regarding notification distances as they relate to types of pesticide applications; determining the feasibility and advisability of requiring land managers to post signs; and determining the feasibility of an automated, Internet-based system for notifying registry participants. Additionally, the BPC must report to the legislature in February 2011 on its progress in developing a comprehensive notification registry and the effectiveness of public outreach to make people aware of the registry.

At its April meeting the BPC began dealing with these directives. It accepted public comments on the scope and functional aspects of the registry. About 10 people commented, and most agreed that the comprehensive registry is a positive step for everyone involved. Heather Spalding, MOFGA's associate director, highlighted what will likely be the biggest issue: developing distances for notification that are acceptable to all stakeholders. Others agreed. For example, at the April 16 hearing, recommended distances for notifying neighbors ranged from 175 feet to 1,320 feet. Determining a distance that is based on science and is acceptable to all involved parties will be a major focus of the BPC in coming months.

The BPC will also have to grapple with the feasibility and benefits of signage. Spalding said that signage should be considered as an additional means of notification; others said that signage would imply something is inherently wrong with pesticide applications and would be bad for business.

The board is seeking input on these new directives from public health professionals, members of the regulated community, people who are currently on the registry, and others. It has tentatively set public hearings dates on June 24 at 7 p.m. at the University of Maine, Machias, Sennett Hall, Clipper Lounge; on June 25 at 9 a.m. at the University of Maine, Machias, Sennett Hall, Clipper Lounge; and on July 23 at 9:30 a.m. in Portland (location to be announced). For more information, please visit www.maine.gov/agriculture/pesticides/about/index.shtml#meeting.

Written comments may be sent to Henry Jennings at henry.jennings@maine.gov or Maine Board of Pesticides Control, 28 State House Station, Augusta, ME 04333-0028.

Product Registrations

In March the board approved registration of another Monsanto Bt corn variety. The label for this new cross allows for both field corn and sweet corn to be grown. Board members discussed the need for this new product, as it broadens control of insects that don't live in Maine. Many board members decided that since this product does not really differ from other approved varieties, it should be registered. Only Chuck Ravis, professor of environmental science and ecology at Thomas College, opposed the registration.

At its April meeting the board developed a new protocol for dealing with Bt corn registrations. Rather than consider the same essential product repeatedly, it gave the staff authority to approve Bt corn varieties unless any of four criteria occur: The product is in a new crop variety; refuge requirements are different; a protein is different; or staff toxicologist Lebel Hicks is uncomfortable with the registration for any reason.

The board approved a Special Local Needs (24c) application for use of Bravo ZN (EPA Reg. No. 50534-204-100) on potatoes at its April meeting. This request was based on late blight pressure that growers experienced last year and the assumption that it will be bad again this year. University of Maine Cooperative Extension potato specialist Dr. Steven Johnson suggested that this request would allow growers a few more sprays to help control blight. Ravis noted that the active ingredient in Bravo ZN, chlorothalonil, is routinely found in surface water samples throughout Maine and asked if other treatment methods have been considered. Johnson said the

issue is having enough supply of other materials. The board unanimously approved the request on the condition that it is updated next year on how the product was used.

Pesticide Application Rule Violations

Three times in 2009, in Brunswick and Kittery, TruGreen Chemlawn of Manchester, New Hampshire, failed to provide proper notification of pesticide applications to landowners who had requested it. In all cases TruGreen maintained that it had provided proper notification, but was unable to provide BPC staff with proof. The fine levied for these violations was \$1,500.

Spruce Bay Farm & Landscape, Inc., of Poland, Maine, was fined \$350 for applying pesticides without a commercial applicator's license at a medical facility in Topsham and failing to keep proper application records. The company was unaware that a license was needed. The board discussed outreach to small and new businesses that may not be aware of required licenses.

The town of South Berwick was cited with a violation after allowing an unlicensed applicator to apply Ready-to-Use Roundup Herbicide on sidewalks and curbs throughout town. A resident notified the board after observing dead grass on lawns adjacent to the sidewalk. A board investigation found that the town allowed unlicensed applicators to use herbicides in this and other instances and issued a \$500 fine.

Similarly, the town of Randolph was cited and fined \$400 for allowing unlicensed applicators to apply Roundup herbicide on town property.

A consent agreement between the board and the Bethel Inn & Country Club in Bethel was unanimously approved at the April meeting. The Bethel Inn had been fined \$400 for unlicensed pesticide applications at the golf course in 2001, 2002 and 2003. At some point in 2004 or 2005, the master applicator ended his employment with the club, and from then through 2009, employees made unlicensed pesticide applications. In April 2010, the board fined the Bethel Inn \$3,000 because it was a repeat violation of the rule.

[End of BPC news]

Children in Ecuador who were exposed to pesticides prenatally when their mothers worked in the greenhouse floral industry had a 1.5- to 2-year developmental delay in motor speed, motor coordination, and visual memory (Stanford-Binet Copying Recall Test) compared with those whose mothers did not work in floriculture. They also had higher systolic blood pressure and a slight decrease in body mass index. (Harari R, Julvez J, Murata K, Barr D, Bellinger DC, Debes F, et al. 2010. Neurobehavioral Deficits and Increased Blood Pressure in School-Age Children Prenatally Exposed to Pesticides. *Environ Health Perspect*, Feb. 25, 2010, doi:10.1289/ehp.0901582; <http://ehp03.niehs.nih.gov/article/info%3Adoi%2F10.1289%2Fehp.0901582>)

Health Canada's Pest Management Regulatory Agency is phasing out approval of all pesticide and fertilizer combination products by December 2012 because "fertilizer-pesticide

combination products for lawn and turf uses do not support the goals of best practices for pest management in turf." More than half of Canada has already banned weed-n-feed type products. The most common herbicide in U.S. pesticide-fertilizer combination products is dichlorophenoxyacetic acid, or 2,4-D. Paul Tukey of the SafeLawns Foundation writes, "What a great step in the right direction. The vast majority of lawn and garden pesticides are applied in combination with fertilizers; this action will significantly reduce the amount of contamination to the environment." (PANNA Feb. 19, 2010; www.panna.org)

Female spouses of **pesticide** applicators were 12.5 percent more likely than the general population to suffer **thyroid disease**, according to self reports on questionnaires. Thyroid disease was associated with use of benomyl, maneb/mancozeb, paraquat and organochlorines, including aldrin, DDT, heptachlor, lindane and chlordane. ("Pesticide Use and Thyroid Disease Among Women in the Agricultural Health Study," by Whitney Goldner et al., Amer. J. of Epidemiology, Jan. 8, 2010; www.panna.org/files/pesticideusethyroid.pdf)

A University of California, Berkeley, study exposed 40 **male frogs** to the common weed killer **atrazine** at concentrations like those found where the herbicide is used. Forty other male frogs served as controls. Ninety percent of the treated frogs had lower testosterone levels, smaller breeding glands, feminized laryngea, suppressed mating behavior, reduced sperm production and decreased fertility, compared with controls. The other 10 percent of the treatment group **frogs became females**, mated with males and produced eggs--which produced male larvae only. Some 80 million pounds of atrazine are applied annually to U.S. cropland, and half a million pounds fall in rain in the United States, even hundreds of miles from application sites. Meanwhile, communities in six Midwestern states have filed a federal lawsuit hoping to force atrazine manufacturer Syngenta to pay to filter the herbicide from their drinking water. ("Atrazine induces complete feminization and chemical castration in male African clawed frogs (*Xenopus laevis*)," by Tyrone Hayes et al., Proc. National Academy of Sciences, March 9, 2010; <http://www.pnas.org/content/107/10/4612>; "Cities Sue Manufacturer of Weed-Killer Found in Tap Water," by Danielle Ivory, Huffington Post, March 8, 2010; <http://huffpostfund.org/print/1414#ixzz0hm9Vgn6i>)

A two-year study by Pennsylvania State University researcher Christopher Mullin and coworkers found "unprecedented levels" of multiple mite-killing **chemicals and crop pesticides in honeybee hives**. Beeswax contained 87 pesticides and metabolites, with up to 30 and a mean of eight in single samples. Pollen contained a mean of seven, but up to three pesticides or metabolites. Bees themselves (primarily queens, brood nurses and adolescents rather than foraging bees) contained a mean of two, although one had 25. Some of the detected chemicals can disorient bees. From hundreds of samples, only one wax, three pollen and 12 bee samples had no detectable pesticides. The most common chemicals in wax and bees were fluvalinate and coumaphos (miticides), chlorpyrifos, chlorothalonil, amitraz (a miticide), pendamethalin, endosulfan, fenpropathrin, esfenvalerate and atrazine. The most common in pollen were fungicides. ("Bees face 'unprecedented' pesticide exposures at home and afield," by Janet Raloff, Science News, Marcy 21, 2010; www.sciencenews.org/view/generic/id/57474/title/Bees_face_unprecedented_pesticide_exposures_at_home_and_afield; "High Levels of Miticides and Agrochemicals in North American Apiaries: Implications for Honey Bee Health," by Christopher Mullin et al., PLoS ONE 5(3):

e9754. doi:10.1371/journal.pone.0009754;

www.plosone.org/article/info:doi%2F10.1371%2Fjournal.pone.0009754)

Epidemiologists say that North Carolina and Iowa farmers who applied six **pesticides**--maneb, mancozeb, methyl-parathion, carbaryl, benomyl and ethyl-parathion--most heavily had an increased incidence of **melanoma**. Manufacturers cancelled the last two in 2008. Carbaryl (Sevin) is widely used by homeowners--often without protective clothing or equipment--to kill lawn and garden pests. Exposure to sun, having red hair and having fair skin also increase melanoma risk, as did obesity in this study. Previous studies have also linked long-term pesticide exposure to increased melanoma risks. ("Farm pesticides linked to deadly skin cancer," by Gordon Shetler, Environmental Health News, March 31, 2010; www.environmentalhealthnews.org/ehs/news/farm-pesticides-linked-to-deadly-skin-cancer)

Genetic Engineering News

USDA Agricultural Research Service microbiologist Robert Kremer, working at the University of Missouri, has found **ravaged root systems in GE Roundup Ready plants**. "We have glyphosate [Roundup] released into the soil, which appears to be affecting root growth and root-associated microbes." Kremer told Reuters. The news outlet adds that some scientists are seeing indications of increased root fungal disease in Roundup Ready crops, and manganese deficiency in RR soybeans. ("Special Report: Are regulators dropping the ball on biocrops?," by Carey Gillam, Reuters, April 13, 2010; www.washingtonpost.com/wp-dyn/content/article/2010/04/13/AR2010041301509.html)

In September 2009, federal Judge Jeffery White ordered USDA to produce an environmental impact statement (EIS) to support its deregulation of **Monsanto's Roundup Ready beet seeds**. Since the July 9 hearing date for the case is after the planting date for beets, activists asked that the court bar production or use of the seeds until a permanent injunction is in place, fearing that pollen from GE beets will contaminate organic beet and chard seed crops in Oregon's Willamette Valley. Some 95 percent of the 2009 U.S. sugar beet crop was Roundup Ready. On March 16, 2010, White ruled against the immediate ban, saying it would be too disruptive at that time of the planting season—but warned that he may block planting later, pending the EIS; and that he was "inclined to order" that growers "take all efforts, going forward, to use conventional seed." ("Plaintiffs to Demand Immediate Seed Ban," by Wes Sander, Capital Press, Dec. 12, 2009; www.capitalpress.com/oregon/ws-Sugar-Beets-121109; "Beet Growers Eager to Plant Before Hearing," by Dave Wilkins, Capital Press, Dec. 12, 2009; www.capitalpress.com/idaho/dw-beet-hearing-side-w-art-p-8-121109; "Judge Won't Bar Modified-Beet Planting Immediately," by Karen Gullo, Businessweek, March 16, 2010; www.businessweek.com/news/2010-03-16/judge-won-t-bar-modified-beet-planting-immediately-update2-.html)

The Indian government put a six-month moratorium on GE Bt brinjal (eggplant) in February. Activists spurred the action, citing problems with India's regulatory process, lack of labeling and potential toxic effects of foreign genes in the crop. Half a dozen Indian state governments have banned the variety. Many people are concerned about Bt crops since 2,000 sheep died in 2006 after grazing on Bt cotton in India, but Agriculture Minister Sharad Pawar supports planting Bt brinjal, promoted by Mahyco-Monsanto Biotech. The crop contains the Cry1Ac gene from *Bacillus thuringiensis* (Bt) to combat the shoot and fruit borer. Activist

Vandana Shiva says, "The traditional brinjal crop—of which we have over 2,000 varieties today—will vanish if the genetically modified variety is allowed." India uses brinjal extensively in ayurvedic medicine. Also, brinjal is a traditional crop in India, and the Cartagena Protocol on Biosafety, which India signed, discourages using GE crops in their land of origin. ("Brinjal a political hot potato in India," by Neeta Lal, Asia Times Online, Feb. 4, 2010; www.atimes.com/atimes/South_Asia/LB04Df03.html); Pesticide Action Network North America News Update, Feb. 12, 2010; www.panna.org; "India halts release of GM aubergine," AP, Feb. 9, 2010; www.guardian.co.uk/world/2010/feb/09/india-halts-genetically-modified-aubergine/print

On March 2, 2010, the **European Commission approved cultivation of GE Amflora potatoes**—the first GE food approved in Europe in 12 years; and it allowed three GE corn products to be sold but not grown in Europe. Amflora, owned by the German company BASF, would be grown only for such "industrial uses" as animal feed, papermaking and textiles. Through gene silencing, it contains only amylopectin starch, while non-GE potatoes contain amylose and amylopectin. Amflora also contains an antibiotic resistance marker gene, which, some worry, could enter the food chain. Previously, the only GE crop approved for cultivation in Europe was Monsanto's MON 810 GE corn. ("EU Authorizes GMO Potatoes," March 2, 2010, Agence France Presse; posted at www.commondreams.org/headline/2010/03/02-4)

Monsanto reports that the **pink bollworm**, a major cotton pest, has developed **resistance to its GE Bt cotton**. Between 2007 and 2009, cotton yield in India fell 9 percent while pesticide expenses for the crop increased 32 percent, and new pest problems arose. Monsanto says its Bollgard II cotton has an additional engineered gene to counter bollworm resistance, but Louisiana farmers experience "no help for insect resistance management for bollworms that are 'slipping' through Bollgard II cotton and must be treated with pyrethroids that are becoming less effective with each application," according to Agricultural Management Services, Inc., adding, "We were supposed to have enough control of bollworms with BGII to not have to treat for bollworms." (Pesticide Action Network News Update, March 12, 2010; www.panna.org; "East-Central Louisiana: Conversations with Monsanto About Fees, Resistance; Cotton Stalk Destruction; Gearing Up For Planting," Agricultural Management Services, Inc., Feb. 28, 2010; <http://agfax.com/news/2010/02/ams-louisiana-0228.htm>)

Peasant, family farm, and indigenous peoples' organizations **protested the March 2010 UN Food and Agriculture Organization (FAO) conference on Agricultural Biotechnologies in Developing Countries** in Guadalajara, Mexico, hosted by the Mexican government and co-sponsored by the International Fund for Agricultural Development. Filipino farmer Isidoro Ancog noted that risks and additional costs of GE crops are often obscured by jargon-laden packaging; that poor people were not represented at the conference; and that he is a target [of] technologies designed without his knowledge that he does not need. Social and environmental groups held their own conference in Guadalajara, calling the FAO conference an "act of aggression" for its pro-GE agenda and because it was held where, "for indigenous people, maize is first, maize is ours, and we are part of her." Mexico is trialing GE corn, despite potential contamination of the biodiversity in the plant's place of origin. (Pesticide Action Network News Update, March 12, 2010; www.panna.org)

In March 2010, the **U.S. departments of justice (DOJ) and agriculture (USDA) began investigating corporate control over food and farming**, focusing first on the seed industry. Many public interest groups held their own town hall meeting then, to give voice to those interested in breaking monopoly control over food and agriculture. Dr. Ishii Eiteman presented evidence that GE seeds and industrial-scale farming will not feed the world but do benefit large, transnational corporations and wealthier groups. Since a 5-4 Supreme Court decision in 1980 allowing patenting of living organisms, and a law adopted in 1980 allowing publicly funded research to be patented and sold for commercial use, seeds are increasingly owned by a small handful of corporations, led by Monsanto, Dupont/Pioneer and Syngenta. (Pesticide Action Network News Update, March 19, 2010; www.panna.org)

Matthew Dillon of the Organic Seed Alliance warns **organic vegetable farmers** who use Seminis seeds (owned by Monsanto) that they **may inadvertently be engaging in contract agreements with Monsanto**. Monsanto holds patents on many traits in these seeds (some vague and naturally occurring, such as heat tolerance). These utility patents prohibit farmers from saving seed for any purpose. Monsanto puts a technology agreement--a legal contract--on bags of seed, stating that the farmer is agreeing to not save seed for any purpose, including breeding. "Unless you want Monsanto agents taking samples from your farm, suing you in court for thousands of dollars in patent infringement, and causing you to go into debt for legal counsel (regardless if you were guilty or not) you might want to think twice about ordering Seminis varieties," says Dillon. ("Organic Vegetable Farmers - WARNING - you may be engaging in contract agreements with Monsanto," by Matthew Dillon, Organic Seed Alliance, March 15, 2010; <http://blog.seedalliance.org/2010/03/16/organic-vegetable-farmers--warning--you-may-be-engaging-in-contract-agreements-with-monsanto.aspx>)

Contamination of organic corn in the Midwest with GE genes is occurring increasingly, reports The Organic & Non-GMO Report, citing a source who wanted to remain anonymous. Despite organic farmers' precautions (planting later than neighbors who plant GE corn; growing in isolated fields; cleaning equipment), contamination is threatening organic markets. The GE genes do not seem to be coming from contaminated seed. Soybeans, too, although self-pollinating, are showing low levels of contamination. (The Organic & Non-GMO Report, April 2010; www.non-gmoreport.com/articles/apr10/organicfarmers_gmocontamination.php)

United States District Court **Judge Robert W. Sweet has struck down patents on the genes BRCA1 and BRCA2**, linked to breast and ovarian cancer, a decision possibly affecting intellectual property law and patents on thousands of human genes. Sweet said the patents involved a "law of nature" and that simply isolating a gene does not make it patentable. Some 20 percent of human genes have been patented. The decision is likely to be appealed. ("Judge Invalidates Human Gene Patent," by John Schwartz and Andrew Pollack, The New York Times, March 29, 2010; www.nytimes.com/2010/03/30/business/30gene.html?adxnml=1&hpw=&adxnmlx=1269950726-45/mZ9FOcmIGLEh9UbPkCA; "After Patent on Genes Is Invalidated, Taking Stock," by Andrew Pollack, The New York Times, March 30, 2010; www.nytimes.com/2010/03/31/business/31gene.html)

Environment Canada says the **GE Yorkshire “Enviropig”** developed at the University of Guelph is not toxic to the environment under the Canadian Environmental Protection Act--the first regulatory step in approving the transgenic pig for market in Canada. The pig contains mouse DNA that reduces the phosphorus concentration in its manure by 30 to 65 percent. If approved, it would be the first GE animal allowed for food or feed in the world. (“Genetically modified pork one step closer to dinner table,” by Sarah Schmidt, Canwest News Service, Feb. 19, 2010; www.leaderpost.com/technology/Genetically+modified+pork+step+closer+dinner+table/2583723/story.html)

Bill Gates and Bill Clinton are pressing for passage of the **Global Food Security Bill** (the Lugar-Casey Act), which aims to fight global hunger while producing a **giant taxpayer subsidy to pesticide and ag biotech companies**. The bill would refocus aid programs on agricultural development to use public funding of GE seeds--despite two decades of failure of GE to help farmers in the developing world. The International Assessment of Agricultural Science and Technology for Development (www.panna.org/mag/summer2008/agriculture/business-as-usual-is-not-an-option) shows the need to strengthen agroecological research to support small-scale farmers, while decreasing corporate control of seeds and of the food system. (Pesticide Action Network News Update, April 2, 2010; www.panna.org)

Food Issues

The Office of Inspector General reported on March 9 that **under the Bush administration, USDA inadequately enforced federal organic law**. The audit of the National Organic Program (NOP) found that improvements in the program had been made under the new administration but identified 14 major concerns regarding management, enforcement, and oversight of organic certification agents--especially the state of California and foreign certifiers that import into the United States--such as not following through or delaying action on enforcement after federal investigators confirmed violations. "Spotty enforcement of organic rules, since 2002, has enabled a number of giant factory farms, engaged in suspect practices, to place ethical family farmers at a competitive disadvantage, particularly in organic dairy, beef and egg production," says the Cornucopia Institute. Current USDA Agricultural Marketing Service (AMS) administrator Rayne Pegg says she "reviewed the report and agree[d] in principle with its findings and recommendations"; and the AMS and NOP had already taken remedial action on some or was to do so soon--indicating that the Obama/Vilsack administration is serious about national organic standards. The USDA will begin enforcing rules requiring spot testing of organically grown foods for traces of pesticides--required under the 1990 law that established national organic standards. It will also require unannounced inspections of organic producers and processors and will check labeling of organic products in stores. (“USDA Inspector General Finds Bush Administration Ignored Organic Laws,” Cornucopia Institute, March 19, 2010; “U.S. Plans Spot Tests of Organic Products,” by William Neuman, The New York Times, March 19, 2010; www.nytimes.com/2010/03/20/business/20organic.html; review posted at www.usda.gov/oig/webdocs/01601-03-HY.pdf)

Aspartame producer Ajinomoto is renaming its sweetener AminoSweet, which it believes is an appealing and memorable name and reflects the amino acid content of the product. (“Ajinomoto brands aspartame ‘AminoSweet,’” by Shaun Weston, FoodBev.com, Nov. 17, 2009)

A Princeton University research team says **rats with access to high-fructose corn syrup (HFCS) gained significantly more weight than those with access to table sugar**, even when their overall caloric intake was the same. Also, rats' long-term consumption of HFCS led to abnormal increases in body fat, especially in the abdomen, and a rise in circulating blood fats called triglycerides. Psychology professor Bart Hoebel said, "When rats are drinking high-fructose corn syrup at levels well below those in soda pop, they're becoming obese—every single one, across the board. Even when rats are fed a high-fat diet, you don't see this; they don't all gain extra weight."

HFCS and sucrose both contain the simple sugars fructose and glucose, but sucrose has equal amounts of the two, while the HFCS in this study had 55 percent fructose, 42 percent glucose and 3 percent of higher saccharides. Also, the HFCS fructose molecules in the sweetener are unbound, ready for absorption and utilization, while the fructose in sucrose that comes from cane or beet sugar is bound to glucose, requiring an extra metabolic step before being utilized.

In the 40 years since HFCS was introduced to the U.S. diet, obesity rates have gone from about 15 percent in 1970 to about one-third of the population now.

The Corn Refiners Association says amounts of HFCS consumed by rats in this study were far greater than those that humans consume; and that the study had inadequate control groups. Ars Technica calls the study results suggestive, somewhat confusing, sometimes contradictory and in need of replication with a larger study population and improved experimental design. ("A sweet problem: Princeton researchers find that high-fructose corn syrup prompts considerably more weight gain," by Hilary Parker, News at Princeton, March 22, 2010;

www.princeton.edu/main/news/archive/S26/91/22K07/index.xml?section=topstories; "Gross Errors in Princeton Animal Study on Obesity and High Fructose Corn Syrup," by Audrae Erickson, Corn Refiners Assoc., March 22, 2010; www.corn.org/princeton-hfcs-study-errors.html; "Does High Fructose Corn Syrup Make You Fatter?" by John Timmer, Ars Technica, March 29, 2010; <http://arstechnica.com/site/about-ars-technica.ars>)

According to writer Martha Rosenberg, **ractopamine** (Paylean and Optaflexx), a **drug** that increases protein synthesis and made mice more muscular, is **used in [conventional] U.S. livestock** production (including cattle, pigs and turkeys), even when animals are close to slaughter. Banned in 160 nations, the drug, farmers report, caused pigs to be hyperactive, vomit, suffer muscle breakdown and stress, and to die. Temple Grandin, professor of animal science at Colorado State University, has noted similar problems. Changes in heart rate, behavior and catecholamine profile in pigs were described in a 2003 Journal of Animal Science article. ("Why Has the FDA Allowed a Drug Marked 'Not Safe for Use in Humans' to Be Fed to Livestock Right Before Slaughter?" by Martha Rosenberg, CounterPunch, Feb. 2, 2010; www.alternet.org/story/145503/)

Despite protests from more than 90,000 people representing 100 farm, environmental and social groups, **President Obama appointed Islam Siddiqui** as Chief Agricultural Negotiator at the U.S. Trade Office in April. Siddiqui is a former pesticide lobbyist and vice president of regulatory affairs for CropLife America, the pesticide and ag biotech industry's trade association. Siddiqui and CropLife have aggressively promoted interests of the pesticide/GE crop industry over that of farmers, consumers and children's health. (Pesticide Action Network News Update,

April 2, 2010; www.panna.org)

Basilio Coronado, 45, an owner of Sel-Cor Bean and Pea, Inc., in Brownfield, Texas, was sentenced in February by U.S. District Judge Sam R. Cummings to **two years in federal prison**, three years of supervised release and given a \$523,692.08 fine **for selling conventional grain, beans and peas as organic**. Coronado is also barred from participating in any USDA or other agricultural programs for five years. (U.S. Dept. of Justice press release, Feb. 26, 2010; www.justice.gov/usao/txn/PressRel10/coronado_crop_sen_pr.html)

Sheila Pell reports in Emagazine that some 70 percent of **U.S. broiler chickens, as well as turkeys and swine, are given the arsenic-based growth promoting feed additive roxarsone**. While some of that organic arsenic remains in chicken meat, most is excreted and breaks down into inorganic arsenic, a strong promoter of many cancers. In Prairie Grove, Arkansas, which is surrounded by large poultry factory farms, and where manure from those farms is used extensively as fertilizer on area fields, incidences of rare cancers are high. A decade ago, the town's 2,500 residents learned that 17 children there suffered from cancers including brain and testicular cancer and leukemia. Likewise, the Delmarva Peninsula, another area with factory poultry farms, has one of the highest cancer rates in the United States. Manure that isn't used as fertilizer is added to cattle feed. The National Chicken Council claims that roxarsone, an antibiotic, contributes to "animal health and welfare, food safety and environmental sustainability." ("Arsenic and Old Studies--Pressure Is On to Ban a Hazardous but Profitable Feed Additive," by Sheila Pell, Emagazine, March-April 2010; <http://www.emagazine.com/view/?5064>)

Maine Legislation

The Maine Environmental Priorities Coalition (EPC) is a partnership of 26 environmental, conservation and public health organizations—including MOFGA—that represents more than 100,000 members. It provides lawmakers with a roadmap for protecting Maine people and promoting prosperity for today and future generations. Each year, several issues are selected as priorities and receive the collective support of the Coalition during the legislative session.

This year, the 124th Legislature passed several EPC priority bills. Despite some setbacks, progress occurred in ensuring Maine's environmental legacy. Following are results and summaries of those bills.

LD 1631, An Act to Provide Leadership Regarding the Responsible Recycling of Consumer Products Status: PASSED AND SIGNED BY GOVERNOR BALDACCI. This law sets up a process to identify consumer products that would require producers to fund collection and recycling programs. These programs would help to safely recycle or dispose of the products when they are no longer needed. LD 1631 focuses the state's limited resources on products that adversely impact the environment and human health. The law positions Maine as a national leader in minimizing waste and improving recycling.

LD 1538, An Act to Close Loopholes in Environmental Laws Status: PASSED AND SIGNED BY GOVERNOR BALDACCI. This law ensures that road building will have adequate regulatory review by tightening an exemption for forest management roads. If these roads are

used primarily to access development, LD1538 requires that they get storm water and Natural Resources Protection Act permits. The law maintains the proper use and integrity of our natural resources.

LD 1662, An Act to Improve Maine's Air Quality and Reduce Regional Haze at Acadia National Park and Other Federally Designated Class I Areas

Status: PASSED AND SIGNED BY GOVERNOR BALDACCI. Sulfur is a common pollutant and its combustion contributes to haze, acid rain and asthma. LD 1662 reduces the amount of sulfur in home heating oil and industrial oil over the next six years. The law received the support of the oil industry and represents a shared step in improving Maine's air quality.

LD1568, An Act to Clarify Maine's Phase-out of Polybrominated Diphenyl Ethers Status: PASSED AND SIGNED BY GOVERNOR BALDACCI. This law bans a toxic flame retardant, DECA, from plastic pallets used to ship everything from food to bottled water to clothing. DECA can accumulate in the environment, building up to higher levels in the food web. DECA interferes with brain development and can lead to learning disabilities. This first-in-the-nation law represents Maine's commitment to healthy people and a healthy environment.

LD 1547, An Act to Revise Notification Requirements for Pesticides Applications Using Aircraft or Air-carrier Equipment

Status: PASSED AND SIGNED BY GOVERNOR BALDACCI. Last year, Maine successfully passed a notification law to inform neighbors in adjacent properties of aerial pesticide application. It also created a registry for people wishing to be notified of certain applications taking place within 1,320 feet of their properties. LD 1547 was seriously weakened by eliminating the direct, written, pre-season notification requirement, exempting non-agricultural pesticide applications until 2012, and, for applications to orchards and Christmas trees, reducing the notification distance from 1,320 to 500 feet. Maine's Board of Pesticides Control (BPC) will assess much of the bill with input from the Department of Health and Human Services and make recommendations to the next Legislature. The BPC also will develop a comprehensive notification registry for people wanting information about all outdoor pesticide applications taking place in their neighborhoods.

LD 891, Resolve, To Develop Practices for Development of State and Regional Significance in Order To Reduce Dependency on Fossil Fuels and Meet the State's Greenhouse Gas Emissions Reduction Goals

Status: PASSED AND SIGNED BY GOVERNOR BALDACCI. LD 891 was significantly weakened and later changed to a Resolve. It asks the Department of Environmental Protection (DEP) to identify and recommend practices in the operation and design of development that will minimize climate change pollution and maximize energy efficiency. DEP then submits its recommendations to the Natural Resources Committee. This bill does not create any regulatory requirements but does ask questions that will position the Committee to move forward next legislative session. In 2011, we look forward to implementing DEP's recommendations to ensure a clean and sustainable future for Maine.

LD 1725, Resolve, Regarding Legislative Review of Portions of Section 10: Stream Crossings within Chapter 305 Permit by Rule Standards, a Major Substantive Rule of the Department of Environmental Protection

Status: PASSED AND SIGNED BY GOVERNOR BALDACCI. Despite bipartisan support in both bodies, this bill was significantly compromised so that only new culverts are required to accommodate fish and aquatic organism passage. Many native aquatic species migrate up streams to breed and are impeded with poorly constructed and/or inappropriately sized culverts. The approved rules do not affect the bulk of the problem—existing culverts. Due to a last minute surprise Department of Transportation fiscal note, the rules for replacement culverts will instead be brought back to the next Legislature. We will continue to advocate for the protection of sustainable aquatic life in Maine.

Fall 2010

The Good News

Looking for organic farms, foods or other products in Maine? Then **Organic Maine!**, a free directory from MOFGA, is the place to start your search. Funded by a USDA Specialty Crop Block Grant and by advertisers, the directory lists more than 400 certified organic farmers and processors by county and alphabetically, as well as 100 farmers' markets in Maine (some open even in winter). Not sure what you're looking for? See the Maine Food Pyramid in the directory, which lists nutritious foods raised in Maine, and the "Maine Local 20"—foods Maine can produce and Mainers can enjoy all year. Get Organic Maine! at the MOFGA office in Unity, at Maine's natural food stores and farmers' markets, or online at www.mofga.org/Publications/OrganicMaine/tabid/1716/Default.aspx.

In May, chefs **Mark Gaier and Clark Frasier of Arrows Restaurant** in Ogunquit won the **James Beard Award for Best Chefs in the Northeast**—the culinary equivalent of an Academy Award. Other Maine chefs who have won the award are Rob Evans of Hugo's and Sam Hayward of Fore Street, both in Portland. Almost all produce for Arrows comes from Gaier and Frasier's garden. ("Two Ogunquit chefs are Northeast's best," by Dennis Hoey, Portland Press Herald, May 4, 2010, www.pressherald.com/news/two-ogunquit-chefs-are-northeasts-best_2010-05-04.html)

Maine Farmland Trust, The Nature Conservancy and state resource agencies have agreed to **protect 83.5 acres of active coastal farmland in Bowdoinham**, including 4,500 feet of shoreline and habitat for waterfowl, migratory fish and bald eagles, as well as the rare marsh plant Eaton's bur-marigold. The parcel is within the Kennebec Estuary, which includes nearly a quarter of Maine's tidal marshland and is critical habitat for migratory birds and fish. The property is owned by Alan Kelley and his mother, Erla, of Bowdoinham, but much of the farmland is sublet to 14 certified organic start-up "incubator farms" by George Christopher, who has farmed the land organically since 1996. The project was funded in part by a \$510,000 grant from the Land for Maine's Future Program, and grants from the Farm and Ranchlands Protection Program and the Landowner Incentive Program. (Press release, The Nature Conservancy in Maine, May 19, 2010)

John DeLong of the Agriculture Canada Research Station in Kentville, Nova Scotia, says **fiddleheads** (from ostrich ferns, *Matteuccia struthiopteris*), with **twice the antioxidant activity of blueberries**, should be cultivated commercially. Antioxidants help fight cancer, cardiovascular and other diseases by altering free radicals linked to those diseases. Fiddleheads are also high in omega-3 fatty acids, says DeLong. (“Fiddleheads should be farmed: scientists,” CBC News, May 12, 2010, www.cbc.ca/canada/nova-scotia/story/2010/05/12/ns-fiddleheads-farm-nutrients.html; “Fiddlehead Fronds: Nutrient Rich Delicacy,” by John M. DeLong and Robert K. Prange, *Chronica Horticulturae*, Vol. 48, No. 1, 2008, www.actahort.org/chronica/pdf/ch4801.pdf)

A **USDA poultry research facility** operated by the Agricultural Research Service in Fayetteville, Ark., **has become certified organic**. Research associate Anne Fanatico and research leader Annie Donoghue will use the facility to study natural compounds that reduce food borne pathogens and diseases, such as Salmonella and Campylobacter, in poultry.

Studies with the University of Connecticut and the University of Arkansas suggest that natural compounds such as caprylic acid—a fatty acid naturally found in milk and coconuts—and essential plant extracts have antimicrobial efficacy against poultry enteric pathogens. Fanatico and Donoghue have also formed the Organic Poultry Advisory Board to work with organic producers. (“ARS Poultry Farm Gains Organic Certification,” by Sharon Durham, USDA Agricultural Research Service News Service, May 12, 2010, www.ars.usda.gov/is/pr)

The UK Soil Association says two frequently quoted statistics—that we **need to increase food production** 50 percent by 2030 or 100 percent by 2050—are based on “**a big fat lie**.” Its report, “Telling porkies: The big fat lie about doubling food production,” says the 100 percent figure is actually 70 percent in the original FAO reference; and the 50 percent figure is from a paper that the authors appear to have withdrawn. Still, many commentators use these inflated claims to justify the need for more intensive agricultural practices, especially for further expansion of genetically engineered crops. Peter Melchett, Soil Association policy director, said: “The ‘big fat lie’ of needing to double global food production by 2050 has dominated policy and media discussions of food and farming, making it increasingly difficult for advocates of sustainable farming methods, such as organic, to convince people we can actually feed the world without more damage to the environment and animal welfare.” Independent sources quoted in the report say that with fairer diets and better food distribution, organic farming could feed the world in 2050, with healthy diets. (“Telling porkies: The big fat lie about doubling food production,” Soil Association, April 20, 2010, www.soilassociation.org/News/NewsItem/tabid/91/smId/463/ArticleID/360/reftab/57/Default.aspx)

A study published in *Nature* by Klaus Butterbach-Bahl of the Karlsruhe Institute of Technology in Germany says that **cattle grazing** on grass in China **reduced nitrous oxide**, a greenhouse gas. When the grasslands in Inner Mongolia were not grazed, the long grass insulated the soil in winter, keeping alive soil microbes that then released nitrous oxide during the spring thaw. Grazing kept the grass short, so the ground froze and the microbes died. (“Cows absolved of causing global warming with nitrous oxide,” by Louise Gray, *Telegraph*, April 8, 2010,

www.telegraph.co.uk/earth/environment/climatechange/7564682/Cows-absolved-of-causing-global-warming-with-nitrous-oxide.html)

Local Sprouts Cafe and Bomb Diggity Bakery have opened at 649 Congress St. in Portland, Maine. The café, which works with many Maine farmers, provides local and organic breakfast, lunch and dinner in a community environment with music, classes, art shows and more. Bomb Diggity Bakery produces gluten-free, vegan and regular baked goods and breads and aims to employ bakers of all abilities. Bomb Diggity Baking and Arts program functions in the kitchen alongside the bakery and cafe, building skills for individuals with intellectual disabilities. More than 200 people helped start Local Sprouts by volunteering labor and skills, loaning money in a community financing program and joining the Community Supported Kitchen, says Jonah Fertig, a worker-owner and founder of Local Sprouts. Local Sprouts also offers beverages, caters local and organic food, and has provided programs about cooking with local foods to nonprofits and schools. The Community Supported Kitchen started in 2008 at the Public Market House, where members could order from a weekly menu and pick up local food from the kitchen. The Cafe will be home to Local Sprouts' Catering, Community Food and Learning Programs and Community Supported Kitchen. (Local Sprouts press release, May 26, 2010; www.localsproutscooperative.com)

Iowa State agronomy professor (and MOFGA friend) Matt Liebman and a team of researchers found that **a farm can halve its fossil fuel use by switching from a two-year corn-soy rotation to a four-year corn-soy-oats-alfalfa rotation.** Liebman et al. published their work in the May/June Agronomy Journal, showing that the four-year rotation produced the same number of crop calories and income as the two-year rotation. The researchers added livestock to the system, feeding cows corn, oats and alfalfa hay, and spreading cows' manure on crop fields. The more complex rotation took twice as much labor—for making hay, for instance—all done with tractor-powered machinery. (“Saving Fuel on the Farm by Making Hay,” by Mason Inman, National Geographic News, May 3, 2010, <http://news.nationalgeographic.com/news/2010/05/100503-energy-saving-fuel-with-hay/>)

The Connecticut-based Wholesome Wave Foundation's “Veggie Prescription” program in Maine lets **doctors give vouchers** to low-income patients **to buy produce at participating farmers' markets;** and its “Double Dollars” program lets people receiving government food subsidies receive up to \$10 a week in matching funds at their local farmers' market. (“Farmers markets' pilot program targets food assistance recipients,” by Christopher Cousins, The Bangor Daily News, June 4, 2010, www.bangordailynews.com/detail/145224.html)

The town of **Monroe, Maine**, voted 40-27 in May to adopt an ordinance declaring that **corporations** doing business with the town **are not "people."** Green Party member Allyn Beecher (who wrote the ordinance) and Seth Yentes said the defensive ordinance does not restrict any legitimate business from coming to town and does not have any impact unless the company threatens the health, safety or welfare of the community. Beecher and Yentes attended the Daniel Pennock Democracy School (www.celdf.org) to learn how to bring the ordinance to Monroe. (Email, The Peace & Justice Center of Eastern Maine, June 15, 2010, www.peacectr.org)

A Washington State University study led by David Crowder and published in Nature says the balanced mix of organisms in **organic potato fields may check pests better and produce larger plants** than fields treated with synthetic pesticides. The researchers learned that worldwide and on various crops, a few insect species dominate conventional fields, while organic fields have a more even mix of organisms. Crowder added potato beetles to 42 potato plots enclosed in fine mesh and then added varying numbers of insects, fungi and nematodes that attack the beetles' eggs and larvae. Plots with the most balanced mix of organisms had 20 percent fewer beetles and 30 percent bigger plants than plots with a mix typical of pesticide-treated fields. The study suggests that farmers who reduce pesticide use might be able to use natural predators to help further control pests. ("WSU study on potato farming gives organic way a boost," by Sandi Doughton, Seattle Times, June 30, 2010, http://seattletimes.nwsourc.com/html/localnews/2012250093_taters01m.html)

When Columbia University researchers collected information for an average of four years on the diets of 2,148 healthy people over 65 years old, 253 developed **Alzheimer's Disease**. Subjects who adhered most closely to a diet including more olive oil-based salad dressing, nuts, fish, tomatoes, poultry, cruciferous vegetables such as broccoli, fruits, and dark and green leafy vegetables and ate less red meat, organ meat or high-fat dairy products had about a 40 percent lower risk of developing Alzheimer's. ("Mediterranean Diet and Risk for Alzheimer's Disease, by Nikolaos Scarmeas et al., Annals of Neurology 2006;59:912-921, www.rosenthal.hs.columbia.edu/MeDi1%20Scarmeas%2006.pdf; "Diet can sharply cut Alzheimer's risk: study," by Julie Steenhuysen, Reuters, April 12, 2010, www.reuters.com/article/idUSTRE63B5JL20100412)

Researchers at Harvard University reviewing 20 studies that met their criteria found that consuming one serving per day of **processed meats**, but not red meats, was associated with a 42 percent higher incidence of **coronary heart disease** and a 19 percent higher incidence of **diabetes mellitus**. Three studies that looked at stroke showed no relationship between consuming red or processed meat and stroke. Processed meats had some four times more sodium and 50 percent more nitrate preservatives than unprocessed meats. ("Red and Processed Meat Consumption and Risk of Incident Coronary Heart Disease, Stroke, and Diabetes Mellitus. A Systematic Review and Meta-Analysis," Renata Micha et al., Circulation, May 17, 2010, <http://circ.ahajournals.org/cgi/content/abstract/CIRCULATIONAHA.109.924977v1>; "Don't Bring Home the Bacon," by Tara Parker-Pope, The New York Times, <http://well.blogs.nytimes.com/2010/05/19/dont-bring-home-the-bacon/?src=me&ref=homepage>)

At Aronimink Golf Club in Newtown Square, Penn., a **border collie runs off Canada geese** (and coyotes and foxes), while birdhouses attract bluebirds and swallows, known for devouring insects, including mosquitoes. ("Aronimink's low-tech, organic – and peppy – pest-control," by Derrick Nunnally, Philadelphia Inquirer, June 30, 2010; www.philly.com/inquirer/local/pa/20100630_Aronimink_s_low-tech_organic_-and_peppy_-_pest-control.html)

A National Research Council report, "**Toward Sustainable Agricultural Systems in the 21st Century**," critiques the fragility, narrow focus and externalized costs of contemporary industrial farming and calls for more sustainable, balanced agriculture. The report says four goals should

be considered simultaneously: satisfy human food, fiber and feed requirements, and contribute to biofuels needs; protect the natural resource base on which food production depends; maintain the economic viability of agriculture; and improve the quality of life for farmers, farm workers and society as a whole. The report's findings are consistent with the UN report, "International Assessment of Agricultural Knowledge, Technology and Development." Authors say efficiency gains of the industrial model of agriculture incur such costs as agrochemical waterway pollution; harm to human and animal health; and rising input costs that shrink farmers' income. (Pesticide Action Network North America News Update, July 9, 2010; www.panna.org)

The **Maine League of Conservation Voters** publishes an **annual Environmental Scorecard**, tracking each legislator's votes on key environmental issues of the session. Learn how your legislators voted this year on bills that affect Maine's air, land and water. Visit the League's website at www.mlcv.org for more information.

Scary Food Additives

The report "No Silver Lining: An Investigation into Bisphenol A in Canned Foods," produced by The National Workgroup for Safe Markets, says **canned foods and beverages can absorb bisphenol A (BPA)** from the epoxy lining of cans. The chemical was found in 46 of 50 cans of food tested from 19 states, including Maine, at an average concentration of 77.36 parts per billion. BPA, also found in plastic toys and baby bottles, is linked with developmental, behavioral and hormonal problems and is a concern especially for pregnant women, fetuses and children. Regularly consuming canned foods could result in concentrations of BPA known to damage fetuses of lab animals. The report suggests buying fresh and frozen foods when possible. ("Study: Harmful additives found in canned food," by Meg Haskell, Bangor Daily News, May 20, 2010, www.bangordailynews.com/detail/143947.html)

"**Food Dyes—A Rainbow of Risks**," a report by the Center for Science in the Public Interest (www.cspinet.org), says the nine approved food dyes raise health concerns, including carcinogenicity, hypersensitivity reactions and behavioral effects. For example, Green 3 significantly increased bladder and testes tumors in male rats. In 1990, the FDA recognized Red 3 as a thyroid carcinogen, but the FDA still permits Red 3 in ingested drugs and foods. Red 40, the most-widely used dye, may accelerate appearance of immune-system tumors in mice, and may trigger hyperactivity in children. Yellow 5 and Yellow 6 may be contaminated with cancer-causing chemicals. The Center says the FDA should ban food dyes, which serve only cosmetic purposes. Meanwhile, companies should voluntarily replace dyes with safer, natural colorings. The British government advised companies to stop using most food dyes by the end of 2009, and the European Union has required a warning notice on most dye-containing foods since July 20, 2010. Organic foods do not contain synthetic dyes.

More Reasons to Eat Organic

A review of 220 studies published in English between January 1966 and August 2009 **comparing unprocessed organic and conventional** foods and their consumption concluded that:

- Organic produce had significantly less risk of contamination with pesticide residues; the clinical significance of this finding was not clear.
- Organic produce did not appear safer or more nutritious in any other outcome measured, including risk of bacterial, heavy metal or mycotoxin contamination. Other factors, such as geography, seasonal weather, local ambient pollution, ripeness at harvest, and storage and other agricultural practices unrelated to the organic label seem to predict nutritional quality or contamination with harmful substances better.
- Human studies suggests that children who consume organic produce and adults who consume organic cereal may significantly reduce their pesticide exposure compared with groups consuming conventional diets.
- Rates of bacterial contamination did not differ significantly between organic and conventionally grown meats, eggs and milk, but the antibiotic resistance of bacteria cultured from conventional meats, eggs and milk was significantly greater than for those cultured from organic products. (“Is There a Difference between Organically and Conventionally Grown Food? A Systematic Review of the Health Benefits and Harms,” Research in Progress Seminar, April 21, 2010, Crystal Smith-Spangler et al., Stanford University; http://healthpolicy.stanford.edu/events/is_there_a_difference_between_organically_and_conventionally_grown_food_a_systematic_review_of_the_health_benefits_and_harms/)

The **President’s Cancer Panel Report**, “Reducing Environmental Cancer Risk: What We Can Do Now,” released on May 6, 2010, says the proportion of cancer cases caused by environmental exposures has been “grossly underestimated” and exhorts consumers to decrease exposure to environmental chemicals that can increase their risk of contracting cancer by:

- choosing food grown or made without pesticides or chemical fertilizers, antibiotics, growth hormones, endocrine disruptors and other toxic substances, especially for pregnant women and small children
- choosing toys and garden products made without endocrine disruptors and other toxic substances
- choosing medicines and medical tests with minimal toxic substances
- removing shoes when entering the house and washing work clothes separately from the rest of the laundry, for those who work with toxic chemicals
- filtering drinking water
- storing water in glass or stainless steel containers, or in plastics that don’t contain BPA or phthalates; and microwaving food in ceramic or glass containers
- avoiding charred and well-done meats and processed meats
- checking home radon levels.

“Exposure to pesticides can be decreased by choosing, to the extent possible, food grown without pesticides or chemical fertilizers... Similarly, exposure to antibiotics, growth hormones, and toxic run-off from livestock feed lots can be minimized by eating free-range meat raised without these medications,” says the report, written by mainstream scientists appointed to the President’s Cancer Panel by George W. Bush.

“Only a few hundred of the more than 80,000 chemicals in use in the United States have been tested for safety,” says the report, adding, “Many known or suspected carcinogens are completely unregulated.” The report says regulating chemicals does not work, because staffing and funding are insufficient, rules are too complex, laws are weak, enforcement is uneven, and industry has too much influence.

“The American people—even before they are born—are bombarded continually with myriad combinations of these dangerous exposures,” the panel wrote in a letter to President Obama. It added, “The Panel urges you most strongly to use the power of your office to remove the carcinogens and other toxins from our food, water, and air that needlessly increase health care costs, cripple our Nation’s productivity, and devastate American lives.”

The American Cancer Society debated the report, saying it estimates that about 6 percent of U.S. cancers have environmental causes, while smoking causes 30 percent of cancer deaths, and poor nutrition, obesity and inadequate exercise contribute significantly to cancer risk. (“President’s Cancer Panel: Organic foods reduce environmental risks,” Press Release, Organic Trade Assoc., May 6, 2010, www.ota.org; ^L_{SEP} “New Alarm Bells About Chemicals and Cancer,” by Nicholas D. Kristof, The New York Times, May 6, 2010, www.nytimes.com/2010/05/06/opinion/06kristof.html?hp; “U.S. Panel Criticized as Overstating Cancer Risks,” by Denise Grady, The New York Times, May 6, 2010, www.nytimes.com/2010/05/07/health/research/07cancer.html?hp; Original report at <http://deainfo.nci.nih.gov>)

A Monsanto-funded study by Cornell University scientists found 23 percent **more conjugated linoleic acid (CLA) and 63 percent more omega 3 fatty acids in organic than conventional milk**. These fatty acids promote health. (A.M. O'Donnell et al., "Survey of the fatty acid composition of retail milk differing in label claims based on production management practices," Journal of Dairy Science, Jan. 2010; Organic Bytes, May 13, 2010, Organic Consumers Assoc., www.organicconsumers.org; “New Study on Milk Quality Runs Away from Its Own Findings,” The Organic Center Newsletter, May 2010)

The USDA has banned the Organic Crop Improvement Association (OCIA) from inspecting organic operations in China, because, say federal officials, OCIA had Chinese government agency employees inspecting state-controlled farms and processing facilities, posing a potential conflict of interest. (“U.S. Drops Inspector of Food in China,” by William Neuman and David Barboza, The New York Times, June 13, 2010, www.nytimes.com/2010/06/14/business/global/14organic.html?hp)

Bills filed in Maryland would **ban** the use, sale and distribution of commercial **poultry feed with** additives containing **arsenic**, such as Roxarsone, widely used in conventional poultry

operations. Arsenic has been linked to cancer and other health problems. (“Local bill set to ban arsenic in chicken feed,” WorldPoultry.net, March 18, 2010, <http://www.worldpoultry.net/news/local-bill-set-to-ban-arsenic-in-chicken-feed-7229.html>)

Pesticides

Maine Board of Pesticides Control: Refining the Pesticide Application Notification Registry By Katy Green

For the past few months, the Maine Board of Pesticides Control (BPC) has been accepting public comments on the new notification registry for pesticide applications made with aerial and air carrier equipment. As it stands now, any resident of Maine within 1/4 mile of agricultural pesticide applications (or 500 feet of fruit or Christmas tree farms) that use aerial or air carrier technology can be notified before the application. Anyone can sign up for the registry, although the deadline has passed for this growing season.

This rule became state law through legislation earlier this year mandating that the BPC implement it. In addition to putting the registry into action, the board was tasked with gathering public comments on the scope, operation and equipment types to be included in a comprehensive registry, the feasibility of using an automated notification system for people on the registry and of land managers posting signs where pesticides are applied, and distances where neighbors should qualify for notification.

MOFGA has attended and commented at many of the information gathering sessions held throughout Maine. Our stance has been that the registry should be comprehensive and include **all** outdoor pesticide application sectors, without focusing solely on agricultural uses. This would include bringing biting fly, forestry, and pesticide-reliant business sectors back under the purview of the registry.

As MOFGA’s associate director Heather Spalding said in her testimony, “Hundreds of people in Maine have signed up for the registry expecting to be notified regardless of the context in which aerial or air carrier spraying happens.” This is evident from the large number of people on the registry who live in urban areas or far from agricultural property.

MOFGA also commented that signage should be placed at the obvious entrance points to a field so that the public is aware of pesticide spraying activity as well as the existence of the registry as a means of notification.

One contentious issue has involved how far neighbors can be from farms and still be notified of pesticide applications. Because MOFGA believes that the distances should be based on the type of equipment used, we recommended that the board keep the 1/4-mile distance for aerial and air carrier equipment, adopt 500 feet for ground-based motorized equipment, and 250 feet for non-motorized equipment. These distances are used for registries or buffer zones in other states, and they seem workable for all stakeholders.

The board will make recommendations based on public comments and input from the public health sector. Visit www.thinkfirstspraylast.org to view meeting minutes, dates for coming meetings, and other news.

MOFGA would love to hear your thoughts about the registry and its functionality. Email kgreen@mofga.org with your ideas.

Product Registrations

In May the BPC approved a Special Local Need (SLN) registration for use of DuPont Express Herbicide with TotalSol (EPA Reg. No. 352-632) in lowbush blueberries. This product was originally granted a SLN in 2008, with an expiration date in December 2009, so that the BPC could evaluate groundwater effects where the product was being used. The board did not conduct any water quality sampling, however, but did unanimously approve the indefinite registration of the herbicide, made at the request of University of Maine Cooperative Extension and DuPont.

Pesticide Application Rule Violations

At its May meeting the BPC unanimously approved a consent agreement including a \$300 fine with Old Marsh Country Club in Wells for violations uncovered during a spot inspection, including applying a fungicide on the golf course without proper recordkeeping, failure of the applicator to wear proper personal protective equipment, and failure to post a notification of the application for the golfing public.

[End of BPC report]

After a coalition of groups sued the EPA over rules enacted in 2006 allowing **testing pesticides on humans**, including children, the EPA said it would propose far stronger safeguards to prevent unethical and unscientific pesticide research on humans. (Pesticide Action Network News Update, June 25, 2010; www.panna.org)

Insects, including **bees**, are consuming lethal doses of **neonicotinoid pesticides** as they drink water that plants emit through a process called guttation, according to a German study, when seeds of those plants were treated with neonicotinoid pesticides such as imidacloprid (Gaucho) and clothianidin (Poncho). Guttation droplets contain the pesticide for up to two months after germination. Pollen also contained imidacloprid. (Pesticide Action Network News Update, April 30, 2010; www.panna.org)

The Environmental Working Group (EWG) found that people who eat five **fruits and vegetables** a day from **the Dirty Dozen** list consume an average of 10 pesticides a day. Those who eat from the 15 least contaminated conventionally-grown fruits and vegetables ingest fewer than two pesticides daily. Produce was tested as it is typically eaten (washed, rinsed or peeled), and the EWG scores six criteria: percent of samples with detectable pesticides; percent with two or more pesticides; average number of pesticides on a single sample; average amount of all pesticides; maximum number of pesticides on a single sample; and total number of pesticides on the commodity. The EWG suggests eating a varied diet, rinsing all produce and buying organic when

possible. Its 2010 Shopper's Guide to Pesticides suggests buying organic produce to avoid the most contaminated "Dirty Dozen"—celery, peaches, strawberries, apples, blueberries, nectarines, bell peppers, spinach, kale, cherries, potatoes and imported grapes. Conventional produce lowest in pesticides were: onions, avocados, sweet corn, pineapple, mangos, sweet peas, asparagus, kiwi, cabbage, eggplant, cantaloupe, watermelon, grapefruit, sweet potato and honeydew melons. (Environmental Working Group, www.foodnews.org)

A study of children ages 8 to 15, led by Maryse Bouchard of the University of Montreal, found that above average concentrations of an **organophosphate pesticide metabolite in urine roughly doubled the chance of being diagnosed with ADHD**. ("Attention-Deficit/Hyperactivity Disorder and Urinary Metabolites of Organophosphate Pesticides," by Maryse F. Bouchard et al., Pediatrics, May 17, 2010, doi:10.1542/peds.2009-3058; <http://pediatrics.aappublications.org/cgi/content/abstract/peds.2009-3058v1?maxtoshow=&hits=10&RESULTFORMAT=&fulltext=Bouchard+%2B+ADHD&searchid=1&FIRSTINDEX=0&sortspec=relevance&resourcetype=HWCIT>)

A Stanford study of 266 environmental factors found that development of type 2 **diabetes** correlates strongly with the presence of the **organochlorine pesticide**-derivative heptachlor in blood or urine, with polychlorinated biphenyls (PCBs) also showing a significant association. Beta-carotenes helped protect against development of the disease. (Pesticide Action Network News Update, May 28, 2010, www.panna.org)

In June, an Indian court **convicted** eight former **Union Carbide officials** of death by negligence when a Union Carbide pesticide plant in **Bhopal** leaked the toxic gas methyl isocyanate in 1984, killing thousands. The crime has a maximum two-year sentence. Victims' groups and activists had sought more serious charges. Among those charged was Warren M. Anderson, chair of Union Carbide at the time, although he was not in India for the trial. Union Carbide is now owned by Dow Chemical. ("Indian Court Convicts 7 in Bhopal Disaster," by Hari Kumar, The New York Times, June 7, 2010, www.nytimes.com/2010/06/08/world/asia/08bhopal.html)

In June, the EPA announced that the persistent pesticide **endosulfan, banned** in more than 60 countries, will be eliminated in the United States. ^[1]_{SEP}Used primarily on Florida tomatoes and cotton grown in California and Nevada, the chemical has been linked to autism, birth defects and delayed puberty in humans. (Pesticide Action Network News Update, June 11, 2010, www.panna.org)

A review report published by CHEM Trust says some studies indicate that **pesticide** exposure before conception, during pregnancy or during childhood appears to increase the risk of **childhood cancer**, with maternal pesticide exposure during pregnancy most consistently associated with childhood cancer. Also, several studies indicate that farmers are at greater risk of developing certain cancers than the general population; and studies strongly suggest that pesticide exposures are associated with some cases of non-Hodgkin's lymphoma, leukemia, prostate cancer and other hormone related cancers. The report notes that certain cancers have increased dramatically in recent decades, so environmental factors must be partly to blame, with pesticide exposures suspect in some cases. ("A review of the role pesticides play in some cancers: Children, farmers and pesticide users at risk?" July 2, 2010, www.chemtrust.org.uk)

Genetic Engineering (GE)

Early in 2010, the U.S. District Court in San Francisco ruled that the USDA violated law by not completing an Environmental Impact Statement (EIS) before allowing Monsanto's GE Roundup Ready (RR) alfalfa to be planted. On June 21, 2010, the U.S. **Supreme Court** (including Justice Clarence Thomas, a former Monsanto corporate counsel) ruled in *Monsanto vs. Geertson Seed Farms* that the lower court overreached its authority in the case—i.e., that a district court cannot tell a federal agency not to make regulations. However, the Supreme Court said **no more RR alfalfa could be planted until USDA completes an EIS**. The Supreme Court noted that contamination of conventional plants by GE material through cross pollination is "harmful and illegal," and that its dangers include "economic effects such as reduced agricultural yield or loss of market." (Bees can spread GE alfalfa pollen over many miles, potentially contaminating conventional and organic alfalfa.) So future lawsuits can argue that gene flow from GE crops is harmful. The court also recognized that an EIS may be subject to legal challenge, and that the threat of transgenic contamination allows farmers to challenge future biotech crop commercializations in court. Elena Kagan, a Supreme Court nominee at the time of the trial, filed a brief in her post as Solicitor General supporting Monsanto in this case. On June 23, Sen. Patrick Leahy and five other senators, Rep. Peter DeFazio and 49 other representatives, including Rep. Michael Michaud and Rep. Chellie Pingree, sent a letter asking Agriculture Secretary Tom Vilsack to retain the regulated status of GE alfalfa (i.e., not to allow its planting) because GE alfalfa is a particular threat to the \$1.4 billion organic dairy industry. Their letter notes that when some 200,000 acres of RR alfalfa were planted—less than 1 percent of U.S. alfalfa acres—Cal/West Seeds reported that 12 percent of 200-plus lots and all six of its research lots tested positive for GE alfalfa in 2008, and preliminary data indicated that 30 percent of 10 seed stock lots tested positive in 2009. Dairyland Seed Company reported contamination of 11 to 16 sites up to 1 1/2 miles from GE plots—far beyond the recommended 900-foot isolation distances. (Pesticide Action Network News Update, June 25, 2010, www.panna.org; Press release, Center for Food Safety, June 21, 2010, <http://truefoodnow.org/publications/supreme-court-briefs/>; "Supreme Court's ruling on Monsanto's GE alfalfa: Who won?" by Tom Laskawy, Grist, June 21, 2010, www.grist.org/article/food-supreme-court-ruling-on-monsanto-alfalfa/; "Supreme Court Nominee, Elena Kagan, no friend to organic or National Environmental Policy Act," by Matthew Dillon, May 12, 2010, <http://blog.seedalliance.org/2010/05/12/supreme-court-nominee-elena-kagan-no-friend-to-organic-or-national-environmental-protection-act.aspx>)

International **patent applications for conventionally bred plants** doubled between 2007 and the end of 2009; Monsanto has applied for a patent on meat from pigs fed its GE plants and various supplements; and in 2009, Monsanto received a European patent covering the chain of food production from seeds of GE plants to food products such as meal and oil. The "No Patents on Seeds" coalition is demanding a change in patenting policies and practices that will exclude patents on seeds, animals and parts thereof. The coalition says Monsanto and other big companies have applied for patents on methods widely used in conventional plant breeding and in cattle breeding. (www.no-patents-on-seeds.org/index.php?option=com_content&task=view&id=45&Itemid=32; "Patenting The

Entire Food Chain,” by Devinder Sharma, April 30, 2010,
www.countercurrents.org/dsharma300410.htm)

Overuse of Roundup and other glyphosate herbicides on GE crops has created new **superweeds** that are being **treated with more-toxic herbicides** and with mechanical weed control methods. Ten resistant weed species now cover millions of acres in at least 22 states—dampening farmers’ interest in planting expensive GE seeds and reducing their ability to practice no-till farming. Reporters say Monsanto is subsidizing cotton farmers’ purchases of other herbicides; and Monsanto and other companies are developing GE crops that resist other herbicides—including a 2,4-D tolerant corn and soy. (“Farmers Cope With Roundup-Resistant Weeds,” by William Neuman and Andrew Pollack, The New York Times, May 3, 2010,
www.nytimes.com/2010/05/04/business/energy-environment/04weed.html?sc)

Retired Purdue University professor of plant pathology Don Huber and Purdue botanist and plant pathologist G.S. Johal say the herbicide glyphosate (the active ingredient in Roundup) kills plants by chelating manganese (Mn), so plants cannot use this essential nutrient. **Glyphosate-resistant GE plants** absorb and use less Mn, which makes them **less disease resistant**, since Mn is involved in inducing disease resistance. So one way this herbicide kills plants is by making their roots more susceptible to soil borne fungi, such as Fusarium and Pythium. Soils treated with glyphosate, they say, also have more oxidized Mn (Mn+4) than reduced (plant available) Mn+2, because the herbicide selects for Mn oxidizing microorganisms. Diseases that have built up after repeated glyphosate use include take-all of wheat, apple canker, bean root rot and damping off, soybean root rot and white mold. Huber told The Organic & Non-GMO Reporter, “Glyphosate is the single most important agronomic factor predisposing some plants to both disease and toxins. These toxins can produce a serious impact on the health of animals and humans. Toxins produced can infect the roots and head of the plant and be transferred to the rest of the plant. The toxin levels in straw can be high enough to make cattle and pigs infertile.” Glyphosate also immobilizes copper, potassium, iron, magnesium, calcium and zinc, so the herbicide may make crops less nutritious for consumers. Huber added that “reports of allergic reactions, such as stomach lesions, produced by the Roundup Ready (genetically modified) gene...need to be studied...” (Johal, G.S. and D.M. Huber. “Glyphosate effects on diseases of plants,” 2009, European Journal of Agronomy 31:144-152;
www.mosesorganic.org/attachments/research/roundup.html); “Scientist warns of dire consequences with widespread use of glyphosate,” The Organic & Non-GMO Report, May 2010)

Federal regulators have approved **field testing** by biotech company ArborGen of **GE cold-tolerant eucalyptus trees** on about 300 acres in seven southeastern states, for potential pulp and paper production and biofuel. ArborGen is owned by International Paper, MeadWesvaco and Rubicon forest products companies. This is the first U.S. clearance for GE forest trees. More than 12,000 comments opposed the trial and only 45 supported it. Concerns include the potential for the trees to become invasive; to use excess water; to spread fires faster than native trees; and to support a fungus that causes illness in people. The USDA said this species of eucalyptus does not spread naturally and has been engineered to be pollen free. ArborGen says the trees would produce more wood on less land than other species. On July 1, an alliance of conservation organizations sued USDA over the approval, arguing that USDA conducted minimal

environmental review. The U.S. Forest Service, say the organizations, says that GE eucalyptus plantations in the southern United States would use more than twice the water of pine plantations in a region already suffering from water deficits. The Georgia Department of Natural Resources and the Florida Exotic Pest Plant Council formally criticized the proposed open field tests. ("U.S. Clears a Test of Bioengineered Trees," by Andrew Pollack, The New York Times, May 12, 2010, www.nytimes.com/2010/05/13/business/energy-environment/13tree.html; "Lawsuit Filed to Halt Release of Genetically Engineered Eucalyptus Trees Across the American South," Center for Food Safety press release, July 1, 2010, <http://truefoodnow.org/2010/07/01/lawsuit-filed-to-halt-release-of-genetically-engineered-eucalyptus-trees-across-the-american-south/>)

Jose Fernandez of the **U.S. State Department** Bureau of Economic, Energy and Business Affairs told the Biotechnology Industry Organization at its 2010 annual convention that the department **will aggressively confront critics of agricultural biotechnology** as the United States seeks to mitigate effects of climate change—despite growing evidence that organic and agroecological farming offer a more robust solution to world hunger. Pesticide Action Network senior scientist Dr. Marcia Ishii-Eiteman and World Food Prize laureate Dr. Hans Herren say, "The trouble with a mandate for GM crops is this: it won't work.... Ultimately, tackling global hunger and poverty requires more than a focus on production technologies. The bigger, more fundamental challenge today is about restoring fairness and democratic control over our food systems." (Pesticide Action Network News Update, May 14, 2010; www.panna.org)

Attorney General Darrell V. McGraw of **West Virginia is investigating** whether **Monsanto** misled growers when it promised 7 to 11 percent increased yields from its Roundup Ready 2 Yield soybean seeds over its original RR soybean seeds. Growers pay 42 percent more for the seed than for the original RR seed, yet Iowa State and Penn State found that yields were not increased as promised. ("Monsanto Soybean Claims Probed by West Virginia," by Jack Kaskey, Businessweek, June 25, 2010, www.businessweek.com/news/2010-06-25/monsanto-soybean-claims-probed-by-west-virginia-update2-.html)

Scientists, development experts and more than 100 groups from around the world joined Pesticide Action Network (PAN) in urging U.S. senators to strip what they termed a **GMO giveaway to agricultural biotech companies** embedded in the Global Food Security Act (S. 384). Sponsored by Senators Casey and Lugar, the bill is intended to reform aid programs to focus on longer-term agricultural development, and restructure aid agencies to better respond to food crises. After months of advocacy by PAN and partners, the controversial clause on genetically modified organisms was revised so that the Act directed that funding shall support agricultural research "appropriate to local ecological and social conditions" and include ecological agriculture along with conventional breeding and genetically modified technology [sic] as approaches that could be supported. "The challenge going forward," observes PAN senior scientist Dr. Marcia Ishii-Eiteman, "lies in ensuring that U.S. development aid actually shifts from favoring top-down 'solutions' like GMOs and the 'Green Revolution' model of agriculture towards ecologically sound farming systems that can feed the world without destroying either local culture or the very ecosystem functions on which life depends. Farmers' in-depth knowledge of local agroecosystems must inform the quest for solutions to today's complex problems." Likewise, the UN Special Rapporteur for the Right to Food, Olivier de

Schutter, speaking in Brussels at an international conference on agroecology and food security, argued that agroecological farming has a proven capacity to increase food production and farmers' income, while protecting soil, water and climate. Citing the success of such approaches in Brazil, Cuba and Africa, de Schutter explained that increased investments in agroecology are urgently needed to meet the world's food needs. (Pesticide Action Network News Update, July 2, 2010, www.panna.org)

Monsanto has agreed to pay the EPA a **\$2.5 million penalty** for selling mislabeled bags of GE cotton seed in 10 Texas counties where the insecticide-containing seeds were banned. ("E.P.A. Fines Monsanto \$2.5 Million," AP, July 8, 2010; www.nytimes.com/2010/07/09/business/09cotton.html?_r=1&hpw)

Winter 2010-2011

The Good News

Citizens for a Green Camden has a powerful tool for encouraging town residents to pledge to have poison-free lawns: Their lawn can be colored green on a map that sits in the window of the town office and is on their website, www.citizensforagreencamden.org. The site also offers 10 Tips for a Natural Lawn and tells how lawn pesticides affect kids and pets. Citizens for a Green Camden received an Environmental Merit Award from the EPA for its contributions to problem solving and environmental awareness that led to passage of Camden's policy to eliminate the use of pesticides in parks and on playing fields.

The **Friends of Casco Bay (FOCB)** has posters saying, "**Wanted: Green Slime Sightings,**" asking volunteers to report algae growing on mudflats that indicates nitrogen pollution and can kill organisms in and around the flats. Nitrogen runoff from lawn, garden and farm fertilizers contributes to the problem, as do vehicular and smokestack emissions and effluent from sewage treatment plants and septic systems. The FOCB BayScaping program, which partners with the Maine Board of Pesticides Control, teaches Casco Bay watershed homeowners six simple steps to have lawns that don't pollute. ("Wanted: Green slime sightings," by Muriel L. Hendrix, The Working Waterfront, Sept. 2010; www.workingwaterfront.com/articles/Wanted-Green-slime-sightings/14033/printer-friendly/)

The **Waldo County Area Local Food Guide**, available free from the Unity College Office of Community-Based Learning (207-948-3131, ext. 273, jolin@unity.edu) and from MOFGA, connects area consumers with local farms and retailers selling local foods throughout Waldo County and bordering towns, and details farmers' production methods. Support from the Belfast Area Chamber of Commerce enabled the guide to include the coastal region.

"**Gardens for Maine: Where to Share in Waldo County,**" Nan Cobbey's 2010 Master Gardener project, shows where gardeners can donate extra produce in Waldo County. It lists all pantries and soup kitchens with refrigeration and tells when those pantries can accept donations—often not the day the pantry is open to the public for pickup. The list is organized like a calendar so that on almost any day of the month, growers can see where to drop off extra produce. For a copy, contact nan@cobbey.com or 338-1198.

The new **Food Justice Certified label** guarantees fair prices to farmers, protection of children from hazardous farm work, and living wages plus respectful treatment for all food system workers. After a dozen years in development, the **Agricultural Justice Project** is launching this program across North America. The Farmer Direct Coop, 70 Saskatchewan grain farms marketing together, is the first group of farmers to earn the Food Justice label. Hoch Orchards, Featherstone Farm, the Bluff Country Coop, and the Midwest Organic Services Association also met the high bar for AJP certification as part of its pilot project over the past three years. The Food Justice label is available to farms and other food businesses from seed to table. It can be an additional claim along with certified organic or a stand-alone label for advanced integrated pest management farms. In New York state over the next year, farms will pilot a pledge version for small-scale direct market farms with limited hired labor. The standards are posted at www.agriculturaljusticeproject.org. For information, contact Sally Lee, Rural Advancement Foundation International, agjusticeproject@gmail.com, 919-623-9516. (E-mail, Oct. 11, 2010, Agricultural Justice Project Management Committee, Elizabeth Henderson, 585-764-8471, elizabethhenderson13@gmail.com or Sally Lee, 919-623-9516, agjusticeproject@gmail.com)

Ken Greene of Gardiner, N.Y., founded the Hudson Valley **Seed Library** three years ago using the library model: Members get seeds from the “library” each spring and are encouraged to give back seeds from mature plants each fall. Almost 700 members of the seed library pay \$20 each annually for 10 seed packets that they select from 130 heirloom varieties—many produced locally. Greene’s goal is to keep New York heirlooms and their stories alive, and to find varieties that do well locally. Last year Greene learned that ‘New Yorker’ and ‘Fox’ cherry tomato had more late blight resistance than other varieties. The seed library sells to the public as well, offering “library packs” of locally grown seeds; “garden packs” of heirlooms bought from seed wholesalers; and “art packs” designed by local artists. (“A Seed Library for Heirloom Plants Thrives in the Hudson Valley,” by Joy Y. Wang, The New York Times, Oct. 6, 2010; www.nytimes.com/2010/10/07/garden/07seed.html)

The U.S. Court of Appeals for the Sixth Circuit ruled in favor of the Organic Trade Association and its members in a case that would otherwise have prevented consumers in Ohio from knowing whether products on store shelves were produced without synthetic growth hormones. The court’s decision upholds consumers’ rights to receive truthful information about organic production practices, such as not giving cows synthetic recombinant **Bovine Growth Hormone**, on dairy product **labels**. It also recognizes the rights of organic dairy farmers and processors to communicate truthfully with consumers regarding USDA regulated organic production practices. (“Organic dairy products produced free from synthetic growth ^[1]_{SEP}hormones—Consumers Win Right to Know,” Organic Trade Assoc. press release, Sept. 30, 2010)

University of Maine researchers have found that **shikimic acid**, used to make the anti-flu drug Tamiflu, makes up 3.5 percent of the dry weight of **white pine needles**. They hope Maine’s forest products industry will be interested in developing a market for the acid, once the extraction technique—currently similar to brewing a tea from fresh needles—is refined. While all plants and bacteria produce the acid, few store it in a form that can be extracted. Star anise, with 6 percent shikimic acid, has been the source of the compound, but it grows in a limited area of China, so the compound has been expensive. Maine’s larch trees are also good sources of shikimic acid. UMaine researchers have also found that spruce trees are high in the antioxidant

resveratrol. (“White pine needles help fight disease,” by Beth Quimby, The Kennebec Journal, Sept. 22, 2010; www.kjonline.com/news/maine-iconwhite-pineneedlesfightdisease_2010-09-21.html)

Preliminary results of USDA-funded research provide the first direct evidence that **blueberries can help prevent harmful plaques** that are symptomatic of atherosclerosis (hardening of the arteries) from increasing in size in arteries. Atherosclerosis is the leading cause of heart attacks and strokes. The study compared the size, or area, of atherosclerotic lesions in 30 young laboratory mice. Half the animals were fed diets that contained 1 percent freeze-dried blueberry powder for 20 weeks; the diet of the other mice did not contain the berry powder. Lesions at two sites on aorta were 39 and 58 percent smaller in mice that consumed blueberry powder. All mice in the study were deficient in apolipoprotein-E, a trait that makes them highly susceptible to forming atherosclerotic lesions. (“Blueberries Help Fight Artery Hardening, Lab Animal Study Indicates,” by Marcia Wood, USDA Agricultural Research Service News Service, Sept. 29, 2010; www.ars.usda.gov/is/pr)

University of California researchers studied 238 children as they moved from fourth grade into middle school in the Berkeley Unified School District, with its School Lunch Initiative (SLI) co-created by the Chez Panisse Foundation in 2004. Compared with students from schools without **integrated cooking and gardening curricula**, the Berkeley students had greater nutritional knowledge; ate 1.5 more servings of fruits and vegetables, including leafy greens; and had more positive attitudes about the taste and health value of school lunches. The study was too small to detect effects on academic test scores or body mass index. (“Berkeley's New School Food Study: A Victory for Alice Waters,” by Sarah Henry, The Atlantic, Sept. 2010; www.theatlantic.com/food/archive/2010/09/berkeleys-new-school-food-study-a-victory-for-alice-waters/63465/)

Washington State University researchers **compared** fruit and soil quality from 13 pairs of commercial **organic and conventional strawberry** farms in California, sampling the soil multiple times over two years and evaluating three varieties of strawberries. Organically grown strawberries had longer shelf life, more dry matter, antioxidant activity, ascorbic acid and phenolic compounds, but lower concentrations of phosphorus and potassium. Tasters found the organic ‘Diamante’ strawberries to be sweeter and have better flavor, overall acceptance, and appearance than conventional counterparts. The organically farmed soils had more total carbon and nitrogen, more microbial biomass and activity, greater concentrations of micronutrients, more endemic genes and greater functional gene abundance and diversity for several biogeochemical processes, such as nitrogen fixation and pesticide degradation. (“Fruit and Soil Quality of Organic and Conventional Strawberry Agroecosystems,” by John P. Reganold et al., Sept. 1, 2010, PLoS ONE 5(9): e12346. doi:10.1371/journal.pone.0012346; www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0012346)

Penn State researchers have found that **chickens that forage** in pastures produced eggs with **twice as much vitamin E and long-chain omega-3 fats**, more than double the total omega-3 fatty acids, and less than half the ratio of omega-6 to omega-3 fatty acids, than eggs laid by caged hens. The hens did not forage enough to meet their requirements for energy and protein. At the end of the experiment, pastured hens weighed 14 percent less and averaged 15 percent lower

egg production than commercial birds. Additional mash should increase weight and production but may also reduce omega-3 fatty acid and vitamin A and E concentrations in eggs. ("Vitamins A, E and fatty acid composition of the eggs of caged hens and pastured hens," by Heather Karsten et al., *Renewable Agriculture and Food Systems*, Jan. 2010,.

<http://journals.cambridge.org/action/displayIssue?jid=RAF&volumeId=25&issueId=01&iid=7219008>

British forester Linda Mallet says that **alder brush farms** in Nova Scotia could create **biomass** for energy, saving the province's forests from clearcutting. Coppicing—cutting alders back and then letting them resprout—can produce chips on marginal farmland or industrial land.

Sherwood Forest, says Mallet, has biomass fields that are fueling Britain's power stations. ("An alder bush alternative for N.S.," *CBC News*, July 9, 2010;

www.cbc.ca/canada/nova-scotia/story/2010/07/09/ns-alder-bush-farms-biomass.html)

Researchers in Alabama are growing **loblolly pine** (*Pinus taeda*) to provide an ingredient **for a potting substrate** they call "WholeTree." Soilless potting media used to grow nursery plants typically consists of Canadian peat moss, perlite (heat-expanded volcanic rock), vermiculite (a heat-expanded silicate mineral) and pine bark. The first three are energy intensive to harvest, prepare and ship, and pine bark availability depends on the stability of industries from which it is derived. WholeTree is made from the chipped bark, needles, wood and cones of pines harvested while thinning plantations. Chrysanthemums grown in WholeTree did as well as those grown in a WholeTree-peat moss mix and a peat moss-perlite mix. The researchers are also evaluating the use of WholeTree for cutting and seedling propagation of herbaceous perennial and woody ornamental crops and hope to study its use as a landscape soil amendment. ("Whole Tree: A More Sustainable, Environmentally Friendly Substrate," by Stephanie Yao, *Agricultural Research*, Aug. 2010, www.ars.usda.gov/is/AR/archive/aug10/tree0810.htm)

As much as **12 percent** of the world's human-caused **greenhouse gas emissions** could be sustainably **offset by producing biochar**, a charcoal-like substance made from plants and other organic materials—more than could be offset if the same materials were burned to generate energy, says a study published in *Nature Communications* by soil chemist Jim Amonette and coworkers. Biochar is made by decomposing plants, wood and other organic materials at high temperature in a process called slow pyrolysis. Normally, biomass breaks down and releases carbon (C) into the atmosphere within a decade or two, but biochar is more stable and can hold onto its C for hundreds or thousands of years. Biochar can also increase the ability of soils to retain water and nutrients; decrease nitrous oxide and methane emissions from soil into which it is tilled; and, during pyrolysis, produce some bio-based gas and oil that can offset emissions from fossil fuels.

The researchers looked at world biomass sources that aren't being used for food, such as corn leaves and stalks, rice husks, livestock manure and yard trimmings, and calculated the C content and quantity of each source that could realistically be used to make biochar. Using all sustainably available biomass could offset up to the equivalent of 1.8 billion metric tons of C emissions annually—a total of 130 billion metric tons in the first 100 years—or 12 percent of the 15.4 billion metric tons of greenhouse gas emissions that human activity adds to the atmosphere each

year. Using biomass residues and wastes that are readily available, with few changes to current practices, could sequester just under 1 billion metric tons annually.

Instead of making biochar, burning the same amount of biomass to produce bioenergy from heat would offset 107 billion metric tons of C emissions during the first century—23 metric tons less than the offset from biochar. By improving soils, biochar increases plant growth and so creates more biomass for biochar production. The study showed that biochar would be most beneficial when tilled into the planet's poorest soils, such as those in the tropics and the Southeastern United States.

The authors estimated avoided emissions by assuming no agricultural or previously unmanaged lands will be converted for biomass crop production; that enough biomass residue would remain on the soil to prevent erosion; that no crop residues currently eaten by livestock would be used; that no biochar made from treated building materials be added to agricultural soils; and that only modern pyrolysis technologies that fully recover energy released during the process and eliminate soot, methane and nitrous oxide emissions be used. "Roughly half of biochar's climate-mitigation potential is due to its carbon storage abilities," Amonette said. "The rest depends on the efficient recovery of the energy created during pyrolysis and the positive feedback achieved when biochar is added to soil. All of these are needed for biochar to reach its full sustainable potential."

("Charcoal takes some heat off global warming," by Frances White, U.S. Dept. of Energy Pacific Northwest National Laboratory, Aug. 10, 2010; www.pnl.gov/news/release.aspx?id=813)

The Variable Input Crop Management System trials started in 1989 on 40 acres of the Elwell Agroecology Farm at the University of Minnesota substantiate the **long-term productivity of organic systems**. Alfalfa yields were highest and least variable with organic management. Oat yields and yield variability were similar for organic and high-input systems. Corn yields with a 4-year organic rotation were among the highest and least variable. The challenge in organic management will be to increase soybean yield and reduce variability in soybean yield across years. ("Long-term Cropping Trials at Southwest Research and Outreach Center (SWROC) Demonstrate Positive Effects of Organic Production," by Jim Riddle, organic outreach coordinator, Univ. of Minnesota. Data presented by Dr. Jeff Coulter at U of M Organic Field Day, July 8, 2010; presentation posted at www.organicecology.umn.edu)

The Whole Foods Market annual Food Shopping Trends Tracker survey conducted online in June found that **organic foods are increasingly impacting consumers' shopping choices**. For example, in 2010:

- 75 percent of adults purchase natural and/or organic foods (73 percent in 2009)
- for 27 percent of adults, more than a quarter of their total food purchases are organic (20 percent in 2009)
- 84 percent say they read nutrition labels more closely today and 83 percent understand better how their food is produced than they did in 1980.

The top five foods that shoppers strived to have on hand in 1980 were milk (89 percent); canned or frozen vegetables (83 percent); white bread and soda/pop (74 percent); iceberg lettuce (66 percent). Those shifted by 2010 to fresh fruit (83 percent); milk (82 percent); fresh vegetables

(79 percent); wheat or whole-grain bread (77 percent); canned or frozen vegetables (69 percent). (“National Survey Shows Organic Foods Now Represent Larger Part of Total Food Purchases,” PRNewswire, Aug. 16, 2010; www.prnewswire.com/news-releases/national-survey-shows-organic-foods-now-represent-larger-part-of-total-food-purchases-100749604.html)

Organic

A U.S. appeals court has ruled that Wal-Mart, Target, Costco and other retailers, and Aurora Dairy of Boulder, Colorado, must face a federal lawsuit accusing them of **selling milk mislabeled as organic**. (“Wal-Mart, Target Must Face Organic Milk Label Suit,” by Andrew M. Harris, Businessweek, Sept. 15, 2010; www.businessweek.com/news/2010-09-15/wal-mart-target-must-face-organic-milk-label-suit.html)

In 2009, **Dean Foods stopped buying organic** soybeans and began marketing its Silk product line as “natural.” Some retailers were not informed of the change and continued to inaccurately market Silk products as “organic.” Now Whole Foods Market has decided to shift its soymilk offerings back toward organic by bringing in a new branded organic soymilk partner, Earth Balance. Whole Foods told the Denver Post in August 2010 that it wanted Earth Balance’s soymilk products to contain only U.S.-grown, organic soybeans. Other soymilk manufacturers hope to meet U.S. consumers’ demand for organic products, as well. The Cornucopia Institute’s soy foods scorecard, on its website, rates soy products on the integrity of their production, including whether brands buy from U.S. family farmers or from China. (“Not Crying over Spilt Soymilk,” press release, The Cornucopia Institute, Sept. 7, 2010; www.cornucopia.org)

Food Safety

The Cornucopia Institute (www.cornucopia.org) report “**Scrambled Eggs: Separating Factory Farm Egg Production from Authentic Organic Agriculture**” rates how various egg brands are produced in accordance with federal organic standards and consumer expectations. Cornucopia co-director Mark A. Kastel says “a high percentage of the eggs on the market should be labeled ‘produced with organic feed’ rather than bearing the USDA-certified organic logo” because of “no legitimate access to the outdoors.” Cornucopia has filed legal complaints against several poultry companies that offer birds no access to the outdoors or just very small, enclosed porches. The best producers with permanent housing profiled in Scrambled Eggs have plenty of pasture surrounding their chicken houses, multiple popholes (doors) of adequate size, and rotate birds into separate paddocks, allowing time for the pasture to recover. Laying hens on pasture-based farms tend to be less stressed due to greater opportunity to exercise and engage in instinctive foraging behaviors that reduce aggression toward flock mates. They frequently live closer to three years instead of one, as is common on industrial-scale farms. A growing body of scientific literature, says Cornucopia, confirms the nutritional superiority of eggs when birds can eat fresh forage, seeds, worms and insects.

In June 2010, the Environmental Law Foundation (“ELF”) filed Notices of Violation of California Proposition 65 Toxics Right to Know law, alleging that **lead** was found **in a variety of children’s and baby foods**, including apple juice, grape juice, packaged pears and peaches

(including baby food) and fruit cocktail. The notices claim that the foods contain enough lead in a single serving that they require a warning under California's Safe Drinking Water and Toxic Enforcement Act of 1986 ("Proposition 65"). The notices were based on tests of 398 samples of 146 different branded products in five categories. Samples were purchased throughout California. A list of products tested, noting whether or not they exceeded Prop 65's warning threshold, is on ELF's website. ("Lead Found in Children's Foods and Baby Foods; Legal Notices Sent to Law Enforcement," Environmental Law Foundation, June 10, 2010; www.envirolaw.org)

The Corn Refiners Association has petitioned the FDA to change the ingredient name "**high fructose corn syrup**" to "corn sugar," because, according to an interview with the Association in The New York Times, the former term confuses consumers. ("A New Name for High-Fructose Corn Syrup," by Tara Parker-Pope, The New York Times, <http://well.blogs.nytimes.com/2010/09/14/a-new-name-for-high-fructose-corn-syrup/?hpw>)

Sludge

Compost made from sewage sludge from the Synagro CVC plant and distributed free to gardeners since 2007 by the **San Francisco** Public Utilities Commission is **contaminated** with known and suspected endocrine-disrupting compounds, including polybrominated diphenyl ether (PBDE) flame retardants, nonylphenol detergent breakdown products, and the antibacterial agent triclosan. Research has shown that triclosan from sewage sludge can be absorbed and translocated by soybean plants. Half of all U.S. sewage sludge is applied to farmland. San Francisco temporarily stopped giving away sludge in March 2010. ("Independent Scientific Testing Finds Toxic Contaminants in San Francisco's Free 'Organic Biosolids Compost,'" PR Newswire, Aug. 10, 2010; www.prnewswire.com/news-releases/independent-scientific-testing-finds-toxic-contaminants-in-san-franciscos-free-organic-biosolids-compost-100335484.html)

A Canadian government-funded study found that 24 of 82 **pharmaceutical and household cleaning products** tested are not completely broken down by waste treatment processes and **remain in "biosolids" (sludge)** spread on fields or used in land reclamation. Bisphenol A was in 86 percent of samples; triclocarban, an antibacterial in soap and disinfectant, was in all samples, as was Carbamazepine, a mood stabilizing drug. Other contaminants included antibiotics, fragrance compounds, antifungal materials and painkillers. Safe levels have not been set for most of the detected products, and their impact on soil organisms is unknown. ("Chemicals survive waste treatment to be released into environment: study," by Bob Weber, Winnipeg Free Press, Oct. 18, 2010; www.winnipegfreepress.com/life/sci_tech/chemicals-survive-waste-treatment-to-be-released-into-environment-study-104965919.html)

Environmental Chemicals

The new, sixth edition of a report from the Breast Cancer Fund, "State of the Evidence: **The Connection Between Breast Cancer and the Environment**," catalogs the growing evidence linking breast cancer to, among other factors, synthetic hormones in pharmaceuticals, cosmetics and meat; pesticides in food; solvents in household cleaning products; BPA in food containers; flame retardants in furniture; and radiation from medical treatments. The report highlights

impacts on the most vulnerable populations (including infants, pregnant women, African-American women and workers), and outlines policy initiatives required to develop a national breast cancer prevention plan. This report comes just months after the President's Cancer Panel report, "Reducing Environmental Cancer Risk: What We Can Do Now," whose lead authors found that the true burden of environmentally induced cancer has been grossly underestimated. The report leveled a hefty critique of failed regulation, undue industry influence, and inadequate research and funding. It also found that the government has been locked in a cancer-fighting paradigm that has failed to look at the complexity of cancer causation and, in so doing, has missed the opportunity to create a national campaign for cancer prevention. ("New Report Catalogues Chemical and Radiation Links to Breast Cancer," press release, Breast Cancer Fund, Oct. 1, 2010; www.breastcancerfund.org/evidence)

Bees and CCD

A combination of a fungus and a virus that proliferate in cool, damp weather and that affect bee guts may be linked to **Colony Collapse Disorder (CCD)**. Researchers found the virus and fungus in every killed colony they studied. Neither organism alone seems to devastate, but the two together seem to be 100 percent fatal, according to an article in The New York Times. Neither the Times article nor the study mentioned that the lead author, Dr. Jerry Bromenshenk, has a significant research grant from Bayer Crop Science to study bee pollination. Bayer makes neonicotinoid insecticides, which some suspect are a cause of CCD. Also, Bromenshenk's company, Bee Alert Technology, is developing scanners to detect bee ailments. Reporter Katherine Eban notes that the company "will profit more from a finding that disease, and not pesticides, is harming bees." ("Scientists and Soldiers Solve a Bee Mystery," by Kirk Johnson, The New York Times, Oct. 6, 2010; www.nytimes.com/2010/10/07/science/07bees.html?hpw; "What a scientist didn't tell the New York Times about his study on bee deaths," by Katherine Eban, Fortune, Oct. 8, 2010; http://money.cnn.com/2010/10/08/news/honey_bees_ny_times.fortune/index.htm; "Bayer behind the curtain on latest CCD claims?" Pesticide Action Network, Oct. 13, 2010; www.panna.org/blog/bayer-behind-curtain-latest-ccd-claims)

Fertilizers

For decades, scientists have believed that **synthetic nitrogen fertilizer** promotes crop photosynthesis and growth and therefore increases soil organic matter (OM) through increased crop residues. Now, University of Illinois researchers say that synthetic N use actually **reduces soil OM** by stimulating microbial populations that feed on OM. This triggers a treadmill in which even more N fertilizer is needed as less OM is available to hold nitrogen (and other nutrients, and water and carbon). The end result is more erosion and runoff; more nitrous oxide and CO₂ in the atmosphere; more compacted soils; and a greater dependence on irrigation and even more synthetic nitrogen. The researchers reached these conclusions after studying data from the university's Morrow plots, which have been cultivated continuously since 1876. They noted soil organic carbon rising for the first several decades due to livestock manure applications but dropping after 1967, as synthetic N fertilizers were substituted. ("New research: synthetic nitrogen destroys soil carbon, undermines soil health," by Tom Philpott, Grist, Feb. 23, 2010;

www.grist.org/article/2010-02-23-new-research-synthetic-nitrogen-destroys-soil-carbon-undermines-/)

A 2006 study by the Washington-based Environmental Working Group (EWG) says runoff from the greater Mississippi Basin accounted for 70 percent of the **nitrate pollution in the Gulf of Mexico**. These nitrates (and phosphates) come from agricultural states that receive tens of billions in taxpayer dollars supporting commodity corn, soy and similar operations concentrated in the upper Midwest. The EWG notes that in areas with the worst runoff, subsidies that promote soil loss can be 1,000 times greater, or more, than those that promote soil conservation and clean water. A 1999 study by the National Oceanic and Atmospheric Administration (NOAA) said that more than 50 percent of nitrogen runoff from the Mississippi Basin could be eliminated by such measures as creating and restoring wetlands and riparian ecosystems between farmland and streams and rivers, reflooding former wetlands throughout the region, and retaining or diverting floodwaters to their historic backwater and coastal wetland destinations. The EPA has proposed a 45 percent reduction in nitrate runoff to the Gulf by 2015. The NOAA says this can be done by conventional means. Jack Bradigan Spula of the Northeast Organic Farming Association Interstate Council asks, why stop at 50 percent?

“[W]hy not set a target of, say, a 75-80 percent reduction over the coming years? A huge additional reduction in problematic runoff could be achieved by going organic”—by using practices advocated by the Rodale Institute: converting cropland to organic agriculture to increase soil organic matter, which holds nutrients and water; growing more nutrient-retaining crops; returning cropland to pasture; and growing more multi-year forage crops.

“Something in that [75 to 80 percent] range should be attainable if organic becomes... the new normal... of U.S. agriculture,” says Spula. (“Saving the Gulf the Right Way...By Going Organic,” by Jack Bradigan Spula, article forwarded by Elizabeth Henderson for the NOFA Interstate Council, Sept. 3, 2010)

Pesticides

BPC Works on Pesticide Notification Registry Report for Legislature

By Katy Green

At the end of its last session, the Maine Legislature tasked the Maine Board of Pesticides Control (BPC) with answering several questions about the new comprehensive notification registry for pesticide applications made with aerial and air carrier equipment and reporting back by February 2011.

One question concerned the effectiveness of the public awareness campaign regarding the registry. A Portland-based survey firm contracted by the BPC found that 18 percent of the Maine residents surveyed were aware of registry.

The board was also asked to report on the feasibility and advisability of requiring land managers to post signs on properties where pesticides are applied. Board members do not seem to agree about what to report to the Legislature on this topic, although they seem to have some agreement

that posting signs is unreasonable and unnecessary in some areas, such as secluded areas where nobody would read them. MOFGA believes that signage can be a means of preseason notification, a way to make people aware of the registry, and a way for people to be aware of pesticide applications in areas they frequent or pass through. At its public information gathering sessions, the BPC received comments for and against requiring land managers to post signage. The board's standing on this issue seems to be up in the air for now.

For updates on BPC activity or to sign up for the registry, visit www.thinkfirstspraylast.org or email henry.jennings@maine.gov.

Pesticide Application Rule Violations

Maine statutes require all dealers of general use pesticides to maintain a General Use Pesticide Dealer License. At its July meeting the BPC unanimously approved a consent agreement with J. L. Hayes & Company Inc. Agway in Auburn for failing to maintain its license for 2008 through 2010, when the violation was discovered. J.L. Hayes & Company was fined \$160 for the violation.

Likewise, Petro's Ace Hardware, also in Auburn, was cited for selling pesticides without a license. In both cases the license expired at the end of 2007 and the businesses continued to sell pesticides through April 2010. The fine in this case was also \$160.

At its August meeting the BPC unanimously approved a consent agreement for a violation of the existing (non-agricultural) pesticide notification registry. In this case, someone on the registry observed an herbicide being applied on his neighbor's property, and he had not received notification. The BPC determined that the applicator, Warren Mathisen of Advantage Landscaping in Portland, applied Roundup Herbicide, was unlicensed and was unaware of the notification registry. The fine levied in this case was \$500.

On June 28, an employee of Mainely Grass Inc., of Kennebunkport, applied pesticides to the wrong property after relying on GPS to arrive at the correct address. The GPS gave the correct number, but the applicator was on the wrong street. He failed to check the electric meter to positively identify the site and applied Allectus 0.225 Insecticide Plus Fertilizer and Lesco Three-Way Selective Herbicide to turf. The company owner reported the error himself and was fined \$1,200.

At its October meeting the BPC unanimously approved a consent agreement with Tailor Done Lawn Care, Inc., of Old Orchard Beach. In this case a caller reported to the BPC that the company owner, Craig Pooler, was making unlicensed pesticide applications at a condominium complex in Scarborough. Pooler initially denied applying the pesticides, but an inspection and sampling showed that glyphosate, the active ingredient in Roundup Herbicide, was present. Pooler then admitted making the application and was fined \$600.

[End of BPC report]

Glyphosate, the active ingredient in the herbicide **Roundup**, causes malformed frog and chicken embryos at doses far lower than those used in agricultural spraying and well below maximum residue levels in EU-approved products, according to research by Professor Andrés Carrasco, director of the Laboratory of Molecular Embryology at the University of Buenos Aires Medical School and member of Argentina's National Council of Scientific and Technical Research, and coworkers. Carrasco studied embryonic effects of glyphosate because high rates of **birth defects** were reported, beginning in 2002, in rural areas of Argentina where Monsanto's genetically engineered Roundup Ready soybeans began to be grown two years earlier. Carrasco said, "The findings in the lab are compatible with malformations observed in humans exposed to glyphosate during pregnancy. I suspect the toxicity classification of glyphosate is too low. In some cases this can be a powerful poison." Amnesty International reported in August 2010 that when Carrasco spoke about his research in the town of La Leonesa, Chaco province, an organized mob violently attacked listeners. Witnesses implicated local agro-industry figures in the attack. ("Groundbreaking study shows Roundup link to birth defects," Sept. 16, 2010; www.gmwatch.org/index.php?option=com_content&view=article&id=12491; Paganelli, A., Gnazzo, V., Acosta, H., López, S.L., Carrasco, A.E. 2010. Glyphosate-based herbicides produce teratogenic effects on vertebrates by impairing retinoic acid signalling. Chem. Res. Toxicol., Aug. 9, <http://pubs.acs.org/doi/abs/10.1021/tx1001749>; "GM Soy: Sustainable? Responsible?" by Andrés Carrasco et al., Sept. 16, 2010; www.gmo-free-regions.org/conference2010/press.html)

Organic growers in Whatcom County, Washington, say that severe **damage to their crops** seems to be **linked to the herbicide aminopyralid** (sold as Milestone and other brand names), which **contaminated manure and compost** coming from non-organic farms, where it is used to control weeds in pastures and in fields where silage crops are grown. Aminopyralid passes through cows when they consume silage and remains in their manure. Some organic growers estimate they've lost tens or hundreds of thousands of dollars due to the contamination. Jason Kelly of the Washington State Department of Agriculture said that lab tests pointing to aminopyralid in these cases have been inconclusive so far. The herbicide is known to be able to harm crops. ("Herbicide-tainted manure wilts organic crops across Whatcom County," by John Stark, The Bellingham Herald, Aug. 1, 2010; www.bellinghamherald.com/2010/08/01/1551497/agriculture-herbicide-tainted.html)

The insecticide and miticide **aldicarb (Temik)**, made by Bayer CropScience, will be **phased out** by the end of 2014, because EPA's new risk assessment shows that it does not meet dietary safety standards, especially for infants and young children. Temik is used on citrus, coffee, cotton, dry beans, peanuts, potatoes, sugar beats, tobacco and other crops. Manufacturing the active ingredient, aldicarb, involves using methyl isocyanate, the chemical that leaked from Union Carbide's Bhopal, India, plant in 1984, with devastating consequences. ("EPA Confirms Phase-Out of Key Bayer Pesticide," by Ken Ward Jr., The Charleston Gazette, Aug. 16, 2010; <http://wvgazette.com/News/201008160658>)

A study published in June 2010 showed that U.S. children whose urine had higher concentrations of **organophosphate pesticide** metabolites were more likely to have attention deficit hyperactivity disorder (**ADHD**) than those with lower concentrations. Another study—of children of Mexican American women born in the Salinas Valley in California, where pesticides

are heavily used—also correlates pesticide exposure, especially prenatally, with increased susceptibility to ADHD. Five-year-olds had a 500 percent increase in ADHD diagnosis when their mothers had 10 times as much dialkyl phosphate (DAP) metabolites in their urine during pregnancy as other mothers. Organophosphate pesticides disrupt neurotransmitters that are critical for brain development and memory. (“More Evidence Organophosphate Pesticides Raise ADHD Risk in Children,” by Caroline Helwick, Medscape Medical News, Aug. 20, 2010; www.medscape.com/viewarticle/727225; Organophosphate Pesticide Exposure and Attention in Young Mexican-American Children, Amy R. Marks et al., Environ Health Perspectives, Aug. 19, 2010; <http://ehp03.niehs.nih.gov/article/info%3Adoi%2F10.1289%2Fehp.1002056>)

Genetic Engineering

In August 2010, Federal District Judge Jeffrey White of California, issued a ruling granting the request of plaintiffs Center for Food Safety, Organic Seed Alliance, High Mowing Organic Seeds and the Sierra Club to **rescind USDA approval of GE Roundup Ready sugar beets**, since the USDA had violated the National Environmental Policy Act (NEPA) by approving Monsanto’s GE crop without first preparing an Environmental Impact Statement. The ruling prohibited any future planting and sale pending USDA’s compliance with NEPA and all other relevant laws. Judge White noted that USDA's "errors are not minor or insignificant," he expressed "concern that Defendants are not taking this process seriously," and he noted that "despite the fact that the statutes at issue are designed to protect the environment," USDA and the sugar beet industry focused on the economic consequences to themselves, yet "failed to demonstrate that serious economic harm would be incurred pending a full economic review...." When beet farmers planted stecklings (rootstock for seed production) in the fall of 2010, after getting permits from USDA, plaintiffs in the previous case—the Center for Food Safety, et al.—asked the judge to order that the rootstock be dug up. Stecklings are normally dug in winter and replanted in spring to produce seed. Hearings on the case were ongoing as we went to press. (“Plaintiffs want bio-beet stecklings uprooted,” by Wes Sander, Capital Press, Oct. 5, 2010; www.capitalpress.com/newest/ws-sugar-beets-100810; “Federal Court Rescinds USDA Approval of Genetically Engineered Sugar Beets,” Press Release, The Center for Food Safety, Aug. 13, 2010; <http://truefoodnow.org/2010/09/09/farmers-and-conservationists-file-suit-challenging-usda-attempt-to-sidestep-court-ban-on-genetically-engineered-sugar-beets/>; “Judge sets hearing on beet stecklings,” by Wes Sander, Oct. 25, 2010; <http://capitalpress.blogspot.com/2010/10/judge-sets-hearing-on-beet-stecklings.html>)

Monsanto stock share price fell from a peak near \$145 in 2008 to \$47.77 in October 2010—including a 42 percent drop since the beginning of 2010. Its GE SmartStax corn, with eight inserted genes, was not yielding any higher than its less expensive corn with three inserted genes, and its Roundup Ready 2 Yield soybean seed sales have been lower than expected after disappointing yields in 2009. At the same time, China released less expensive generic versions of Monsanto’s Roundup herbicide—even as weeds become increasingly resistant to the product. Also, Monsanto is being investigated by the Justice Department for possible antitrust violations. Monsanto plans to lower the cost of SmartStax corn for farmers next year and to offer more varieties with fewer engineered genes, since some farmers say they don’t need all eight genes and don’t want to pay for them. (“Monsanto’s Fortunes Turn Sour,” by Andrew Pollack, The New York Times, Oct. 4, 2010; www.nytimes.com/2010/10/05/business/05monsanto.html)

The **Gates Foundation's investment portfolio includes 500,000 shares of Monsanto stock** worth an estimated \$23.1 million purchased in the second quarter of 2010—a substantial increase over its previous holdings, valued at just over \$360,000. Dr. Phil Bereano, University of Washington professor emeritus and expert on genetic engineering, sees this as problematic because of Monsanto's "appalling environmental track record" and its historic disregard for the interests and wellbeing of small farmers worldwide. The Gates Foundation connections to Monsanto represent a conflict of interest and cast doubt on the Foundation's heavy funding of agricultural development in Africa and purported goal of alleviating poverty and hunger among small-scale farmers, adds Bereano. Monsanto's GE corn failed to produce kernels in South Africa in 2009, leaving small-scale farmers with almost no crop. ("Gates Foundation Invests in Monsanto," by Travis English and Brenda Biddle, AGRA Watch, August 25, 2010; www.seattleglobaljustice.org/agra-watch)

Entities linked to the private security firm **Blackwater** (now Xe Services) worked not just for U.S. and foreign governments but also for corporations, including **Monsanto**. Blackwater, founded and owned by Erik Prince, coordinated with Total Intelligence Solutions (TIS)—also owned by Prince. Monsanto hired TIS from 2008 to 2010 to report on groups or individuals that could pose a risk to the company. ("Blackwater's Black Ops," by Jeremy Scahill, The Nation, Sept. 15, 2010; www.thenation.com/article/154739/blackwaters-black-ops)

An insecticidal protein called Cry(12A)b, produced by a bacterial gene inserted into **GE corn**, has been found **in numerous streams in Indiana**. The engineered corn debris was found in 86 percent of the 217 sites sampled; the insecticidal Cry(12A)b proteins were found in 13 percent of the sites. ("GM maize 'has polluted rivers across the United States,'" by Steve Connor, The Independent, Sept. 28, 2010; www.independent.co.uk/environment/nature/gm-maize-has-polluted-rivers-across-the-united-states-2091300.html)

Researchers found in North Dakota the first evidence of established populations of **GE plants in the wild**. Of 406 canola plants growing alongside North Dakota roads, 347 (86 percent) tested positive for the CP4 EPSPS protein for glyphosate herbicide tolerance or the PAT protein for glufosinate herbicide tolerance. Two plants had multiple transgenes, even though varieties with multiple transgenic traits are not commercially available—suggesting that wild plants are reproducing and have become established outside of cultivation. ("Scientists find the new evidence of genetically modified plants in the wild," Ecological Soc. of Amer., Aug. 6, 2010; www.esa.org/pao/newsroom/press2010/08062010.php)

Planting GE Bt corn kills enough European corn borers that **non-Bt cornfields are also losing less corn to borers**, according to a study by Paul Mitchell and coworkers at the University of Wisconsin in Madison. Mitchell found that using GE corn saved farmers in Minnesota, Illinois, Wisconsin, Iowa and Nebraska \$6.9 billion over 14 years, and that some two-thirds of the savings came from fields where farmers did not plant the expensive, GE Bt corn. Margaret Mellon, director of the food and environment program at the Union of Concerned Scientists, estimated that the savings were modest—only about 3 percent of the total value of the corn crop in the five states. ("GMO corn: An organic farmer's best friend?," October 8, 2010, Los Angeles

Times; <http://latimesblogs.latimes.com/greenspace/2010/10/genetically-modified-crops-corn-agriculture-economics-borer.html>)

Silkworms engineered to contain spider DNA at the University of Notre Dame are spinning silk that, according to scientists there, is twice as strong, finer and more elastic than natural silkworm fibers. Possible commercial uses include surgical sutures, healing bandages, ligament repair, bulletproof vests, athletic clothing and automobile airbags.

Silkworms produce much more silk than spiders. The researchers say the worms are contained in a lab and, if they did escape, could not survive outdoors. (“Tough new fiber a breakthrough,” by Margaret Fosmoe, South Bend Tribune, Sept. 30, 2010; www.southbendtribune.com/article/20100930/News01/9300330)

A panel convened by the FDA deferred recommending approval of the first GE animal for sale as food in the U.S. The agency agreed to publish an environmental assessment and open a 30-day comment period before approving "**AquaAdvantage**" salmon, a fish engineered to grow faster on less feed. FDA had already accepted industry-supplied studies that the fish will not be "materially" different from other salmon, and thus is safe to eat. The research was submitted by AquaBounty Technologies, the Massachusetts company that's developed the animal. Still at issue is whether the fish must be labeled as genetically engineered. AquaBounty plans to produce its salmon eggs on Prince Edward Island, raise the fish inland in Panama, and sell the product in the United States. The company claims the altered fish will lower food costs. Critics say the promised benefits are unlikely. Just as Roundup Ready corn and soy and Bt cotton have profited Monsanto but neither farmers nor consumers, GE salmon will take livelihoods away from those who fish for salmon in the wild as well as other fish farmers, and retail costs will change little if at all, say critics. Furthermore, the GE salmon threatens the survival of endangered wild salmon, should the faster-growing fish escape. A recent UN study of global agriculture concluded that agroecology will likely do more to end world hunger than biotech "solutions." Products like GE salmon transfer more control to giant corporations at the expense of farmers, fisherfolk and local economies. (“GE salmon deferred,” Pesticide Action Network News, Sept. 22, 2010; www.panna.org)

Spring 2011

The Good News

On January 12, 2011, MOFGA released an economic study indicating that **Maine organic producers generate at least \$36.6 million** in sales, support 1,600 jobs and keep 41,000 acres of farmland in organic production. “Maine's Organic Farms – An Impact Report,” written by Jed Beach and available at www.dnnmaine.com/mofga/files/Organic%20Impact%20Report.pdf, analyzes the current state of organic agriculture in Maine using U.S. Census data. Key findings of the report about Maine organic agriculture include:

- Farm level sales of organic products are \$36.6 million. Indirect impacts of those sales take that figure to \$91.6 million.
- Organic farm numbers continue to increase rapidly. MOFGA certified 339 organic farms in 2008, and 582 farms reported selling organically in the census report. (This figure includes small farms not requiring certification under federal law.)

- Organic farms create more jobs per farm than do conventional farms. The average number of positions on organic farms in 2007 was 2.7 per farm, compared with 2.3 for other farms. Organic dairy farms support an average of 4 jobs per farm.
- Organic farmers are younger than conventional, and a higher percentage of organic farmers are women.
- Maine's organic farmers manage 38,767 acres with organic production – a doubling since 2002.

"Organic agriculture represents a real opportunity for Maine's economic future," said Russell Libby, MOFGA's executive director. "Young people are choosing to farm here, and they're creating jobs and businesses that support their local communities."

MOFGA's new farmer training programs support more than 200 people each year, with 50 enrolled in the organization's Journeyperson Program. Almost all of MOFGA's Journeypersons go on to farm in Maine, contributing substantially to the growth of Maine's organic farming community. MOFGA also operates the USDA-accredited MOFGA Certification Services LLC, which certified almost 400 Maine farms in 2010.

Maine Farmland Trust announced in January 2011 an estimated \$50 million fundraising campaign to **preserve 100,000 acres** of Maine farmland by 2014. ("Maine Farmland Trust Working To Preserve Maine's Farmland," by Rob Poindexter, WABI TV, Jan. 12, 2011; www.wabi.tv/news/17045/maine-farmland-trust-working-to-preserve-maines-farmland)

Food for Maine's Future, representing a coalition of family farm, labor and trade organizations, delivered an open letter to Governor Paul LePage and the 125th Maine Legislature in January 2011 calling for immediate action to **protect Maine's family farms and small-scale food processors**. The letter identifies failed rural development policies and consolidation of the food supply chain into the hands of a very small number of powerful multinational corporations as responsible for the disappearance of millions of farms and farm families from the rural U.S. landscape. Low prices, increased debt, and fewer markets are cited as outcomes of the last 70 years of U.S. agricultural policy. The letter recommends that Maine enact an immediate moratorium on farm foreclosures, to last at least a year from release of USDA/Department of Justice findings on the impacts of corporate consolidation in agriculture; conduct an inquiry into how corporate concentration and free trade have impacted Maine farmers; and ensure that Maine farms, cottage-scale food processors and cooperative food buying clubs not be subjected to the harsh law enforcement tactics being used elsewhere in the United States. In addition, Food for Maine's Future and Food AND Medicine of Brewer have a confidential worker rights hotline (866-933-9236) to field calls from Maine farmers at risk of foreclosure. ("Coalition Announces Hotline for Farmers at Risk of Foreclosure," Press Release, Food for Maine's Future, Jan. 11, 2011; www.savingseeds.wordpress.com)

New England Farmers Union (NEFU) is New England's voice in Washington, D.C., when policymakers and regulators discuss issues regarding food and agriculture. NEFU is a chapter of the National Farmers Union, one of the largest and most influential general agriculture organizations in the country, which represents the collective voice of farmers, ranchers and rural communities. Its Washington, D.C., staff meets and works with members of Congress and administration officials to address issues on food, forestry, fishery, conservation and agriculture. In New England, NEFU educates communities about these issues and brings people together to ensure that their collective voice is heard.

“If New England agriculture is to thrive, we need a progressive ally that effectively supports farmers on the local and the national level,” says Jim Gerritsen, owner of Wood Prairie Farm in Bridgewater, Maine. “That’s why we’re members of NEFU.”

With the recent high turnover in Congress, NEFU is working hard to educate elected officials and to make the case that New England agriculture and fisheries are creating jobs, growing the economy and deserve laws and regulations that support and foster new growth in the industry.

Needs and concerns of the NEFU membership—New England farmers, consumers and organizations—drive NEFU’s policy positions and work. For more information, see www.NewEnglandFarmersUnion.org.

Despite the sluggish economic recovery, **U.S. families continue to buy more organic products** than ever before and from a wider variety of categories, according to a study sponsored by the Organic Trade Association (OTA) and KIWI magazine. In fact, 41 percent of parents report buying more organic foods today than a year ago, up significantly from 31 percent reporting organic purchases in 2009, according to the “U.S. Families’ Organic Attitudes & Beliefs 2010” tracking study. Three-quarters of U.S. families purchase some organic products.^[1] “Consumers are increasingly interested in where their food comes from and how it is produced. With organic, they have that transparency,” said Christine Bushway, OTA’s executive director and CEO, adding, “It is exciting to see parents recognize the importance of organic products to their families.”^[2] The survey also found that parents buy organic because they see organic products as generally healthier, as addressing their concern about the effects of pesticides, hormones and antibiotics on children, or as providing a way to avoid highly processed foods and/or artificial ingredients. Demographically, consumers’ education level appears to be more significant than income level in predicting organic purchase behaviors. (Organic Trade Assoc. press release, Dec. 8, 2010; www.ota.com)

The National Institute for Food and Agriculture, through the USDA Beginning Farmer and Rancher Development Program, is funding a one-year pilot NOFA-NY project entitled “**Growing Beginning Farmers in the Northeast** through Regional Programming, Tools and Community.” The program will increase the capacity of NOFA-NY to provide extensive training and support to on-farm apprentices and interns, to beginning farmers and to experienced farmers who mentor them. The improved programming will attract beginning farmers to the Northeast to learn to farm. The project includes workshops, scholarships to qualified beginning farmer applicants, new Web-based tools to facilitate on-farm learning, and opportunities for new farmers to network. NOFA-NY will work closely with NOFA-VT and MOFGA, two organizations with highly successful beginning farmer programs. Other state NOFAs will participate in the training and program development. FMI: www.nofa.org

The Maine School Garden Network (MSGN) and Maine Ag in the Classroom have scheduled the 2011 Maine School Garden Day for Saturday, April 9, at Medomak Valley High School. Teachers will be able to tour the school’s renowned seed-saving program and earn continuing education credits for attending workshops on cooking in the classroom, using integrated pest management, helping students plan profit-making activities around their garden harvest, and

more.

The MSGN's education-focused tent appeared for the first time at the 2010 Common Ground Country Fair. Feedback from participants will fuel improvements to the 2011 School Zone Tent. MSGN hopes to increase the number of school garden projects represented by encouraging artwork, demonstrations and more by student gardeners. The Network is also considering finding a sponsor or sponsors for the tent; maximizing limited table space to allow for greater participation; and lining up presenters before May 1.

MSGN's Kids' Art Contest will be publicized earlier this year to give young artists plenty of time to create garden-focused works before the late-summer submission deadline.

A new program this year, the School Garden Open House will raise awareness of school gardens across Maine, promote garden curricula within participating schools, and give students a chance to share their projects with the public by encouraging people to visit school gardens in their area on a predetermined day—similar to the Maine Department of Agriculture's Open Farm Day. The MSGN will provide publicity, guidance and suggestions; participating schools will organize and facilitate their own activities to highlight their garden programs.

Another new program, Bean Fest 2011, will be hosted by Medomak Valley High School this fall. The network hopes this will become an annual celebration. Beans, part of Maine's culinary tradition, lend themselves to investigations across disciplines and beyond kitchens. From plant physiology and the "three sisters" garden to the history behind each bean variety and the possibilities for bean-inspired art, beans are packed with possibilities!

For more information, watch for updates in the June-August issue of The Maine Organic Farmer & Gardener, visit www.msgn.org, email info@msgn.org or call MSGN's chair, Kat Coriell, at 207-926-3047.

Students in the **PeaceJam** group at **Mount View High School** in Thorndike, Maine, grew \$1,700 worth of vegetables in their organic garden in 2010. Because of this and other activities promoting local foods and healthful meals in a low-income area, the school **won PeaceJam's 2010 Global Call to Action Challenge Award**. PeaceJam is a national foundation with the mission of creating young leaders committed to positive change in themselves, their communities and the world through the inspiration of Nobel Peace Laureates who pass on the spirit, skills and wisdom they embody, according to www.peacejam.org. Mount View Peacejam faculty advisor Janet Caldwell and three students traveled to Colorado to accept the award. The Mount View students started with an organic garden at MOFGA's Common Ground Education Center, donating that harvest to local food pantries. As their harvests increased from their gardens at Mount View, they gave produce to their school nutrition program and worked with school officials to improve food quality there while supporting the local economy and reducing school food costs. By raising produce for school meals, they freed funds that enabled the school to buy more food from local farmers. Participation in the school lunch program subsequently increased by more than 20 percent. ("Maine Student Project Wins Global Call to Action Challenge," by Georgeanne Davis, Nov. 11, 2010; www.freepressonline.com/main.asp?SectionID=52&SubSectionID=78&ArticleID=9937)

AgMatters LLC is administering three USDA **Specialty Crop grants**. Specialty crops include

vegetables, fruits and nuts. One grant helps develop **farm food safety plans** and helps incorporate good agricultural practices and good handling practices that might lead to attaining GAP/GHP certification. Another helps write **nutrient management plans**. A third provides up to \$300 in **reimbursement** to farms that successfully complete a **GAP audit** to help defray the cost of the audit. Specialty crop farmers can access and use these services free. AgMatters LLC, operated by Lauchlin, Linda and Miah Titus, wrote these grants and will help farmers clarify what they need to do to improve safe food handling practices on their farms, especially if they are going to obtain USDA-GAP/GHP certification. Certified organic growers are generally well prepared to create a food safety plan for the farm. For example, GAP recommendations regarding manure use are much like National Organic Program rules on this issue. Presently, USDA GAP/GHP audits are not mandated by law but are by some markets. For more information, contact AgMatters at 207-873-2108, 207-314-2655, or ltitus1@myfairpoint.net. An EU-funded study by Newcastle University of 22 brands of milk found 30 to 50 percent lower concentrations of harmful saturated fats and **more beneficial fatty acids in organic than conventional milk**. These benefits occurred in milk year round. The study was published in the peer-reviewed Journal of Dairy Science. The Nafferton Ecological Farming Group suggested that conventional milk rated lower than organic in these measures because conventionally raised cows rely less on grazing, and synthetic chemical fertilizer suppresses clover. ("Organic milk is better for you, say scientists," by Martin Hickman, The Independent, Jan. 17, 2011; www.independent.co.uk/news/science/organic-milk-is-better-for-you-say-scientists-2186302.html)

Organic dairy farming systems **promote cow health and longevity** by placing less stress on cows and feeding them healthier forage-based diets, **while also improving the nutritional quality of milk**, according to a November 2010 report by The Organic Center (TOC). "A Dairy Farm's Footprint: Evaluating the Impacts of Conventional and Organic Farming Systems" compares milk and meat production and revenue earned, feed intakes, the land and agricultural chemicals needed to produce feed, and the volume of wastes generated by representative, well-managed conventional dairy farms and representative, well-managed organic farms. The report says that the average cow on organic dairy farms provides milk through twice as many, markedly shorter lactations and lives 1.5 to 2 years longer than cows on high-production conventional dairies. Because cows live and produce milk longer on organic farms, milking cow replacement rates are 30 to 46 percent lower, reducing the feed required and wastes generated by heifers raised as replacement animals. Cows on organic farms require 1.8 to 2.3 breeding attempts per calf carried to term, compared with 3.5 attempts on conventional farms. The enhanced nutritional quality of milk from cows on forage-based diets, particularly Jersey cows, significantly reduces the volume of wastes generated on organic dairy farms. Manure management systems common on most organic farms reduce manure methane emissions by 60 to 80 percent, and manure plus enteric methane emissions by 25 to 45 percent. The report also notes that gross milk and meat sales revenues are about 50 percent higher per year of a cow's life on organic dairy farms, largely because of significantly greater milk revenue. Over the last five years, organic dairy farmers have received, on average, a premium of \$10.98 per hundredweight of milk. Dairy specialists worked with TOC to create a "Shades of Green" dairy farm calculator to make these projections. The report, the calculator and a manual for using the calculator are available free at www.organic-center.org/SOG_Home.

The world has 25 percent more food calories available (after losses) for consumption than it needs, and it's expected to produce 70 percent more food by 2050, yet one billion people are hungry or starving. The challenge is to provide access to food for the poor. **Organic agriculture can feed the world** while empowering the poor and mitigating climate change and biodiversity loss, writes Anne English of the International Federation of Organic Agriculture Movements (IFOAM). She quotes Markus Arbenz, IFOAM executive director, who said that small farmers already produce 70 percent of the world's food and form the backbone of food security throughout the developing world: "Organic agriculture currently has similar yields to conventional agriculture and often much higher yields in regions of the world where production environments are tough." Meanwhile, "Conventional practices deplete soils and thereby undermine long term food security... conventional, green revolution-based or industrial agriculture fails to feed 15% of the world's population" and at the same time pushes out small farmers "through international investments, through land-grabbing and through bad governance."

On the other hand, enhanced biological activity on organic farms creates affordable production systems. The article says that the Ethiopian government has "put organic practices at the heart of their national agriculture development policies," and agricultural pesticide use was dramatically reduced in Egypt after consultation with local organic farmers. Supporting small farmers, said Arbenz, requires good policy, corporate responsibility, and research and education in ecological intensification." ("Powered by Nature," by Anne English, IFOAM, in The Financial Times Food Security Briefing, www.feedingthefuture.eu/FS/foodsecurity.pdf).

In January 2011, President Obama signed the **Food Safety Modernization Act** into law. Congress still has to approve \$1.4 billion in funding. The bill includes the Tester-Hagan amendment, which exempts producers with less than \$500,000 in annual sales who sell most of their food locally. The legislation gives the FDA added power to inspect food, to enact mandatory recalls and to track tainted foods. It requires that FDA conduct more inspections of food processing plants—especially of those processing foods at highest risk for contamination; and large processing plants must write food manufacturing plans and routinely test foods for safety.

The law also provides for stricter standards on imported foods, which make up almost one-fifth of the U.S. food supply and up to three-quarters of our seafood, says The New York Times. The bill gives small farms and food processors and direct-market farms selling locally the option of complying with state or modified federal regulations; gives FDA authority to exempt or modify requirements for low- or no-risk processing or co-mingling; to exempt farmers who sell directly to consumers or grocery stores from extensive traceability and recordkeeping requirements; to enable farms to satisfy traceability requirements via labels that preserves the identity of the farm through to the consumer; and in most cases to limit farm recordkeeping to the first point of sale.

The New York Times reports that the bill would not "consolidate overlapping functions at the Department of Agriculture and nearly a dozen other federal agencies that oversee various aspects of food safety, leaving coordination among the agencies a continuing challenge."

("Obama signs food safety bill," by Lynn Sweet, Chicago Sun Times, Jan. 6, 2011; www.suntimes.com/news/sweet/3158575-452/durbin-bill-safety-president-battle.html?print=true; "Congress Sends Food Safety Bill to President's Desk," Dec. 21, 2010,

National Sustainable Agriculture Coalition; <http://sustainableagriculture.net/blog/house-passes-food-safety-act/>; “Fixing Error, Senate Passes Food Bill Again,” AP, The New York Times, Dec. 19, 2010; www.nytimes.com/2010/12/20/us/politics/20food.html?hpw; “Senate Passes Sweeping Law on Food Safety,” by Gardiner Harris and William Neuman, The New York Times, Nov. 30, 2010; www.nytimes.com/2010/12/01/health/policy/01food.html?hpw)

Factory Farms

Food & Water Watch has updated its **Factory Farm Map** (www.factoryfarmmap.org) charting the concentration of U.S. factory farms and their impacts on human health, communities and the environment. USDA Census data show that:

- In five years, total animals on factory farms grew by 5 million—more than 20 percent.
- The number of cows on factory dairy farms nearly doubled between 1997 and 2007, shifting the dairy industry from traditional states, such as Wisconsin, New York and Michigan, to western states, including Idaho, California, New Mexico and Texas.
- Beef cattle numbers on industrial feedlots rose 17 percent from 2002 to 2007.
- About 5,000 hogs were added to U.S. factory farms daily for the past decade.
- Industrial broiler chicken production added 5,800 chickens per hour over the past decade.
- The number of laying hens on factory farms increased by one-quarter over the decade.
- The average size of factory farms increased by 9 percent in five years, cramming more animals into each operation.
- In 2007, the average factory-farmed dairy held nearly 1,500 cows and the average beef feedlot held 3,800 beef cattle.
- The average size of hog factory farms increased by 42 percent over a decade.
- Five states with the largest broiler chicken operations average more than 200,000 birds per factory farm.
- Average-sized layer chicken operations grew by 53.7 percent between 1997 and 2007.

The Food & Water Watch report “Factory Farm Nation” explains the forces driving factory farms and the environmental, public health and economic consequences of these farms. (“Factory Farm Nation: Map Charts Unprecedented Growth in Factory Farming,” Food & Water Watch press release, Nov. 30, 2010)

Organic

Several prominent food companies, including Amy’s Kitchen, Nature’s Path and Turtle Island Foods, have **stopped using ingredients made with the toxic solvent hexane** since consumers began responding to Cornucopia Institute’s 2009 expose of hexane use. Cornucopia’s new report, “Toxic Chemicals: Banned In Organics But Common in Natural Food Production,” and its guide at www.cornucopia.org/2010/11/hexane-soy/, identify brands that use hexane-extracted soy protein ingredients from those using cleaner sources. “Many soy foods, thought of as ‘healthy options’ on grocery store shelves, contain ingredients that were processed with a neurotoxic and highly-polluting petrochemical compound called hexane,” said Charlotte Vallaes, Farm and Food Policy Analyst for Wisconsin-based Cornucopia. Buying foods with the USDA Organic seal assures consumers that the soybeans in their food were not immersed in petrochemical solvents, an almost universal practice in conventional food processing. Hexane is a common

processing agent for soy oil, soy meal (fed to livestock) and other soy food ingredients, and is an inexpensive tool for high protein extraction. Because it is a processing agent, not an ingredient, companies need not disclose its use to consumers. The FDA does not require that food companies test for hexane residues. (“Dirty Little Secret in the Natural Foods Industry: Toxic Chemical Use,” Cornucopia Institute press release, November 28th, 2010; www.cornucopia.org/2010/11/dirty-little-secret-in-the-natural-foods-industry-toxic-chemical-use/)

Nebraska-based **Promiseland**, with 22,000 head of cattle, **will lose its organic certification** for five years for feeding its cattle non-organic grain, selling fraudulent feed and selling conventional cattle as organic—violations of the Organic Foods Production Act. (“USDA Strips Rancher of Organic Certification,” EIN Presswire, Oct. 28, 2010; www.caymanmama.com/2010/10/30/USDA-Strips-Rancher-of-Organic-Certification_201010307866.html)

H1N1 Scandal?

German epidemiologist and head of health at the World Health Organization Wolfgang Wodarg has called the widely predicted **H1N1** outbreak “one of the **largest medical scandals** of this century,” reports the agricultural site allaboutfeed.net. “The so-called pandemic is a setup of a few giant drug companies and the World Health Organisation,” he said, adding that WHO softened the definition of a pandemic at scientists’ requests, and giant drug companies could then cash in on sealed contracts for vaccines. Millions of Euros were spent on vaccination campaigns, and thousands of animals were destroyed, although fewer deaths occurred due to H1N1 than would be expected with classic seasonal flu, reports allaboutfeed.net. (“H1N1 outbreak ‘largest medical scandal of 21st century,’” AllAboutFeed.net, Jan. 13, 2010; www.allaboutfeed.net/news/h1n1-outbreak-%E2%80%9Clargest-medical-scandal-of-21st-century%E2%80%9D-4007.html)

The Food Bubble

Lester Brown, Earth Policy Institute president and author of the new book *World on the Edge: How to Prevent Environmental and Economic Collapse*, says the **current food bubble economy** is like the recent U.S. housing bubble, except that the food bubble is global, so its bursting could have further reaching impacts. The food bubble has been created by overpumping aquifers, overplowing land, and overloading the atmosphere with carbon dioxide, notes Brown, adding that if we cannot reverse these trends, economic decline is inevitable. Record high temperatures and drought in Russia last summer, for example, caused thousands of fires and smoke everywhere and cut Russia’s grain harvest from roughly 100 million to 60 million tons, which drove up bread prices worldwide. Brown says that “if the July temperature in Chicago were to average 14 degrees above the norm, as it did in Moscow, there would be chaos in world grain markets.”

Depleted aquifers are another threat to world food security. In Saudi Arabia, aquifer depletion has reduced the wheat harvest by two-thirds in three years. In the Middle East as a whole, peak irrigation water is now history, and the grain harvest has started to shrink as aquifers are depleted

and as irrigation wells go dry. India and China depend on overpumping their aquifers to feed their populations. As China replaces cropland with roads and cars, it will have to import massive quantities of grain—for which it will turn to the United States, the world's largest grain exporter.

“The new reality,” says Brown, “is that the world is only one poor harvest away from chaos. It is time to redefine security. The principal threats to our future are no longer armed aggression but instead climate change, population growth, water shortages, spreading hunger, and failing states. What we now need is a mobilization to reverse these trends on the scale and urgency of the U.S. mobilization for World War II. The challenge is to quickly reduce carbon emissions, stabilize population, and restore the economy's soils, aquifers, forests, and other natural support systems. This requires not only a redefining of security but a corresponding reallocation of fiscal resources from military budgets to budgets that address the new threats to security.” (“World on the Edge,” Press release, Earth Policy Institute, Jan. 12, 2011; www.earth-policy.org)

Fertilizers

A Soil Association report called “A rock and a hard place: **Peak phosphorus** and the threat to our food security” says declining supplies and higher prices of phosphate rock threaten global food security. The report highlights the urgent need for farming to become less reliant on phosphate rock-based fertilizer, since we may hit peak phosphate as early as 2033. Most rock phosphate is mined in China (35 percent), the United States (17 percent) and Morocco and Western Sahara (15 percent). China has restricted and the United States has stopped exports of phosphate. The Association notes that organic farms are more resilient to the declining supply, as rock phosphate can be used only to supplement nutrient recycling (including crop rotations, green manures and composting). Organic crops generally have lower fertilizer requirements than non-organic, with a greater capacity to scavenge for nutrients through denser and deeper root systems. Eating less meat can reduce the demand for mined phosphate, since vegetable-based production uses P more efficiently than livestock production. Grazing livestock on grass that has not had artificial fertilizers applied can also conserve P. The report also recommends changing EU organic regulations to allow the use of P-rich human excreta on agricultural land. Globally only 10 percent of human excreta are returned to agricultural soils. Urine alone contains more than 50 percent of the P excreted by humans. Likewise, an article in the Energy Bulletin shows that recycling human and livestock manure can more than meet the P needs of agricultural crops worldwide. (“New threat to global food security as phosphate supplies become increasingly scarce,” Soil Association press release, Nov. 29, 2010; complete report at www.soilassociation.org/peakphosphate.aspx ; “Recycling animal and human dung is the key to sustainable farming,” by Kris De Decker, Energy Bulletin, Sept. 16, 2010; www.energybulletin.net/stories/2010-09-16/recycling-animal-and-human-dung-key-sustainable-farming)

Pesticides

BPC Adopts Policy on Homemade Pesticides

By Katy Green

The Maine Board of Pesticides Control (BPC) adopted a policy in December 2010 regarding the

use of homemade pesticides. In statute, a pesticide is defined as “any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pests and any substance or mixture of substances intended for use as a plant regulator, defoliant or desiccant.” So, common household products such as vinegar and dish soap, when used to control pests, are considered unregistered pesticides.

The BPC adopted loose language allowing it to “use [its] enforcement discretion regarding the use of common consumer products or homemade mixtures when those products or mixtures are applied by the individual that purchased the product or created the mixture.”

Growers who produce and sell agricultural products should know that, when a tolerance level for a particular pesticide has not been established, federal legislation prohibits residue of that pesticide on products. The Maine Division of Quality Assurance and Regulations can tell growers which products have established tolerance levels. If you have a question about a particular product or either of these policies, please contact me Katy Green at kgreen@mofga.org or 568-4142.

The BPC seems particularly concerned about using homemade pesticides in schools and municipal buildings at this point, but does not have a formal position concerning home gardeners who use homemade pesticides.

Notification Discussions Continue

A BPC report for the legislature regarding a comprehensive pesticide notification registry recommends notification distances that are mostly in line with those that MOFGA sought in its testimony, but they leave two important questions unanswered and request guidance from the legislature. Those questions are, “Who should identify properties that trigger notification?” and, “What types of pesticide applicators should be required to notify neighbors under a comprehensive notification registry?”

The BPC has received many comments from various stakeholder groups about who should initiate notification, but members of the ad hoc Public Health Committee and some members of the board staff generally agree that pesticide users should initiate notification. Also, stakeholder groups almost unanimously support that the comprehensive registry include outdoor pesticide applications by homeowners, but the BPC believes it cannot regulate so many people. Given the number of new members on the Legislature’s Agricultural Committee, it is unclear if they will have enough background on the subject to answer and provide guidance on these questions.

Further, multiple bills being introduced during this Legislative session jeopardize the BPC’s year of work on the registry. [MOFGA staff members have been working with Representative Jeff McCabe \(D – Skowhegan\) on a bill that would establish a simple, efficient, effective notification registry for people who want information about all outdoor commercial pesticide applications in their neighborhoods](#)—a bill that follows [logically](#) from [the BPC’s work on notification](#). See www.mofga.org for current [information about](#) this and other [bills relating to organic farming and gardening in Maine](#).

Product Registrations

In November, the BPC approved a Special Local Need request submitted by David Yarborough of the University of Maine Cooperative Extension for Asulox Herbicide (EPA Reg. No. 70506-139) in blueberries. The product was approved with the conditions that it be applied only in non-bearing years; no more than once every other year; and via spot treatment. Additionally, because of the high runoff and leaching potential of the herbicide, the BPC recommended that the staff monitor water quality where it's used. With the exception of Chuck Ravis, who cited groundwater concerns, BPC members approved the registration. The EPA lists [Asulam](#), the active ingredient in Asulox, as a possible human carcinogen.

Pesticide Application Rule Violations

On July 16, 2010, a Plum Creek employee reported that he unintentionally sprayed a 25- by 1,400-foot swath on an adjoining property with a mix of Accord Herbicide (EPA Reg. No. 62719-324) and Arsenal Herbicide (EPA Reg. No. 241-299). The applicator, JBI Helicopters of Pembroke, New Hampshire, acknowledged that the error damaged the adjoining property. The BPC unanimously approved a consent agreement with JBI Helicopters and fined the company \$300. Board member Dan Simonds abstained from voting because of a prior relationship with JBI Helicopters.

Lawn Dawg, a Portland landscape company, was cited for failing to notify a registrant on the urban Pesticide Notification Registry of a pesticide application on an abutting property. The registrant observed the application of Quinstar Turf Herbicide (EPA Reg. # 42750-90) and notified the BPC that he had not been given prior notice. Patrick Devoe, Lawn Dawg manager, said the company had a system in place for notifying registrants, but the system had failed this time. The company, which was fined \$500, has implemented a backup system to prevent such an incident from recurring.

In December, the BPC unanimously approved a consent agreement with Michael Mills Landscaping of Rumford. A caller told the BPC that a company employee was applying pesticides without a commercial applicator license. During the investigation BPC staff discovered that the employee also was not wearing protective clothing required by the pesticide label and was not keeping the necessary application records. The BPC fined the company \$500.

Similarly, a caller told the BPC that Magic Carpet Cleaning and Restoration Inc., of South Portland, was performing mold remediation without the required commercial pesticide applicator license. The company acknowledged routinely using Mircroban Disinfectant Spray Plus (EPA Reg. # 70385-5) in its mold remediation efforts. The company was fined \$350 and has since sought the appropriate licenses.

[End of BPC news]

Larry Jacobs of Jacobs Farm/Del Cabo in California was mystified when Whole Foods rejected his organic dill because it tested positive for pesticides. Then he learned that **pesticides** applied as a liquid to Brussels sprouts near his farm had evaporated and **moved in vapor** to his dill. In

December 2010, California's 6th District Court of Appeal in San Jose said **Jacobs can sue the pesticide applicator**, Western Farm Service, and the court upheld an earlier \$1 million jury award. The decision strengthens the case for those harmed by pesticides to seek legal recourse, even when the pesticide was applied legally. (“Appellate court: Santa Cruz organic dill grower has right to sue neighboring farm for 'pesticide drift,’” by Kurtis Alexander, Dec. 23, 2010, San Jose Mercury News, www.mercurynews.com/central-coast/ci_16923749?nclick_check=1)

Dr. Jeffrey Pettis, the U.S. government’s leading bee researcher, says that **bees may be more vulnerable to infection** by the bee disease nosema when exposed to minute concentrations of **imidacloprid**, a neurotoxic neonicotinoid pesticide, and that vulnerability may be related to the colony collapse disorder (CCD) affecting bees worldwide. He has submitted his work for publication. Imidacloprid was Bayer CropScience’s top-selling insecticide in 2009. Bayer says it is safe for bees when used properly. Neonicotinoids are systemic—i.e., they are absorbed into all parts of treated plants, even pollen and nectar, so bees can carry them back to their hives. Pettis and fellow bee researcher Dennis van Engelsdorp of Penn State University spoke about the issue in a new film by Mark Daniels called “The Strange Disappearance of The Bees.” French researchers subsequently also found that the combination of nosema and imidacloprid significantly weakened honeybees. They published their results in Environmental Microbiology. Also, a leaked memo from the U.S. EPA says that a newer neonicotinoid, **clothianidin**, may put bees and other non-target invertebrates at risk, and that tests in the U.S. approval process for the pesticide are inadequate. Clothianidin, sold as Poncho, has been widely used as a seed treatment on many major U.S. crops for eight growing seasons under an EPA “conditional registration” granted while EPA waited for Bayer to assess the insecticide’s toxicity to bees in the field — a study that now appears to be flawed. Neonicotinoids have been banned or partially banned in several countries, but not yet in the United States or Great Britain. Britain’s Soil Association lists household pesticides that contain neonicotinoids at www.soilassociation.org/Takeaction/Savethehoneybee/Householdpesticides/tabid/690/Default.aspx and urges consumers not to buy them, while in the United States, Pesticide Action Network, Beyond Pesticides and beekeepers countrywide have asked the EPA to pull clothianidin from the market. (“Exclusive: Bees facing a poisoned spring,” by Michael McCarthy, The Independent, Jan. 20, 2011; www.independent.co.uk/environment/nature/exclusive-bees-facing-a-poisoned-spring-2189267.html; “Call to ban pesticides linked to bee deaths,” by Michael McCarthy, The Independent, Jan. 21, 2011; www.independent.co.uk/environment/nature/call-to-ban-pesticides-linked-to-bee-deaths-2190321.html; “Beekeepers call for immediate ban on CCD-linked pesticide,” Pesticide Action Network, Dec. 9, 2010; www.panna.org/blog/beekeepers-call-immediate-ban-ccd-linked-pesticide)

Dr. Brenda Eskenazi and her colleagues at the University of California measured pesticide concentrations in the bodies of nearly 600 pregnant women in California’s Salinas Valley. The women’s children were also studied, first through cord blood samples immediately after birth and then as they grew. At age 2, children of mothers with the highest levels of breakdown products from **organophosphate pesticides** in their urine had the greatest risk of **pervasive developmental disorder**. Symptoms include behavioral effects such as being afraid to try new things, inability to tolerate anything out of place, and avoiding looking others in the eye—all signs consistent with autism spectrum behavior. By age 5, children who had been exposed to the most pesticides in the womb were at greater risk of **attention deficit/hyperactivity disorder**

(ADHD). The researchers are now studying whether the greatest prenatal exposures are linked to learning disabilities, behavior problems, asthma, diabetes and obesity. Children in urban settings may face similar risks. Data from the Centers for Disease Control and Prevention suggest that the level of pesticide contamination of kids around the country, regardless of proximity to agriculture, is high enough to raise questions about the impact of those pesticides on their development. This means routine exposures to pesticides from the food we eat may not be as safe as we are led to believe. Pesticide Action Network's "What's on my Food" website and iPhone app can help identify produce with the highest risk of carrying pesticide residues, and health effects associated with those residues. ("More evidence that pesticides impact kids' health," by Margaret Reeves, Pesticide Action Network, Jan. 12, 2011, www.panna.org/blog/more-evidence-pesticides-impact-kids-health)

Bumble Bees

University of Illinois entomology professor Sydney Cameron and her colleagues have found **declines** of up to 96 percent in populations of four of eight **bumble bee** species studied across the country, and declines in their geographic range since record-keeping began in the late 1800s. The declining populations have lower genetic diversity than bumble bee species with healthy populations and are more likely to be infected with the parasite *Nosema bombi*. The study was published in the Proceedings of the National Academy of Sciences. Cameron said that North America has 50 species of bumble bees. Hypotheses about causes of the declines include climate change, habitat loss, low genetic diversity and high infection rates. (Diana Yates, Illinois News Bureau, Jan. 2, 2011; www.news.illinois.edu/news/11/0103bee_cameron.html)

Genetic Engineering (GE)

The Organic Seed Growers and Trade Association (OSGATA) board has approved a **Policy on GMO Contamination of Organic Seed**: "GMO contamination of organic seed constitutes irreparable harm to the organic seed industry and undermines the integrity of organic seed. Any detectable level is unacceptable." (<http://osgata.org/osgata-policy.html>)

The Organic Farming Research Foundation board of directors made the following statement of principles on **preventing contamination of organic agricultural systems by GE organisms and crops**.

Whereas:

- * The use of genetically engineered organisms is prohibited in organic agriculture;
- * There is widespread planting of GE crops in the U.S.;
- * Organically grown crops risk contamination from GE crops;
- * GE contamination can occur through biological or marketplace channels;
- * GE contamination results in product rejection and loss of markets for farmers, leading to the destruction of rural family businesses and farms;
- * The costs of preventing and testing for GE contamination are borne primarily by organic farmers and processors;
- * Consumers are demanding GE free products and the ability to distinguish between GE and non-GE products through labeling;
- * GE contamination of organic crops domestically will result in overseas sourcing for organic

products;

- * GE contamination creates barriers for farmers who export to Europe and other countries who reject GE crops;

- * GE organisms threaten contamination of our seed stock, undermining our ability to ensure global food security; and

- * Organic agriculture provides multiple benefits to society and economic opportunity for family farmers.

The following principles must be applied when creating a policy framework to ensure the viability and continued growth of organic agriculture in the U.S. with respect to the persistence of GE crops and contamination risks:

1. Freedom of Enterprise: Farmers have the freedom to grow non-GE crops without the undue barriers, burdens, and risks caused by GE contamination.

2. Innovation and Entrepreneurship: Barriers to farmer innovation and entrepreneurship such as GE contamination should be removed so that farmers are free to access new and lucrative markets without additional costs.

3. Fairness: Organic farmers should not have to bear the costs for damages to their crops and products caused by the actions of other farmers and companies.

4. Corporate Responsibility: Patent-holders of technologies must be responsible for mitigation of damages to organic operations caused by the use of their GE products, as well as for the cost of preventing contamination.

5. Scientific Soundness: Policy decisions must be based on sound scientific assessments based on thorough, comprehensive, and independent research trials.

6. Appropriate Technology: The acceptance of new technologies must be based on an assessment of the net risks and benefits of those technologies to society as a whole.

7. Transparency: Information about the production and movement of GE organisms through the supply chain must be made available clearly and readily through labeling so that farmers and consumers who choose to avoid GE organisms can do so with ease.

8. Consumer Right to Know: Consumers have the right to choose what they are eating, and to know how their food is grown and where it comes from.

9. Biodiversity: Society must support biologically diverse agricultural systems through the provision of equal opportunity and resources.

(“OFRF Policy Statement on Preventing GE Contamination Approved by the OFRF Board of Directors, Dec. 15, 2010;

http://ofrf.org/policy/policy_statements/preventing_ge_contamination.html?source=olink_1101)

Jeffrey Smith’s Institute for Social Responsibility has started a **Non-GMO Tipping Point Network** of local and national Non-GMO Action Groups, support groups of experts and helpers. The network will reach out to parents, schools, communities and others, providing electronic infrastructure, listserves, forums, educational materials, webinars, trainings and more, so that each group can benefit from the whole. See

http://action.responsibletechnology.org/p/salsa/web/common/public/signup?signup_page_KEY=2925. And the Organic Consumers Association has a **grassroots campaign** for grocery stores to

label foods that contain GMOs (including food from GMO-fueled factory farms), and for local, state and federal laws that would make GMO-labels mandatory. See

www.organicconsumers.org/monsanto/index.cfm.

National wildlife refuges have allowed farming for decades, but in recent years the majority of refuge farming has been converted to GE crops—reportedly the only seed farmers can obtain. Now, however, the U.S. Fish & Wildlife Service has agreed to **stop planting GE crops on all its refuges in a dozen Northeastern states**, according to a settlement agreement in a lawsuit brought by conservation and food safety groups. "Planting genetically engineered crops on wildlife refuges is resource management malpractice," said Paula Dinerstein, senior counsel for Public Employees for Environmental Responsibility (PEER), adding that Fish & Wildlife Service policy explicitly forbids "genetically modified agricultural crops in refuge management unless [they] determine their use is essential to accomplishing refuge purpose(s)." Paige Tomaselli, staff attorney with the Center for Food Safety, said, "These pesticide-resistant crops pose significant risks to the very wildlife those refuges serve to protect, including massively increasing pesticide use and creating of pesticide-resistant superweeds." Because the federal government would not agree to end illegal GE agriculture in refuges nationally, new litigation is being prepared in other regions where national wildlife refuges grow GE crops. The lawsuit in the U.S. District Court for Delaware, filed by the Widener Environmental and Natural Resources Law Clinic on behalf of the Delaware Audubon Society, PEER and the Center for Food Safety, charged that the Fish & Wildlife Service had illegally entered into Cooperative Farming Agreements with private parties, allowing hundreds of acres on its Bombay Hook National Wildlife Refuge in Delaware to be plowed without the environmental review required by the National Environmental Policy Act. ("Feds Yank GE Crops From All Northeast Refuges," Public Employees for Environmental Responsibility (PEER), Jan. 10, 2011; www.peer.org/news/news_id.php?row_id=1443)

For an excellent article about **GE crops** that tolerate the herbicide glyphosate (the active ingredient in Roundup and other herbicides) and **their effects on N-fixing** and other beneficial soil bacteria, harmful plant fungi, nutrient availability, plant diseases and more, see "Glyphosate Tolerant Crops Bring Diseases and Death," by Dr. Mae-Wan Ho, ISIS Report, May 26, 2010; www.i-sis.org.uk/glyphosateTolerantCrops.php .

Biotech firm Okanagan Specialty Fruits of British Columbia has asked the USDA to approve a **GE apple** that resists browning when sliced or bruised due to a silenced gene. Andrew Kimball of the Center for Food Safety said, "Scientists have been saying they're only turning one thing off, but that switch is connected to another switch and another switch. You just can't do one thing to nature." ("Canadian firm seeks US approval for non-browning GM apple," by Caroline Scott-Thomas, FoodNavigator, Nov. 30, 2010; www.foodnavigator-usa.com/Legislation/Canadian-firm-seeks-US-approval-for-non-browning-GM-apple/?c=9b2VLtqxW7Wa66qoSL%2Frtg%3D%3D&utm_source=newsletter_weekly&utm_medium=email&utm_campaign=Newsletter%2BWeekly)

In its final, court-ordered, Dec. 16, 2010, Environmental Impact Statement (EIS) on planting Monsanto's GE **Roundup Ready alfalfa**, the USDA acknowledged for the first time the problem of GE contamination of organic and conventionally grown crops. Despite that finding, USDA announced on Jan. 27, 2011, that it will fully deregulated GE alfalfa allowing its planting everywhere without restrictions.

Alfalfa, a perennial crop that is open-pollinated by bees and other insects, has a pollination radius as large as 5 miles. It is the fourth largest U.S. crop (in planted acres). A federal court in

California previously forced USDA to reverse deregulation decisions on GE alfalfa and sugar beets, because USDA did not consider problems the crops may create for organic growers. USDA standards allow organic crops to have trace amounts of GE materials, but such contamination limits export of those crops.

In response to the GE alfalfa deregulation, the New England Farmers Union (NEFU) said, “This decision threatens farmers' rights to grow the crops they choose and consumers' rights to choose the foods they eat, as there is no scientific evidence of any way to control the resultant contamination of non-genetically engineered crops.” GE alfalfa will affect not only alfalfa farmers but also livestock farmers who “use alfalfa for mulch or bedding, beekeepers who keep hives near fields planted with the new crop, and consumers who enjoy raw alfalfa sprouts in their salad greens,” added NEFU. “In addition, the emergence of glyphosate-tolerant crops has resulted in a dramatic rise in the use of toxic herbicides that contribute to air and water contamination, and the emergence of 'superweeds,’” said NEFU.

Andrew Kimball of the Center for Food Safety said, “We’re disappointed with USDA’s decision and we will be back in court representing the interest of farmers, preservation of the environment, and consumer choice. USDA has become a rogue agency in its regulation of biotech crops and its decision to appease the few companies who seek to benefit from this technology comes despite increasing evidence that GE alfalfa will threaten the rights of farmers and consumers, as well as damage the environment.” (Center for Food Safety Action Alert, Jan. 13, 2011, www.centerforfoodsafety.org; Cornucopia Institute action alert, Jan. 14, 2011; www.cornucopia.org; “USDA Reverses Course, Weighs Restrictions on Biotech Alfalfa,” by Paul Voosen, The New York Times, Dec. 16, 2010; www.nytimes.com/gwire/2010/12/16/16greenwire-usda-reverses-course-weighs-restrictions-on-bi-12637.html ; New England Farmers Union press release, Jan. 28, 2011; www.newenglandfarmersunion.org; Center for Food Safety press release, Jan. 28, 2011; www.foodsafetynews.com)

On Nov. 30, 2010, Federal District Judge Jeffrey S. White issued a preliminary injunction ordering the immediate **destruction of hundreds of acres of GE Roundup Ready (RR) sugar beet seedlings** planted in September after finding the seedlings had been planted in violation of federal law. The ruling comes in a lawsuit filed by Earthjustice and the Center for Food Safety on behalf of a coalition of farmers and conservation groups. The lawsuit was filed on September 9, shortly after USDA revealed it had allowed the seedlings to be planted. The court noted that containment efforts were insufficient and past contamination incidents were “too numerous” to allow the illegal crop to remain in the ground. In his court order, Judge White noted, “farmers and consumers would likely suffer harm from cross-contamination” between GE sugar beets and non-GE crops. He continued, “The legality of Defendants’ conduct does not even appear to be a close question,” noting that the government and Monsanto had tried to circumvent his prior ruling that made GE sugar beets illegal. In an earlier case the court ruled that USDA had violated the National Environmental Policy Act by allowing the crop to be commercialized without first preparing an Environmental Impact Statement (EIS). In August the court made any future planting and sale unlawful until USDA complies with federal law. (USDA has said it expects to complete an EIS in spring 2012.) But almost immediately after the ruling, USDA issued permits allowing companies to plant seedlings to produce seed for future RR sugar beet crops. The

USDA and corporations filed an emergency appeal, expected to be decided by March 2011; **and on February 4, 2011, the USDA said it would allow GE sugar beets to be planted before its court-ordered EIS was complete. In response, the Organic Seed Alliance and others, represented by the Center for Food Safety, is again challenging the USDA in court.** ([“Federal Court Orders First-Ever Destruction of a GMO Crop,” Earthjustice and Center for Food Safety press release, Nov. 30, 2010;](#) www.centerforfoodsafety.org/wp-content/uploads/2010/11/SBII-ORDER-granting-preliminary-inj.pdf; “With Modified Seeds, the USDA Breaks the Rules Yet Again,” by Barry Estabrook, The Atlantic, Jan. 11, 2011; www.theatlantic.com/food/archive/2011/01/with-modified-seeds-the-usda-breaks-the-rules-yet-again/69284/; **Organic Seed Alliance press release, Feb. 4, 2011; www.seedalliance.org**)

In March 2010, Judge Robert W. Sweet of the U.S. District Court in Manhattan ruled that **patents on genes isolated from the body are invalid.** Subsequently, despite a decades-long practice of awarding patents on thousands of genes, the U.S. government said that human and other genes that are simply isolated and are not altered are part of nature and should not be patentable. This position was taken in a Department of Justice friend-of-the-court brief regarding the human genes BRCA1 and BRCA2. The government’s change of sentiment came after the American Civil Liberties Union and the Public Patent Foundation organized interested parties to challenge patents held by Myriad Genetics, which charges more than \$3,000 to test for the genes that predispose women to breast and ovarian cancer, and the University of Utah Research Foundation. The patent holders have appealed. The manipulated DNA found in GE crops and gene therapies could still be patented. (“U.S. Says Genes Should Not Be Eligible for Patents,” by Andrew Pollack, The New York Times, Oct. 29, 2010; www.nytimes.com/2010/10/30/business/30drug.html?hp; “Death of Gene Patents?” by Dr. Mae-Wan Ho, ISIS Report, Nov. 11, 2010; www.i-sis.org.uk/deathOfGenePatents.php?printing=yes)

Genetically engineered canola has contaminated about 220 hectares (about 540 acres—almost two-thirds of the arable land) on an Australian organic farm. Australian organic standards have zero tolerance for GE contamination, so farmer Steve Marsh, who thinks the contamination may have come from a neighboring canola farm, says he may sue for financial loss—the first such suit in that country. (“GM canola contaminates organic farm, Dec. 8, 2010; www.geneethics.org/resource/display/162)

In October 2010, Oregon State University weed scientist Carol Mallory-Smith received **GE Roundup-resistant bentgrass**, being developed by The Scott’s Co. and tested in plots in Idaho, from Oregon residents who found it in their irrigation ditches. The GE grass is not approved for unrestricted commercial production. When Mallory-Smith asked the Oregon Department of Agriculture and the USDA to publicize the problem so that farmers could watch for it, they declined. Mallory-Smith then notified people involved in the GE sugar beet lawsuit (see above), and an Earthjustice attorney introduced the information during that case. Mallory-Smith surveyed the Oregon area near the Idaho border where the grass had been found and noted well-established plants throughout a 9-mile by 2- to 3-mile area. (“Agencies refused to publicize spread of biotech bentgrass,” by Mitch Lies, Capital Press, Nov. 12, 2010; www.capitalpress.com/idaho/ml-bentgrass-111910)

Summer 2011

The Good News

Under **The Law of Mother Earth**, heavily influenced by the indigenous Andean view of the world, Bolivia is expected to establish 11 new rights for nature, including the right to life and to exist; the right to continue vital cycles and processes free from human alteration; the right to pure water and clean air; the right not to be polluted; the right to not have cellular structure modified or genetically altered; and the right to not be affected by mega-infrastructure and development projects that affect the balance of ecosystems and the local inhabitant communities. A ministry of mother earth and an ombudsman are expected to oversee the rights. The proposed law will also give communities legal powers to monitor and control polluting industries, such as mining for metals. Ecuador has also given nature the constitutional “right to exist, persist, maintain and regenerate its vital cycles, structure, functions and its processes in evolution.” (“Bolivia enshrines natural world's rights with equal status for Mother Earth,” by John Vidal, The Guardian, April 10, 2011; www.guardian.co.uk/environment/2011/apr/10/bolivia-enshrines-natural-worlds-rights)

Small-scale farmers using ecological methods can double food production within 10 years in critical regions, says the UN report “Agroecology and the Right to Food.” Based on an extensive review of recent scientific literature, the study calls for a fundamental shift toward agroecology to boost food production and improve the situation of the poorest. Agroecology designs agricultural systems based on ecological science. It enhances soil productivity and protects crops against pests by relying on the natural environment, such as beneficial plants and animals.

“Today’s scientific evidence demonstrates that agroecological methods outperform the use of chemical fertilizers in boosting food production where the hungry live—especially in unfavorable environments,” says report author Olivier De Schutter, UN Special Rapporteur on the right to food.

“To date, agroecological projects have shown an average crop yield increase of 80 percent in 57 developing countries, with an average increase of 116 percent for all African projects,” De Schutter says. “Recent projects conducted in 20 African countries demonstrated a doubling of crop yields over a period of 3-10 years. Conventional farming relies on expensive inputs, fuels climate change and is not resilient to climatic shocks. It simply is not the best choice anymore today,” De Schutter stresses. “Malawi, a country that launched a massive chemical fertilizer subsidy program a few years ago, is now implementing agroecology, benefiting more than 1.3 million of the poorest people, with maize yields increasing from 1 ton/ha to 2-3 tons/ha.”

Likewise, projects in Indonesia, Vietnam and Bangladesh reduced insecticide use in rice by up to 92 percent, leading to important savings for poor farmers. “Knowledge came to replace pesticides and fertilizers,” says De Schutter.

The report says a lack of ambitious public policies promoting work in the knowledge-intensive field of agroecology stifles its adoption in developed countries. “States and donors have a key role to play here. Private companies will not invest time and money in practices that cannot be

rewarded by patents and which don't open markets for chemical products or improved seeds," says De Schutter. He urges states to support small-scale farmers' organizations, which demonstrated a great ability to disseminate the best agroecological practices among their members. "Strengthening social organization proves to be as impactful as distributing fertilizers. We won't solve hunger and stop climate change with industrial farming on large plantations. If key stakeholders support the measures identified in the report, we can see a doubling of food production within 5 to 10 years in some regions where the hungry live," De Schutter says. ("Eco-Farming Can Double Food Production in 10 Years, says new UN report," United Nations press release, March 8, 2011; full report at www.srfood.org/index.php/en/component/content/article/1-latest-news/1174-report-agroecology-and-the-right-to-food)

The **Rodale Institute's** 27-year-old Farming Systems Trial (FST) in Pennsylvania – the longest running side-by-side **comparison of conventional and organic** agriculture in the United States – compares two organic and one conventional system for growing corn and soy. One organic system rotates feed crops with perennial forage crops for cows and is fertilized with manure; another rotates grains with cover crops, and nitrogen-fixing legumes supply fertility. The conventional system relies on synthetic fertilizers and pesticides. The three systems have produced equivalent corn yields over the years, while manure and conventional systems produced equivalent soybean yields, and the legume system yielded slightly less soy. In four out of five years of moderate drought, the organic systems yielded significantly (31 percent) more corn than conventional—an important difference, as climate change may increase drought. Corn and soybean crops in the organic systems also tolerated more weed competition than in the conventional system, while producing equivalent yields – and while not contaminating water with herbicides, as conventional plots did. And organic systems built more organic matter and retained more soil nitrogen. ("Organic farming just as productive as conventional, and better at building soil, Rodale finds," by Tom Philpott, Grist, March 25, 2011; www.grist.org/article/2011-03-25-rodale-data-show-organic-just-as-productive-better-at-building)

A 12-year study has shown that **organic farming** systems in the Canadian Prairies are **energy** winners in two out of three farming goals. If the main focus of producers is to reduce non-renewable energy inputs, organic systems are far ahead. By not using synthetic fertilizers or pesticides, energy savings of about 50 percent were reported. If the primary goal of producers is to increase energy use efficiency (energy produced per unit of energy consumed), organic systems with a mix of annual grains and perennial forages would be favored. Only when the primary focus is to increase net food production per unit of land did conventional systems beat organic. Research in the United States has shown that under certain conditions and in some farming areas, organic yields can approach conventional. More research into organic systems may lead to increased yields. ("Organic systems energy winners in 2 out of 3 farming goals," by Steve Harder, Organic Agriculture Centre of Canada, April 2011; www.organicagcentre.ca/NewspaperArticles/na_energy_use_efficiency_sh.asp)

The Union of Concerned Scientists (UCC) says that although U.S. beef cattle are responsible for 160 million metric tons of global warming emissions every year – equivalent to the annual emissions from 24 million cars and light trucks – farmers who raise **beef on pasture can reduce global warming** emissions by storing, or sequestering, carbon in pasture soils. A new UCC

report discusses pasture plants and grazing systems that reduce the climate change impact of pasture-raised beef. (Union of Concerned Scientists, “Raising the Steaks: Global Warming and Pasture-Raised Beef Production in the United States,” Feb. 2, 2011; www.ucsusa.org/news/press_release/new-beef-and-climate-report.html)

Researchers at the Rodale Institute Experimental Farm in Kutztown, Penn., have been studying the efficacy of National Organic Program (NOP)-approved cutworm controls in an organic no-till corn system, using a grant from the Organic Farming Research Foundation. The system relies on leguminous cover crops rolled at corn planting to form a nitrogen-rich, weed-suppressive mat that also prevents erosion and saves time and energy – but supports large cutworm populations and subsequent corn population losses. Treatments included Dipel-DF, diatomaceous earth, Entrust, Ecomask, Steinernema riobrave, Scanmask, Mycotrol, and none (water only). The applied treatments appeared to be less effective than a native soil fungus, *Metarhizium anisopliae*, in overcoming cutworm larva. The researchers say the most interesting observation was the greater proportion of cutworm moths caught in traps on unprotected hilltop sites compared to lower elevation sites bordered by buffer habitat. Since this pest moves in on storm fronts, **land managed to physically protect production fields**, as with tree lines, **may provide cutworm management** by blocking pest influxes and providing important habitat for birds that were frequently seen catching insects or eating insect larvae from the ground. “These large communities of natural pest managers, while frustrating to the objectives of this project, may provide greater promise to organic producers considering this production system rather than the economically prohibitive biocontrol treatments tested,” say the researchers. (“Managing Farm Habitat Shows Promise in Cutworm Control,” http://ofrf.org/funded/highlights/moyer_08f19.html)

Want to **promote local food production and consumption in your town**? Consider holding a “Food Fair,” as Lincolnville, Maine, did in March 2011. The Lincolnville Food Fair, “A Celebration of What’s Live and Local!” was co-sponsored by the Lincolnville Conservation Commission (LCC), the Lincolnville Transition Initiative (LTI) and Maine Farmland Trust (MFT). Growers and food producers from the town set up in the local school cafeteria and showed (and sold) their goods to visitors from 1 to 2:30 on a Saturday. A touch tank with local sea creatures and a small outdoor petting zoo with farm animals entertained children. Then the “Meet Your Farmer” video was shown and discussed. Jim Dunham, a member of the LCC and the LTI, said, “We are trying to promote agricultural endeavors in our town. With this fair, we’re striving to support the efforts of local food producers and educate the public about all that is grown and produced here locally.” The LCC wants to identify and help MFT preserve existing farmland in the community. The LTI is also developing a community garden, a tool exchange program, and a green and community-focused proposal for two vacant buildings in the town center. Paul Russo, principal of Lincolnville Central School, noted the interest in the local school garden and the increase in local food served in the school. “We’ve brought in whole grains instead of white flour, and we’ve gone to locally raised beef for our hamburgers,” said Russo. For more information, contact Jim Dunham, jdunham@tidewater.net, or Anna Abaldo, anna@mainefarmlandtrust.org.

Portland, Maine, ranked No. 4 on Sperlings Best Places list of **Top 10 Foodie Cities**. Ranking factors included the ratio of locally owned restaurants to chains, the number of wineries and

breweries and the number of nearby CSA farms and farmers' markets. The top three cities were Santa Rosa, Calif., Portland, Ore., and Burlington, Vermont. ("America's Top Foodie Cities," CNBC.com, Jan. 28, 2011; www.cnbc.com/id/41315888?slide=1)

The **University of New Hampshire** has a new **Sustainable Agriculture and Food Systems major** (<http://sustainableag.unh.edu/>) that combines plant, animal and environmental sciences with related topics such as nutrition, forestry, aquaculture, entrepreneurship and marketing. With flexibility to address students' unique goals and needs, the major offers both BA and BS degrees. It aims to prepare students for employment related to New England's diversified and relatively small agricultural operations, and to provide them with the knowledge and experiences to pursue other careers or advanced education.

Green Mountain College in Poultney, Vt., now offers a distance-learning **masters degree in Sustainable Food Systems** (<http://msfs.greenmtn.edu/>). The program, accredited by the New England Association of Schools and Colleges, is expected to launch its first cohort in January 2012.

Three sixth graders – Liv Berez, Jade Hazzard and Molly Mann – started "**Kids for a Greener Camden**" to help keep dangerous chemicals from Camden lawns. Citizens for a Green Camden began this effort, including posting the Camden property map in the town office window to show in green which yards receive only safe lawn products, as pledged by landowners. The three students, with help from middle school classmates, hope to green the entire map. Each student will try to get all homeowners on a particular street to pledge to use only safe lawn products – e.g., no weed and feed products, which contain herbicides; no Roundup herbicide. A Camden ordinance already prohibits using lawn chemicals for cosmetic purposes on town-owned land. For more information, visit www.citizensforagreencamden.org. ("Kids for Greener Camden' campaign for toxin-free lawns," Village Soup, Feb. 18, 2011; <http://knox.villagesoup.com/place/story/kids-for-greener-camden-campaign-for-toxin-free-lawns/381272>)

A Gulf of Maine Research Institute (GMRI) program enables shoppers to easily identify **responsibly harvested seafood from the Gulf of Maine** region. Scientists, environmental organizations, fishermen, processors, retailers and restaurants helped develop requirements for using the seal. The seal signifies that the product came from the clean, productive waters of the Gulf of Maine; that the fishery is managed in a way that contributes to the long-term health of the resource; and that some proceeds help GMRI's efforts to motivate and reward progress throughout the supply chain toward increased sustainability of Gulf of Maine fisheries. The seal will initially appear on cod, haddock, lobster and northern shrimp products from the Gulf of Maine region at Hannaford and other retail stores. GMRI is assessing additional fisheries, with the goal of adding more products to the program later this year. North Atlantic, Inc., Bristol Seafood, Slade Gorton, Cozy Harbor Seafood and New Meadows Lobster will be among the first companies to use the seal, as will local restaurants and fish markets throughout New England. ("Seafood You Can Feel Good About," press release, Gulf of Maine Research Institute, Feb. 24, 2011; www.gmri.org/seafood)

Diane McKay and Jeffrey Blumberg of the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University in Boston have reviewed science-based evidence of **health benefits of drinking three popular herbal teas**. Regarding chamomile tea, they found no human clinical trials that examined its reputed calming effect, but test-tube evidence showed moderate antioxidant and antimicrobial activities and significant antiplatelet-clumping activity from the tea. Also, animal feeding studies have shown its potent anti-inflammatory action and some cholesterol-lowering activity. Peppermint tea, in test tube studies, had significant antimicrobial and antiviral activities, strong antioxidant and anti-tumor actions, and some anti-allergenic potential. When animals were fed either moderate amounts of ground peppermint leaves or leaf extracts, researchers also noted a relaxation effect on gastrointestinal tissue and an analgesic and anesthetic effect in the nervous system. In her work with human volunteers who drank 3 cups of hibiscus tea daily for six weeks, McKay found that those drinking the tea had a 7.2-point drop in their systolic blood pressure, while those who drank a placebo beverage had a 1.3-point drop. Among those with the highest systolic blood pressure, those who drank hibiscus tea showed a decrease in systolic blood pressure of 13.2 points, in diastolic blood pressure of 6.4 points, and in mean arterial pressure of 8.7 points. ("Reading Herbal Tea Leaves: Benefits and Lore," Agricultural Research, March 2011; www.ars.usda.gov/is/AR/2011/mar11/tea0311.htm)

Better Homes and Gardens' 2010 Food Factor Survey, conducted among more than 3,600 U.S. women, showed the **primary reasons why they buy organic food are health (73 percent) and safety (66 percent)**. Women in the survey also were willing to pay 27 percent more for an organic product; and women age 50 and over were especially driven by socio-political benefits of eating organic products: 74 percent buy organic products to support animal rights, and 63 percent for the environmental benefits of organic agriculture. (What's New in Organic, The Organic Trade Assoc., March 2011; www.ota.com)

The organic industry grew at a rate of nearly 8 percent in 2010, to more than \$28.6 billion, and some sectors grew more than 30 percent, says the Organic Trade Association in its 2011 Organic Industry Survey. Total U.S. food sales grew by less than 1 percent in 2010, and the organic food industry grew by 7.7 percent. Experiencing the most growth, organic fruits and vegetables, which represent 39.7 percent of total organic food value and nearly 12 percent of all U.S. fruit and vegetable sales, reached nearly \$10.6 billion in 2010, up 11.8 percent from 2009. Organic dairy grew 9 percent, to a \$3.9 billion value, and captured nearly 6 percent of the total U.S. market for dairy products. Organic supplement sales grew by 7.4 percent; organic fiber (linen and clothing) by 16 percent; and personal care products by 6.6 percent. (Press release, Organic Trade Assoc., April 21, 2011; www.ota.com)

Climate

A **Maine Phenology Project** invites the public to help scientists document local effects of climate change by observing and recording the phenology (seasonal changes) of common plants and animals in their backyards and communities. The University of Maine Cooperative Extension and Maine Sea Grant coordinate the program with the USA National Phenology Network, Acadia National Park, U.S. Fish and Wildlife Service, Maine Audubon and climate

scientists and educators at the University of Maine. To participate, contact Pamela R. Doherty, administrative assistant, University of Maine Cooperative Extension, Knox-Lincoln Counties Office, 377 Manktown Road, Waldoboro, ME 04572; pamela.doherty@maine.edu; (207) 832-0343 or 1-800-244-2104 (in Maine); <http://umaine.edu/signs-of-the-seasons/>.

Soil Erosion

Iowa farms are losing topsoil up to 12 times faster than government estimates, says the Environmental Working Group's new report "Losing Ground," based on research by scientists at Iowa State University. Moreover, aerial surveys by EWG and interviews with experts across the Corn Belt indicate that soil erosion and polluted runoff are likely far worse than even the disturbing ISU numbers suggest. The aerial photography showed that many Corn Belt fields are scarred by gullies that funnel soil and toxic farm chemicals into streams – damage that is not accounted for in official or even ISU estimates of soil erosion and runoff. Farmers are planting fencerow-to-fencerow in response to high crop prices and misguided mandates for corn ethanol production, says the EWG, noting that between 1997 and 2009, the government paid Corn Belt farmers \$51.2 billion in subsidies to spur production, but just \$7 billion to implement conservation practices. "USDA should resume full and aggressive enforcement of provisions in the 1985 farm bill that require farmers who accept subsidies to apply soil conservation measures on the most vulnerable cropland," says the EWG, adding that Congress must strengthen the conservation compliance provisions when it reauthorizes the farm bill in 2012. ("Soil Erosion In Corn Belt Is Much Worse Than Official Estimates," Environmental Working Group press release, April 13, 2011; www.ewg.org)

Factory Farms

Air at some U.S. factory farm test sites is dirtier than in America's most polluted cities and exposes workers to concentrations of **pollutants far above occupational safety guidelines**, according to the Environmental Integrity Project (EIP). The pollutants include fine particles, ammonia and hydrogen sulfide. Pollution levels onsite at factory farms studied were high enough to suggest that those living near these livestock operations also may be at risk. The EIP says a 2008 Bush administration "backroom deal" that gave concentrated animal feeding operations (CAFOs) amnesty from federal pollution reporting rules should be overturned. (Press release, March 9, 2011, The Environmental Integrity Project, www.environmentalintegrity.org)

Organic

On Feb. 11, 2011, the USDA National Organic Program (NOP) made public a **fraudulent organic certificate** produced by an uncertified supplier **in China**. The Chinese firm used the counterfeit certificate to represent non-organic crops, including soybeans, millet and buckwheat, as certified organic. The Cornucopia Institute, at www.cornucopia.org, rates organic soy foods, giving higher ratings to companies that exclusively source organic soybeans from North American family-scale farms. (Cornucopia Institute press release, Feb. 11, 2011; www.cornucopia.org/2011/02/usda-uncovers-plot-to-import-fake-chinese-organic-food/)

The Cornucopia Institute filed a formal legal complaint on Feb. 23, 2011, alleging that Dean

Foods' newly introduced **Horizon Fat-Free Milk Plus DHA Omega-3** includes a **synthetic nutritional oil that is prohibited in organics** – even though the milk bears the USDA organic seal. In 2010, the USDA ruled that the proprietary DHA oil, derived from algae and manufactured by Martek Biosciences Corporation, is not legal in organic production. Martek has petitioned for approval of the oil in organic foods, but the USDA National Organic Program has not yet ruled on the petition. Cornucopia says that Martek produces its patented DHA additives from microalgae species that have never been part of the human diet and that are fermented in a medium including corn syrup.

According to Martek's petition, adds Cornucopia, its algal DHA processing includes hydrolysis with enzymes, extraction with petrochemical solvents, and other "non-organic processing aids" such as "food acids." (Cornucopia Institute press release, Feb. 23, 2011;

www.cornucopia.org/2011/02/3655/#more-3655)

Farm Safety

According to the U.S. Bureau of Labor Statistics, the agricultural industry has the highest rate of occupational fatalities, about 32 per 100,000 employed people or eight times the national average. And **tractor rollovers are the deadliest** type of injury incident on farms. In the Northeast, tractor incidents account for 55 to 60 percent of farm fatalities, and up to two-thirds of those are due to overturns. Half of the 4.7 million U.S. tractors lack rollover protection for the operator. A tractor can turn over suddenly, and if it is not equipped with a Rollover Protection Structure (ROPS – usually cabs or frames) and a seatbelt, there is a good chance the tractor could crush the driver. Older tractors without ROPS can be retrofitted, at a cost of about \$800. National Ag Safety Database figures show that using ROPS and a seat belt is estimated to be 99 percent effective in preventing death or serious injury in the event of a tractor rollover. For more information, see www.asse.org/newsroom/safetytips/farmsafetytips.php and www.asse.org/practicespecialties/ag-safety. ("Tractor Safety," press release, American Society of Safety Engineers' Agricultural Branch administrator Michael Wolf, Jan. 31, 2011; www.asse.org)

Seeking Control of Local Food

As of April 2011, **Blue Hill, Penobscot and Sedgwick, Maine, had adopted "The Ordinance to Protect the Health and Integrity of the Local Food System,"** asserting that towns can determine their own food and farming policies and exempting direct food^[SEP] sales from state and federal license and inspection requirements when the food is sold directly to consumers for consumption in the home. The ordinance, posted at www.localfoodlocalrules.wordpress.com, failed in Brooksville by 161 to 152, but supporters question the validity of that vote because an ordinance review committee's opposition to it preceded the proposed ordinance. In Mount Vernon, selectmen referred the proposal to an ordinance review committee, while Monmouth selectmen defeated it by 4 to 1, saying it was too broad, unnecessary and unenforceable.

Some farmers have complained of rule changes and inconsistencies in Maine's inspection program leading to uncertainty regarding whether they could continue to operate, and of expensive, stringent regulations—especially denial of a request from farms slaughtering fewer

than 1,000 poultry to do so without an indoor processing facility that is more appropriate for industrial-scale farms.

"The certifications of home kitchens, the trend toward licensing and bureaucracy has really put a damper on small cottage industries and small farm businesses, and I think this [ordinance] is going to have the opposite effect," said Bob St. Peter of Food for Maine's Future.

Two state bills also addressed this topic. LD 366, to exempt producers of raw milk from licensing requirements if sales are made on the premises by the producer, died in committee. LD 330, to exempt farm food produce and homemade food from state licensing requirements, would allow those preparing food in their own homes to sell directly to consumers or to offer homemade food at certain traditional community events. It was reported out of the Agriculture, Conservation and Forestry Committee as "ought not to pass."

Maine Agriculture Commissioner Walt Whitcomb told MPBN that the state could lose federal funds and the ability to inspect meat if Maine does not meet certain food safety standards. That would put the federal government in charge of meat inspection. He also questioned local communities' definition of small producers and the ability of producers to sell across town lines and to notify consumers of food safety issues. Assistant Attorney General Mark Randlett told the Bangor Daily News, "To the extent that the ordinance attempts to exempt any of the town residents from the food establishment and licensing laws, it would not be effective. They do not have the ability to conflict with state law." ("Mount Vernon considers law to help food producers," by Liz Seals, Kennebec Journal, April 14, 2011; www.kjonline.com/news/selectmen-consider-law-to-help-local-food-producers_2011-04-13.html); "Third Maine Town Passes Landmark Local Food Ordinance," press release, Food for Maine's Future, April 4, 2011; "Sedgwick's Effort to Boost Local Farm Sales Raises Safety Concerns," by Susan Sharon, MPBN, March 8, 2011; www.mpbn.net/News/MaineNewsArchive/tabid/181/ctl/ViewItem/mid/3475/ItemId/15530/Default.aspx; "Maine Town Declares Food 'Sovereignty,'" by Amy Halloran, Food Safety News, March 10, 2011; www.foodsafetynews.com/2011/03/maine-town-declares-food-sovereignty; "Farmers seek to protect locally grown foods," by Rich Hewitt, Bangor Daily News, March 12, 2011; <http://new.bangordailynews.com/2011/02/24/news/hancock/farmers-seek-to-protect-locally-grown-foods>; "Monmouth selectmen decline food ordinance," by Craig Crosby, Kennebec Journal, April 1, 2011; www.kjonline.com/news/monmouthselectmen-decline-food-ordinance_2011-03-31.html)

Food Safety

In March 2011, the U.S. Food and Drug Administration (FDA) Food Advisory Committee met to review a 2007 study from the University of Southampton, U.K., suggesting that the behavior of children with **ADHD** is worse when they consume **artificial food dyes**. A subsequent 2008 petition from the Center for Science in the Public Interest (CSPI) asked the FDA to ban the nine color additives cited by the researchers. In 2010, the European Union decided to require warning labels on foods with those dyes. The FDA committee voted 8-6 not to require warning labels:

“Based on our review of the data from published literature, FDA concludes that a causal relationship between exposure to color additives and hyperactivity in children in the general population has not been established.” The committee added, “For certain susceptible children with Attention Deficit/Hyperactivity Disorder and other problem behaviors, however, the data suggest that their condition may be exacerbated by exposure to a number of substances in food, including, but not limited to, synthetic color additives.” Other studies have linked organophosphate pesticides with ADHD. The CSPI’s 2010 report "Food Dyes: A Rainbow of Risks" listed allergic reactions, hyperactivity and cancer as possibly being related to artificial dyes. The CSPI has a “Chemical Cuisine” application of food additive safety ratings downloadable at www.cspinet.org/itunes and www.cspinet.org/android. (Organic Trade Association press release, March 29, 2011; www.ota.com; “FDA Food Dyes Report and Recommendations,” by Vincent Iannelli, M.D; <http://pediatrics.about.com/b/2011/04/03/fda-food-dyes-report-and-recommendations.htm>; “FDA Panel Delays Action on Dyes Used in Foods,” by Steven Reinberg, HealthDay News, March 31, 2011; <http://www.healthfinder.gov/News/newsstory.aspx?docid=651471>; “’Chemical Cuisine’ Database Now on Sale in iTunes App Store, Android Market,” Center for Science in the Public Interest press release, April 11, 2011; <http://cspinet.org/new/201104111.html>)

Salmonella was **less prevalent on organic** than on conventional poultry farms in one study. Researchers sampled fecal matter, feed and drinking water for Salmonella at three certified organic and four conventional broiler farms from the same company in North Carolina. Salmonella occurred in 5.6 percent of fecal samples from organic farms and 38.8 percent from conventional farms; and in 5.0 percent of feed samples from organic farms and 27.5 percent of feed samples from conventional farms. No water samples were positive for Salmonella. In this study, more antimicrobial-resistant Salmonella (individual and multi-drug) occurred on conventional than on organic farms. (Walid Q. Alali, Siddhartha Thakur, Roy D. Berghaus, Michael P. Martin, Wondwossen A. Gebreyes. Foodborne Pathogens and Disease. Nov. 2010, 7(11): 1363-1371. <http://www.liebertonline.com/doi/abs/10.1089/fpd.2010.0566>)

Initial studies by microbiologist Gerry Huff with USDA's Agricultural Research Service (ARS) in Fayetteville, Ark., and her colleagues suggest that **dietary yeast extract** has potential as a non-antibiotic alternative for **decreasing pathogens in organic turkey** production. Because turkeys are expensive to work with, the researchers are now testing the efficacy of the yeast extract against Salmonella and Campylobacter in Japanese quail, which eat less than turkeys. Yeast extracts help boost the ability of the immune system to kill bacteria, but the treatment may limit body weight in some birds, because the energy normally used for growth is redirected toward the immune system. The researchers are looking for a balance between enhancing immune response and maintaining growth.

Yeast extract is on the National List of allowed substances for organic poultry production. Alternatives to antibiotics are also needed for conventional poultry production, since regulations for the use of antibiotics are being tightened in response to the prevalence of antibiotic resistance in pathogens. (“Preharvest Food Safety Keeping Pathogens and Chemical Residues Out of Beef and Poultry,” Agricultural Research, April 14, 2011; <http://www.ars.usda.gov/is/AR/archive/apr11/pathogens0411.htm>)

Genetic Engineering

In a March 2011 **poll** by MSNBC asking if **genetically modified foods should be labeled**, 96.1 percent of 44,857 respondents checked “Yes. It's an ethical issue – consumers should be informed so they can make a choice,” while 3.1 percent said, “No. The U.S. government says they are safe and that's good enough for me.” And 0.8% checked “Not sure. It all tastes the same to me.” (http://health.newsvine.com/_question/2011/02/25/6131050-do-you-believe-genetically-modified-foods-should-be-labeled)

The Organic Consumers Association (OCA, www.organicconsumers.org) has developed "**Oh No! Is It GMO?**" labels to put on non-organic foods likely to contain GMOs (genetically modified organisms) and on non-organic products from animals raised in Confined Animal Feeding Operations and fed GE (genetically engineered) grains. Consumers can download and print the stickers, put them on likely products, and send photos of the labeled products to local grocers and to OCA. Consumers can also sign OCA's Millions Against Monsanto petitions to food retailers.

On behalf of 60 family farmers, seed businesses (including Fedco) and organic agricultural organizations (including MOFGA), the Public Patent Foundation (PUBPAT) has **filed suit** in federal district court in Manhattan **against Monsanto Company, challenging its patents on genetically modified seed**. The plaintiffs sued preemptively to protect themselves from being accused of patent infringement. The plaintiff organizations have more than 270,000 members, including thousands of certified organic family farmers. “This case asks whether Monsanto has the right to sue organic farmers for patent infringement if Monsanto's transgenic seed should land on their property,” said Dan Ravicher, PUBPAT's executive director and lecturer of law at Benjamin N. Cardozo School of Law in New York.

PUBPAT is asking Judge Buchwald to declare that if organic farms are contaminated by Monsanto's GE seed, the farmers need not fear also being accused of patent infringement—because, says PUBPAT, Monsanto's patents on GE seed are invalid, as they don't meet the “usefulness” requirement of patent law. PUBPAT cites negative economic and health effects of GE crops and says that the promised benefits of GE seed—increased production and decreased herbicide use—are false.

Jim Gerritsen, a family farmer in Maine who raises organic seed and is president of lead plaintiff Organic Seed Growers and Trade Association, said, “Today we are seeking protection from the Court and putting Monsanto on notice... Americans have the right to choice in the marketplace – to decide what kind of food they will feed their families—and we are taking this action on their behalf to protect that right to choose. Organic farmers have the right to raise our organic crops for our families and our customers on our farms without the threat of invasion by Monsanto's genetic contamination and without harassment by a reckless polluter.” (Press release, Public Patent Foundation, March 29, 2011; Organic Seed Growers & Trade Association, et al. v. Monsanto, www.pubpat.org/assets/files/seed/OSGATA-v-Monsanto-Complaint.pdf; FMI: <http://saveourseeds.com/>)

On March 18, 2011, attorneys for the Center for Food Safety (CFS) and Earthjustice filed a

lawsuit against the USDA, arguing that its **unrestricted approval of GE Roundup Ready alfalfa was unlawful**. The crop is engineered to resist the herbicide glyphosate, which Monsanto markets as Roundup. USDA data show that 93 percent of the U.S. alfalfa crop is grown without herbicide use. With full deregulation of GE alfalfa, USDA estimates that up to 23 million more pounds of toxic herbicides will be released into the environment annually. Because alfalfa is a perennial crop and is pollinated by bees that can fly and cross-pollinate between fields and feral sources many miles apart, the engineered crop will contaminate natural alfalfa varieties. Alfalfa is the key feedstock for the dairy industry, so organic dairies stand to lose their source of organic feed. “GE alfalfa means contamination of all alfalfa seeds within a few years. Our options include giving up organic production at great revenue loss or finding another forage at great cost increase,” says Wisconsin organic beef producer Jim Munsch. Agriculture secretary Tom Vilsack has ordered that the USDA Agricultural Research Service (ARS) maintain pure, non-GE alfalfa seed at a remote site in Washington state; he appointed a committee to determine how to ensure that a choice exists “in a variety of products, GE, non-GE, and the like”; he directed the ARS to determine whether genes can be incorporated into non-GE alfalfa to prevent pollination by GE alfalfa; and he called for proposals for methods to detect GE contamination of non-GE alfalfa seed and hay. (Center for Food Safety press release, March 18, 2011; www.centerforfoodsafety.org; “USDA Announces Decision to Fully Deregulate Roundup Ready Alfalfa,” USDA transcript, Jan. 27, 2011; www.usda.gov/wps/portal/usda/usdahome?contentidonly=true&contentid=2011%2F01%2F0039.xml)

On Feb. 4, 2011, the USDA’s Animal and Plant Health Inspection Service (APHIS) partially **deregulated the Roundup Ready sugar beet** root crop while APHIS continued to draft a full environmental impact statement (EIS). Under this partial deregulation, growers of a RR sugar beet root crop must enter into an agreement outlining mandatory requirements for how the crop can be grown. In 2005, APHIS granted nonregulated status to RR sugar beets. A 2008 lawsuit challenged that decision, and on Sept. 21, 2009, a U.S. District Court found that APHIS should have prepared an EIS before fully deregulating RR sugar beets. On Aug. 13, 2010, a U.S. District Court issued a ruling vacating APHIS’ decision to fully deregulate RR sugar beets and remanded the matter to APHIS. APHIS expects to complete its full EIS by the end of May 2012, before making any further decision on the petition to fully deregulate RR sugar beet. Meanwhile, on February 25, 2011, the 9th U.S. Circuit Court of Appeals **reversed a lower court’s order to destroy young GE Roundup Ready sugar beet plants, or “stecklings,”** ultimately intended to produce GE seed. The Center for Food Safety, representing several coalition members, is challenging USDA’s partial deregulation. (“USDA Announces Partial Deregulation for Roundup Ready Sugar Beets, Feb. 4, 2011; www.aphis.usda.gov/newsroom; press release, Organic Seed Alliance, Feb. 4, 2011; www.seedalliance.org; “Monsanto wins in latest US sugar beet ruling,” Feb. 25, 2011; www.reuters.com/article/2011/02/25/monsanto-ruling-idUSN2514326820110225)

The Organic Seed Alliance has three **fact sheets about GE alfalfa and sugar beets**: Ten Ways to Respond to USDA’s GE Alfalfa and Sugar Beet Decisions; Five Reasons Why GE Sugar Beets Threaten Organic; Twelve Reasons Why GE Alfalfa Threatens Organic. (www.seedalliance.org/)

On Feb. 11, 2011, the USDA said it would deregulate the **first GE industrial corn crop**, commonly called **ethanol corn**: Syngenta’s Variety 3272, engineered to produce the alpha-

amylase enzyme to break down starch into sugar. The breakdown is necessary for ethanol production, so the GE corn is meant to cut the cost of that production. The Union of Concerned Scientists (UCS) says allowing farmers to plant GE ethanol corn will contaminate corn intended for food. About one-third of the U.S. corn crop is used for ethanol production, says the UCS, adding that large-scale planting of GE ethanol corn would make contamination of non-GE corn a certainty. If the engineered enzyme contaminated corn that is grown for human consumption, it could decrease the shelf life and quality of corn-containing foods. Testing for the trait will be an added expense for millers, who also expressed disappointment with the move. (“Deregulating Genetically Engineered Industrial Corn Will Contaminate Food Supply Corn and Harm U.S. Food Industry, Science Group Says,” press release, The Union of Concerned Scientists, Feb. 11, 2011; www.ucsusa.org. “NAMA Disappointed with USDA Decision to Deregulate 3272 Amylase Corn,” press release, Feb. 11, 2011, North American Millers’ Assoc., www.namamillers.org)

Dow AgroSciences LLC hopes to introduce its Enlist Weed Control System in 2013, using corn, soybeans and cotton **engineered to resist the common herbicide 2,4-D** – because an increasing number of weeds engineered to resist Roundup herbicide are developing resistance to that product. Dow’s approach will be for farmers to apply a mix of generic Roundup and 2,4-D in one pass. The engineered seeds will likely also contain SmartStax traits to control insects. (“Dow Agro thinks it has a winner,” by J.K. Wall, Indianapolis Business Journal, March 16, 2011; www.ibj.com/dow-agro-thinks-it-has-a-winner/PARAMS/article/25939)

Researchers at the China Agricultural University, funded by the Beijing GenProtein Biotechnology Company, say they have **engineered human genes into cows** so that the cows produce a breast-milk-like substance. (Organic Bytes, Organic Consumers Assoc., April 7, 2011; www.organicconsumers.org)

Researchers reviewed 19 studies of mammals fed commercialized GE soy and corn, and reviewed raw data of 90-day-long or longer feeding tests on rats. Data “appear to indicate **liver and kidney problems as end points of GMO diet effects**,” wrote the authors – although the 90-day-long tests are insufficient to evaluate chronic toxicity. The lack of obligatory testing of GE crops cultivated on a large scale “is socially unacceptable in terms of consumer health protection. We are suggesting that the studies should be improved and prolonged, as well as being made compulsory, and that the sexual hormones should be assessed too, and moreover, reproductive and multigenerational studies ought to be conducted too... [W]e think that in order to protect large populations from unintended effects of novel food or feed, imported or cultivated crops on a large scale, chronic 2-year and reproductive and developmental tests are crucial... all commercialized GMOs have indeed been released without such tests being carried out.” (Genetically modified crops safety assessments: present limits and possible improvements, by Gilles-Eric Seralini et al., Environmental Sciences Europe, March 1, 2011; www.enveurope.com/content/23/1/10)

Purdue University emeritus professor and soil scientist Don Huber has written a letter to U.S. Agriculture Secretary Tom Vilsack saying that **GE soy and corn crops** have suffered devastating diseases and **may cause high rates of abortions and infertility in livestock**. Huber points to an unidentified new microorganism as being associated with GE RR crops. He says he has

collaborated with other researchers on the issue, but they wish to remain anonymous. (“Scientist Defends Claim of New Pathogen Linked to GM Crops,” Institute of Science in Society, April 21, 2011;

www.i-sis.org.uk/ScientistDefendsHisClaimofNewPathogenLinkedtoGMCrops.php)

Canadian scientists studying 30 pregnant and 39 nonpregnant women in the Eastern Townships of Quebec Province found the **herbicides** glyphosate and gluphosinate (used with herbicide resistant GE crops) **in the blood** of nonpregnant women but not in that of pregnant women; and found a gluphosinate metabolite and the CryAb1 toxin (engineered into crops that resist insects) in nonpregnant women, pregnant women and their fetuses. This is the first study showing **pesticides associated with GE foods in women and fetuses**. (Maternal and fetal exposure to pesticides associated to genetically modified foods in Eastern Townships of Quebec, Canada, Aris, A., Leblanc, S., *Reprod. Toxicol.*, Feb 18, 2011; PubMed, Feb. 18, 2011; www.ncbi.nlm.nih.gov/pubmed/21338670)

The National Organic Coalition (www.NationalOrganicCoalition.org) has identified **seven steps needed for fair farming in relation to GE crops**. The Coalition says that before deregulating new GE crops or discussing “coexistence” of GE and non-GE crops, seven points must be addressed transparently and fairly for all stakeholders involved.

1. Establish a USDA Public Breeds Institute to ensure that the public has access to high quality non-GMO breeds and germplasm.
2. Create a Contamination Compensation Fund, funded by GMO patent holders, to provide immediate assistance to persons contaminated by GMOs, from seed to table.
3. Complete elimination of deregulated GM crop status, including prior deregulations, with ongoing oversight and public evaluation of compliance and enforcement.
4. Conduct comprehensive, independent, longitudinal studies on the health, environmental, and socio-economic impacts of GMOs, prior to GM crop approvals.
5. Prohibit the growing of promiscuous GM crops that are likely to cause GMO contamination.
6. Prevent food security risks associated with the concentration of our food system in the hands of a few companies.
7. Institute an immediate labeling protocol for all GM crops, products, and ingredients.

Pesticides

BPC Releases 2010 Complaints and Inquiries List

By Katy Green

The Maine Board of Pesticides Control (BPC) annually releases its list of complaints and inquiries for the year to the public. At its February meeting the BPC reviewed and released the 2010 report (posted at http://www.maine.gov/agriculture/pesticides/about/agenda_archive.htm#feb11 under the Feb. 2011 agenda). Agricultural and turf/lawn pesticide applications garnered most (33 and 31, respectively) of the 116 complaints and inquiries in 2010.

Product Registrations

The BPC recently approved the use of Avipel Dry Powder Corn Seed Treatment to deter blackbirds and crows on field and sweet corn crops in Maine. The active ingredient in Avipel is 9, 10-Anthraquinone, which deters birds due to the unpleasant reaction it causes in their guts. Avipel will be used as a seed treatment to avoid large crop losses. It is not approved for organic use.

Pesticide Application Rule Violations

At its February meeting, the BPC unanimously approved a consent agreement with C&D Corporation of Deblois, Maine; the fine levied was \$1,500. In this case an employee of C&D Corporation applied a mixture of Velpar L Herbicide (EPA # 352-392) and Sinbar Agricultural Herbicide (EPA # 61842-13) to a field it had been contracted to spray. The company employee failed to stop spraying at the property line and crossed over to the adjacent property, which had already been sprayed by that property owner with a mixture of Velpar L Herbicide (EPA Reg. # 352-392) and Callisto Herbicide (EPA Reg. # 100-1131), so that field received more Velpar L than the maximum labeled rate.

In another case, customer of PuroClean (RMH Cleaning and Restoration, Inc.) of Livermore, Maine, contacted the BPC in July 2010 regarding work the company did at her property in December 2009. The caller had contacted PuroClean for mold remediation work, became sick shortly afterward and was concerned that her illness was related to the mold remediation. The BPC investigation found no violation by PuroClean, which did not use pesticides in this case, but did discover that in other situations, Quest QD-64 (EPA reg.#47371-37-44446), Sporicidin (EPA reg.#8383-3) and EnviroCon HVAC (EPA reg.#9804-3) had been applied, even though nobody at the company was a licensed commercial pesticide applicator. A \$350 fine was issued.

Lucas Tree Experts Company of Portland was fined for failing to provide enough advance notice to a Scarborough resident of a pesticide application of Up-Star Gold Insecticide (EPA Reg. No. 70506-24) used to control mosquitoes. The resident, who is on the urban (non-agricultural) pesticide notification registry, was notified about 90 seconds before the application rather than the required six-hour minimum. Lucas Tree Experts Company admitted that an internal company error occurred, so the company thought it had provided the proper advance notice. A \$500 fine was levied.

Scotts Lawn Service of Hermon, Maine, was cited for three violations. On two separate occasions citizens told the BPC that Scotts employees had applied pesticides in high wind conditions. Using Bangor and Portland airport data to determine likely wind speeds at the sites during the applications, a BPC inspector found that conditions were likely too windy for pesticide applications. The products used were Ortho Weed-B-Gon (EPA # 228-292) and Ortho Weed-B-Gon Pro (EPA # 228-292). The third violation occurred with a pesticide application of Ortho Weed-B-Gon Pro (EPA # 228-292) at Husson College in Bangor on August 17, 2010. As a citizen walked across turf at the campus, his boots became wet. The Scotts employee had not posted the treated area before the pesticide application as required. Scott's disputes some facts in these cases but agreed to pay the \$400 fine. This is the third violation for this company in the last four years.

[End of BPC news]

On April 28, 2011, the **Maine** Legislature's Joint Standing Committee on Agriculture, Conservation and Forestry (ACF) held a work session on three **pesticide spray notification bills**, followed by language review of other bills about pesticide use in Maine. MOFGA had hoped that one of the bills would streamline and simplify the notification system for outdoor pesticide spraying in Maine; instead, the ACF did everything it could to minimize the public's access to information about pesticide spraying. The following bills, which MOFGA opposed, were under consideration as we went to press.

LD 16 – An Act To Revise Notification Requirements for Pesticides Applications Using Aircraft or Air-carrier Equipment, sponsored by Rep. Jeffrey Timberlake (R-Turner), sought to change the notification criteria for application of pesticides by aircraft or air-carrier equipment. The distance between the spray application and a person on a notification registry who must be notified would be cut from 1,320 feet to 100 feet. The distance requiring notification when pesticides are sprayed into the crowns of fruit trees or Christmas trees using air-carrier equipment would be reduced from 500 feet to 50 feet. This would be a significant rollback to the progress made with Maine's Aerial and Air-carrier Pesticide Spray Notification Registry, which sets notification distances at 1,320 feet for aerial spraying and 500 feet for air-carrier spraying. The ACF voted unanimously that the bill ought not to pass.

LD 228 – An Act To Revise Notification Requirements for Pesticide Application, sponsored by Rep. Peter Edgecomb (R-Caribou), sought to repeal Maine's pesticide spray notification registry for aerial and air-carrier applications. Without this registry, residents and property owners wishing to be notified would either have to pay to be notified or confront pesticide sprayers directly, depending on the population density of the area being sprayed. This would significantly limit the notification rights of Maine citizens, including almost 2,000 registrants on the notification registry. The majority of the ACF voted that this bill ought to pass.

LD 1041 – An Act To Simplify and Enhance Pest Control Notification, sponsored by Rep. Dean Cray (R-Palmyra), was created to streamline disparate and confusing systems for outdoor pesticide spray notification by creating one registry with parameters and protocols based on spray technologies. Despite an excellent presentation from the Board of Pesticides Control showing that land managers can use an online geographic information system to identify and notify registrants instantly, the majority of the ACF, including Rep. Cray who sponsored the legislation, voted that this bill "ought not to pass." Almost as troubling was a confusing set of unnecessary amendments that came forth as a minority report from ACF members who still wanted some form of registry. MOFGA originally supported this bill but later opposed it because of the drastic rollbacks in the proposed amendments.

Other pesticide bills reviewed by the ACF present serious concerns as well.

LD 837 – An Act To Protect Children's Health and Promote Safe Schools and Child Care Centers by Limiting the Use of Pesticides, sponsored by Rep. Mary Nelson (D-Falmouth), would require that the use of pesticides on school grounds be restricted to situations that pose a health threat to

a student or staff member and to instances when animals or insects present have been identified as a public health nuisance. It would require the Commissioner of Health and Human Services to adopt rules to provide similar restrictions on the use of pesticides on the grounds of child care facilities and nursery schools. The majority of the ACF was attempting to hijack this bill, changing it into a resolve to promote integrated pest management on school grounds, rather than prohibiting cosmetic use of pesticides. MOFGA supported the minority report (original text) of the bill, NOT the majority report.

LD 321 – An Act To Change the Qualifications of Certain Members of the Board of Pesticides Control, sponsored by Rep. Peter Edgecomb (R-Caribou), would eliminate the two environmental expertise seats from the Board of Pesticides Control. The ACF voted that this bill ought to pass. MOFGA opposed this bill.

Ironically, the only bill with little controversy around it amounts to an additional regulation for all people who use pesticides on fruits and vegetables and who make \$1,000 or more a year. LD 975 – An Act To Require Certification of Private Applicators of General Use Pesticides, sponsored by Rep. Jim Dill (D-Old Town), would require certification of private applicators using general use pesticides in commercial production of food intended for human consumption. The ACF voted unanimously that this bill ought to pass. MOFGA supported this bill.

New research shows that people who used either of the insecticides **rotenone or paraquat** were approximately 2.5 times as likely as non-users to develop **Parkinson's disease**. Researchers from the National Institute of Environmental Health Sciences (NIEHS) and the Parkinson's Institute and Clinical Center in Sunnyvale, Calif., collaborated on the study. No home garden or residential uses for paraquat or rotenone are currently registered (although some product may remain on store shelves). Paraquat use has long been restricted to certified applicators. Rotenone is approved only to kill invasive fish species. (Tanner, C.M., et al., 2011. Rotenone, paraquat and Parkinson's disease. Environ Health Perspectives, Jan. 26, 2011; National Institutes of Health press release, Feb. 11, 2011; www.niehs.nih.gov/news/releases/newslist/index.cfm)

A European Commission-funded lab study at the University of London's School of Pharmacy found that 30 of 37 **crop pesticides interfere with the action of testosterone** in cell cultures. ("Pesticides on fruit and veg 'are wrecking men's fertility,'" by Fiona Macrae, Mail Online, Feb. 23, 2011; www.dailymail.co.uk/health/article-1359747/Pesticides-fruit-vegetables-wrecking-mens-fertility.html?ito=feeds-newsxml)

After a reporting hiatus during the Bush administration, the EPA has released **pesticide sales and use data** through 2007. Pesticide use in agriculture decreased from 948 million pounds in 2000 to 877 million pounds in 2007 – about 1 percent per year. Still, close to a billion pounds of pesticides enter the environment and our food supply annually. Organophosphate use declined, but 33 million pounds are still used, and these neurotoxins are still detected in most Americans' bodies and are commonly found on our food. Use of the herbicide glyphosate (the active ingredient in Roundup herbicide) more than doubled, from 85 to 90 million pounds in 2001 to 180 to 185 million pounds in 2007. The Organic Center says this likely reflects the rising popularity of Monsanto's Roundup Ready genetically engineered crops. ("At long last: EPA releases pesticide use statistics," by Karl Tupper, Ground Truth, Pesticide Action Network, Feb.

23, 2011; www.panna.org; Pesticide Industry Sales and Usage, www.epa.gov/opp00001/pestsales/)

Three independent studies show that children whose mothers are exposed to common agricultural **pesticides** are more likely to experience **deleterious effects in their cognitive development, including lower IQ, as well as impaired reasoning and memory**. Organic agriculture prohibits the use of these pesticides. The peer-reviewed studies, funded by grants from the National Institutes of Health, found links between delayed cognitive development and both dietary and environmental exposure to some of the most widely used agricultural pesticides. The studies examined individuals from a range of ethnic backgrounds, and those who lived in rural and urban settings. The lead researcher of one of the studies, Professor Brenda Eskenazi of the University of California at Berkeley, likened the effects of prenatal pesticide exposure to that of high lead exposure. Lead disrupts brain function in young children. (Prenatal Exposure to Organophosphates, Paraoxonase 1, and Cognitive Development in Childhood, Stephanie M. Engel et al., Environmental Health Perspectives, April 21, 2011, <http://ehp03.niehs.nih.gov/article/action?articleURI=info%3Adoi%2F10.1289%2Fehp.1003183>; Prenatal Exposure to Organophosphate Pesticides and IQ in 7-Year Old Children, Maryse F. Bouchard et al., Environmental Health Perspectives, April 21, 2011, <http://ehp03.niehs.nih.gov/article/action?articleURI=info%3Adoi%2F10.1289%2Fehp.1003185>; 7-Year Neurodevelopmental Scores and Prenatal Exposure to Chlorpyrifos, a Common Agricultural Pesticide, Virginia Rauh et al., Environmental Health Perspectives, April 21, 2011, <http://ehp03.niehs.nih.gov/article/action?articleURI=info%3Adoi%2F10.1289%2Fehp.1003160>; Organic Trade Assoc. press release, April 22, 2011; www.ota.com)

Scientists have found a **new bee behavior: "entombing"** or sealing hive cells containing pollen high in pesticides and other potentially harmful chemicals in an apparent attempt to protect the hive. Pollen in neighboring cells that feed young bees is not so contaminated and is not entombed. Despite the apparent safety precaution, entombing is the greatest predictor of colony loss. ("Honeybees 'entomb' hives to protect against pesticides, say scientists," by Fiona Harvey, The Guardian, April 4, 2011, www.guardian.co.uk/environment/2011/apr/04/honeybees-entomb-hives?)

Fall 2011

The Good News

In a Thompson Reuters-NPR health poll of about 3,000 Americans, **58 percent** of respondents said they **prefer to eat organic food**. Of that 58 percent, reasons for the preference were supporting local farms (36 percent), avoiding toxins (34 percent), concern for the environment (17 percent) and better taste (13 percent). Of those who preferred non-organic food, 54 percent cited price as the reason; 21 percent, availability; 13 percent said non-organic food tastes better; and 11% think non-organic foods are safer. Respondents prefer to get produce from a farmers' market (43 percent), followed by a supermarket (32 percent), their own garden (20 percent) and a farm co-op (5 percent). (Thompson Reuter-NPR Health Poll Organic Food, June 2011; http://www.factsforhealthcare.com/pressroom/NPR_report_OrganicFoods.pdf)

Clayton and Catherine Blake of Blake's Slaughtering and Custom Meats in Alexander, Maine, have received a \$123,000 grant from the Finance Authority of Maine to expand their **slaughter facility in Washington County**. Previously, the closest facilities that could slaughter animals for public resale and not just for private use were hours away – limiting the size of animal operations in the area. Blake and other producers will be able to sell their meat within Maine. (“Certified slaughter facility coming to Washington County,” by Sharon Kiley Mack, June 7, 2011, Bangor Daily News; <http://bangordailynews.com/2011/06/07/business/certified-slaughter-facility-coming-to-washington-county/>)

Washington County resident Nancy Oden writes in a July 9, 2011, email that she met with Commissioner of Corrections Joseph Ponte to **discuss raised bed gardens for Maine prisons**. Then she spoke with the director of the state prison in Machiasport. The result: “Boards are being sawn at the Charleston State Prison, soil will be purchased locally, and prisoners who attended my talk on gardening at the prison last November will – those who want to – plant and grow some food for the 150 prisoners housed in that old military facility.”

First Lady Michelle Obama and Agriculture Secretary Tom Vilsack have unveiled the **federal government's new food icon, MyPlate**, to remind consumers to make healthier food choices. The new icon shows a plate half full of fruits and vegetables, paired with half a plate of lean proteins, whole grains and low-fat dairy. MyPlate replaces the government's pyramid image of food groups and follows government guidelines to balance calories; enjoy food but eat less; avoid oversized portions; make half your plate fruits and vegetables; switch to fat-free or 1 percent milk; make at least half your grains whole grains; limit salt; and drink water instead of sugary drinks. Many of these guidelines are laudable, but some would disagree with the focus on lowfat or fat-free milk. (See The Weston A. Price Foundation at www.westonaprice.org for a different take on fat.) And some question the discrepancy between USDA promoting consumption of 50 percent of our calories as produce while only 1 percent of its agricultural subsidies support fruit and vegetable farming. (“First Lady, Agriculture Secretary Launch MyPlate Icon as a New Reminder to Help Consumers to Make Healthier Food Choices,” USDA press release, June 2, 2011; www.choosemyplate.gov/global_nav/media.html. More information is posted at www.ChooseMyPlate.gov, www.DietaryGuidelines.gov and www.LetsMove.gov; “Breaking News! USDA Replaces Food Pyramid with MyPlate,” Physicians Committee for Responsible Medicine, www.pcrm.org/newsletter/jun11/usda_food_plate.html)

Laboratory hamsters fed high-fat rations containing **blueberry** peels and other leftovers from blueberry juice processing had 22 to 27 percent **lower total plasma cholesterol** than those fed rations without blueberry byproducts, and levels of very low density lipoprotein – a form of "bad" cholesterol – were about 44 percent lower in the blueberry-fed hamsters. In another study, young, rapidly growing laboratory rats fed rations that contained 10 percent freeze-dried blueberry powder had **significantly more bone mass** than rats whose rations were blueberry-free. Cultures of bone-forming cells (osteoblasts) exposed to blood from these animals showed an increase in development of osteoblasts into mature, functional bone cells. Serum in the blueberry-fed rats was high in phenolic acids, derived from the polyphenols that give blueberries their color. The research suggests that the phenolic acids may have promoted bone building in the rats.

(“Blueberry's Effects on Cholesterol Examined in Lab Animal Study,” by Marcia Wood, and

“Blueberries Help Lab Rats Build Strong Bones,” by Marcia Wood,
USDA Agricultural Research Service, Agricultural Research, May-June 2011;
www.ars.usda.gov/is/pr)

Organic produce contains a mean of **12 percent more health-promoting compounds than conventionally grown produce**, say scientists at Newcastle University. The researchers reviewed all published studies on secondary metabolites and vitamin C in fruits and vegetables produced using organic or conventional methods. Secondary metabolites are thought to help guard against cancer, diabetes and heart disease and include alkaloids, carotenoids and salicylates as well as polyphenols such as tannins, flavanones and resveratrol. (“Study sheds new light on organic fruit and vegetables,” Newcastle University press release, May 24, 2011; www.ncl.ac.uk/press.office/press.release/item/study-sheds-new-light-on-organic-fruit-and-vegetables)

In the summer of 2010, five interns collected price data at Vermont farmers' markets, co-ops and grocery stores. All **organic products** except potatoes were **cheaper at the farmers' market** than at the other outlets. Results for conventional items were mixed, with some items cheaper at farmers' markets and some cheaper at grocery stores. The report concludes that “price differences between farmers’ markets and grocery stores have been to a large extent exaggerated, and that farmers’ markets are an especially affordable alternative for consumers who either currently purchase organic food or who have expressed an interest in buying organic food but are restricted due to high organic prices at grocery stores.” (“Is locally-grown and organic food really more expensive?” NOFA Vt.; <http://nofavt.org/pricestudy>)

The USDA Agricultural Marketing Service reported **6,132 farmers’ markets in 2010** – 16 percent more than in 2009 – and projects that consumer demand for locally grown food will reach \$7 billion by 2012 (compared with slightly above \$1 billion in 2005). Among market vendors surveyed in 2005, 25 percent derived all their farm income from farmers’ markets. (“Farmers Markets by the Numbers,” by Gretchen Hoffman, American Farmland Trust, April 29, 2011; <http://blog.farmland.org/2011/04/farmers-markets-by-the-numbers/>)

The **Cumberland County office of UMaine Cooperative Extension has a new home in Falmouth** with a barn, office space, a kitchen for cooking programs, and 3 acres for demonstration plots. The site is part of the new University of Maine Regional Learning Center at 75 Clearwater Drive. The Center for African Heritage, which has a program for growing organic vegetables for local restaurants, and the nonprofit Cultivating Community, which helps young people grow food for the hungry, also have plots nearby. Extension will use some of the land to grow food for food pantries and soup kitchens. And an abandoned orchard on the land was pruned by students from Southern Maine Community College and is tended by master gardeners. (“UMaine Extension gets land, barn and a view,” by Tom Atwell, Portland Press Herald, May 8, 2011; www.pressherald.com/life/homeandgarden/umaine-extension-gets-land-barn-and-a-view_2011-05-08.html)

A **new hybrid variety of organic corn**, D2901, bred to thrive in the Northeast, has been licensed and is available for sale. Previously, the only organic corn seed available was developed and tested primarily in the Midwest. The hybrid parent plants used to create the variety resist

many diseases, have bigger seed ears, and shade the ground early, which can help control weeds. Margaret Smith, professor of plant breeding and associate director of the Cornell University Agricultural Experiment Station and one of a handful of corn breeders in public research institutions, perfected the variety. Corn breeding is dominated by about 500 private-sector breeders in the United States. Klaas Martens of Lakeview Organic Grain collaborated with Smith to expand seed production of D2901. Although Smith believes research done at a land-grant university should remain in the public domain, the seed was licensed because of diminishing public resources, with breeding programs particularly at risk because they require long-term investment that doesn't fit the two- to three-year funding windows of short-term grants. (“New Cornell corn available for nationwide sale, by Stacey Shackford, Cornell University Chronicle Online, April 15, 2011; www.news.cornell.edu/stories/April11/NewCornBreed.html)

Classical plant breeding, coupled with ecological methods for producing crops, “**bests genetic engineering**” in “producing the food we will need by mid-century,” write Margaret Mellon and Doug Gurian-Sherman of the Union of Concerned Scientists. Classical plant breeding can introduce new varieties at significantly less expense than, and about as fast as, genetic engineering, and the pace is increasing with techniques such as marker-assisted breeding. Classical breeding has already created drought-, flood- and pest-resistant crops, and fertilizer-efficient crops. Rice that resists flooding, papaya that resists ringspot virus, and corn that deters rootworms are already growing and increasing food security for millions. The authors note that “classical breeding and better farm management are responsible for all the yield increases for soybeans and most of the yield increases for corn in the United States. Recent yield increases are often erroneously attributed to genetic engineering, but data from the U.S. Department of Agriculture and academic scientists show that even during the past 15 years that GE crops have been commercialized, classical breeding and crop management improvements contributed the large majority of the increases, not the newly inserted genes” – despite minuscule support for public sector crop breeders. The authors recommend increased funding for classical plant breeding programs at public and nonprofit institutions. (“The cost-effective way to feed the world,” by Margaret Mellon and Doug Gurian-Sherman, Bellingham Herald, June 20, 2011, www.bellinghamherald.com/2011/06/20/2067418/the-cost-effective-way-to-feed.html)

The USDA's child nutrition programs have implemented new rules that will let **schools** and other providers **give preference to unprocessed locally grown and locally raised agricultural products** as they purchase food for the National School Lunch, School Breakfast, Special Milk, Child and Adult Care, Fresh Fruit and Vegetable, and Summer Food Service programs. The rule is part of the Healthy, Hunger-Free Kids Act of 2010 signed into law by President Obama and one of the key provisions to bolster U.S. farm to school programs. (“New USDA Rule Encourages the Purchase of Local Agricultural Products for Critical Nutrition Assistance Programs,” USDA press release, April 26, 2011; www.usda.gov/wps/portal/usda/usdahome?contentid=2011/04/0180.xml&contentidonly=true. For more information, see www.fns.usda.gov and www.fns.usda.gov/cnd/f2s/)

A group of leading scientists, economists and farmers writing in Science calls for a broad **shift in federal policies** to speed development of farm practices that are more economically, socially and environmentally sustainable. “We have the technology and the science right now to grow food in

sustainable ways, but we lack the policies and markets to make it happen,” says lead author John Reganold, a Washington State University soil scientist. Reganold’s several studies show organic farming systems are more earth-friendly than conventional and produce more nutritious and sometimes tastier food. Likewise, the 1989 National Research Council report “Alternative Agriculture,” by the same authors, recommended more research and education into sustainable farming, as did the council’s 2010 update, “Toward Sustainable Agricultural Systems in the 21st Century.” The Science paper particularly criticizes the Farm Bill, slated for renewal in 2012. Only one-third of farmers receive payments under the bill, yet it has an outsized influence on production, does little to promote sustainability, distorts market incentives and makes our food system “overly dependent on a few grain crops mainly used for animal feed and highly processed food, with deleterious effects on the environment and human health.” Environmental impacts, says Reganold, include overdrawn aquifers, eroded soil and polluted water. Research in agroecology, which adapts principles of nature to farming systems, is finding new ways to grow abundant and affordable food while protecting the environment, helping farm finances, and contributing to the well-being of farmers, farm workers and rural communities. “Why are we supporting big, mainstream agriculture that’s not necessarily protecting or benefiting the environment?” asks Reganold. “Why don’t we support innovative farming systems of all sizes that produce food sustainably?” (“WSU soil scientist leads expert panel’s call for ‘transforming U.S. agriculture,’” Washington State University, May 5, 2011; wsunews.wsu.edu/pages/publications.asp?Action=Detail&PublicationID=26019&TypeID=25)

The **hemlock woolly adelgid**, an insect that has devastated hemlocks in the mid-South and is creeping into northern New England, may be facing an organic adversary soon – and just in time, as climate change mitigates the extreme cold weather that otherwise stops the adelgid. When University of Vermont entomologist Scott Costa combined an insect-killing fungus, *Lecanicillium muscarium*, with whey, a byproduct of cheese making, and applied the “MicoMax” to infected hemlocks, adelgid growth rate was reduced significantly. (“Forest Fungus Factory,” The University of Vermont, May 5, 2011; www.uvm.edu/research/?Page=news&storyID=11914&category=uvmresearch)

A new campus residence called TerraHaus, which will house 10 **Unity College** students this fall, is the first American college **residence** designed to meet the Passive House standard, the **highest international standard for energy efficiency**, according to <http://terrahaus.wordpress.com/>. The 2,000-square-foot residence is modeled to use the equivalent of 80 gallons of oil per year for space heating, less than 10 percent of the average heating load for a home this size in Maine’s climate. In 0 degree weather, the heating load for TerraHaus could be met almost completely with a standard hair dryer. This level of efficiency results from superior air sealing, super-insulation and solar orientation.

The Humane Society of the United States and the United Egg Producers are working together to enact new federal legislation for all 280 million **hens** involved in U.S. egg production. The proposed standards would define the first federal law addressing the **treatment of animals on farms**. (“HSUS, Egg Industry Agree to Promote Federal Standards for Hens,” Humane Society press release, July 7, 2011; www.humanesociety.org/news/press_releases/2011/07/egg_agreement.html)

Al and Dianne Keene of Carrabassett Valley are publishing the **Maine Locavore Cookbook**, focused on using local Maine foods. The couple expects to publish the book this fall and make it available to all charitable and nonprofit organizations for use as a fundraiser. See <http://locavorecookbooks.com> for information and to submit your favorite Maine food recipes.

Organic

The USDA has **suspended** Nebraska-based **Promiseland Livestock's organic certification** as of July 28, 2011, because the company repeatedly withheld records from authorized agents that would have allowed them to audit its facilities. The action followed a formal complaint by Cornucopia Institute concerning illegal conventional cattle being transferred to the company's giant Aurora Dairy complex in Platteville, Colorado. During the five-year suspension, Promiseland Livestock cannot represent its products as organic. ("Promiseland Livestock Withdraws Appeal, Suspension of Organic Certification Effective July 28," USDA Agricultural Marketing Service press release, July 21, 2011; www.ams.usda.gov/AMSV1.0/Newsroom; Cornucopia Institute email, July 21, 2011)

Climate

A study matching **future climate change hotspots** with regions already suffering chronic food problems identified highly vulnerable populations, chiefly in Africa and South Asia, but potentially in China and Latin America as well, where in fewer than 40 years, the prospect of shorter, hotter or drier growing seasons could imperil hundreds of millions of already-impoorished people. The report, "Mapping Hotspots of Climate Change and Food Insecurity in the Global Tropics," was produced by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

The researchers mapped regions at risk of crossing climate thresholds – such as temperatures too hot for maize or beans – that over the next 40 years could diminish food production; regions that may be sensitive to climate shifts because they devote so much land to agriculture; and regions with a long history of food insecurity. Combined, the maps show that large parts of West Africa, India and China could suffer as, by the mid-2050s, maximum daily temperatures during the growing season could exceed 86 F – close to the maximum that beans tolerate, while maize and rice yields may decline. One previous study showed that African maize yields could decline by 1 percent for each day above 86 F, even with optimal rain.

Farmers already adapt somewhat by changing planting schedules or moving animals to different grazing areas. In some places, they may need to consider new crops, such as sorghum or cassava instead of maize, or new systems, such as integrating livestock and agroforestry.

Many parts of Latin America, where food security is now relatively stable, may be able to cope with some climate stresses – yet millions of people there depend on local agriculture to meet their food needs, so, "they are living in the very crosshairs of climate change." By 2050, for example, prime growing conditions will likely drop below 120 days per season in intensively farmed parts of northeast Brazil and Mexico – too short to mature some staple crops. Also, parts of Latin America will likely experience temperatures too hot for bean production, a staple there.

Some areas have a low sensitivity to the effects of climate change because little land is devoted to agriculture, but agriculture intensification – such as efforts to expand cultivation in sub-Saharan Africa – would render them more vulnerable.

The report calls for major, immediate adaptation efforts to avoid serious food security and livelihood problems later; and foresees an increasing importance for international trade in agriculture commodities. (The CGIAR Research Program on Climate Change, Agriculture and Food Security press release, June 3, 2011; full study at <http://ccafs.cgiar.org/news/media-centre/climatehotspots>)

Dairy cows that live year-round on pastures may contribute less to greenhouse gas emissions, soil erosion, and pesticide use than indoor herds, say USDA Agricultural Research Service researchers who modeled different management systems on a typical 250-acre Pennsylvania dairy farm, using field data on grazing systems and manure management and their effects on nutrient loss to the environment. Compared with high confinement systems, keeping dairy cows outdoors all year lowered ammonia emissions by about 30 percent and total emissions for methane, nitrous oxide and carbon dioxide by 8 percent. Also, when fields formerly used for feed crops were converted to perennial grasslands for grazing, carbon sequestration climbed from zero to as high as 3,400 pounds per acre per year. The results suggest that a well managed dairy herd kept outdoors year-round left a carbon footprint 6 percent smaller than that of a high-production dairy herd kept in barns. (“Beyond the barn: Keeping dairy cows outside is good for the outdoors,” USDA Agricultural Research Service press release, May 24, 2011; www.ars.usda.gov/is/pr/2011/110524.htm)

The Environmental Working Group’s **“Meat Eater’s Guide to Climate Change and Health”** says that if everyone in the United States ate no meat or cheese just one day a week, over a year the effect on emissions would equal taking 7.6 million cars off the road. The research also notes that meat that goes into the trash accounts for more than 20 percent of all meat-associated emissions. “By eating and wasting less meat, consumers can help limit the environmental damage caused by the huge amounts of fertilizer, fuel, water, and pesticides, not to mention the toxic manure and wastewater, that goes along with producing meat,” says Kari Hamerschlag, EWG senior analyst and author of the report. “Choosing healthier, pasture-raised meats can also help improve people’s health and reduce the environmental damage associated with meat consumption.”

The report also says that beef generates more than twice the emissions of pork, nearly four times that of chicken, and more than 13 times that of vegetable proteins such as beans, lentils and tofu. (“EWG Meat Eater’s Guide Spotlights Beef’s Outsize Carbon Footprint,” Environmental Working Group press release, July 18, 2011; www.ewg.org)

Food Safety

As we went to press, sprouts grown from fenugreek seeds were being scrutinized in relation to illnesses and deaths in Europe. More than 16 tons of organic fenugreek seed shipped from Egypt to dozens of companies in at least 12 European countries may be linked to an **outbreak of E.**

coli O104:H4. The initial outbreak, first blamed on cucumbers from Spain and then on bean sprouts from Germany, had killed 49 and sickened more than 4,100. Then a June outbreak in France sickened about 16 more people. Many of the original fenugreek seeds were repackaged into 50-gram packets for resale.

This strain of E. coli, like the better-known O157:H7, is a Shiga-toxin-producing E. coli (STEC) that can lead to hemolytic uremic syndrome, which causes kidney failure and neurological damage.

Health experts believe that bacteria in fields can contaminate sprout seeds while plants grow. The FDA encourages sprout growers to sanitize sprout seeds and test sprouts for pathogens; and it tells consumers that cooking can kill bacteria that can contaminate sprouts. Some growers use a chlorine solution and/or a hot water process to sanitize sprouts.

The Cornucopia Institute says that the underlying cause of new, highly toxic strains of foodborne pathogens seems to be raising cattle in highly concentrated factory farm conditions, instead of on pasture. Cows evolved to eat grass, not the high-grain rations they get in feedlots. Eating grain changes the rumen pH and has been linked to the creation of new, more deadly E. coli pathogens. “There is nothing inherently dangerous about raw spinach, raw cucumbers or raw sprouts, which are dangerous only when they are contaminated with manure from industrial-style factory farms,” says Cornucopia, adding that of the 10 U.S. recalls of sprouts since April 2009, nine were attributed to conventional sprouts and one to organic. (“A Search Is Under Way for Tainted Sprout Seeds,” by William Neuman, The New York Times, July 5, 2011; www.nytimes.com/2011/07/06/business/06seeds.html?_r=1&hpw; “German officials see no E.coli fault at organic farm,” by Brian Rohan, The Montreal Gazette, June 11, 2011; www.montrealgazette.com/news/world/German+officials+coli+fault+organic+farm/4931800/story.html#ixzz1P1eC44As; “E. Coli: Don’t Blame the Sprouts!” by Mark Bittman, The New York Times, June 7, 2011; <http://opinionator.blogs.nytimes.com/2011/06/07/e-coli-dont-blame-the-sprouts/?smid=tw-bittman&seid=auto>; “90% Sprout Contamination Conventional, Not Organic (Linked to Factory Farm Livestock Production),” Cornucopia Institute press release, June 6, 2011; www.cornucopia.org/2011/06/news-advisory-90-sprout-contamination-conventional-not-organic-linked-to-factory-farm-livestock-production/; “The Poster Plant of Health Food Can Pack Disease Risks,” by William Neuman, The New York Times, June 10, 2011; www.nytimes.com/2011/06/11/business/11sprouts.html?_r=1&hpw)

After corn is processed to make ethanol, a byproduct called "wet distiller's grains with solubles" (WDGS) is sometimes used as a cattle feed ingredient. In early experiments with 608 steers, USDA researchers showed that the incidence and **prevalence of E. coli O157:H7** in manure, and the incidence on hides, was significantly higher for cattle whose corn-based feed included 40 percent WDGS than those whose feed did not include WDGS. (“Studies Focus on Feed Ingredient's Effects on Levels of E. coli O157:H7 in Cattle,” by Marcia Wood, USDA Agricultural Research Service press release, May 19, 2011; www.ars.usda.gov/is/pr)

Some 70 percent of **antibiotics** used in the United States **are given to healthy farm animals** at low doses to promote faster growth and to compensate for unsanitary living conditions. This practice appears to **breed antibiotic-resistant bacteria** that are dangerous to humans. Despite

the FDA's 1977 conclusion that feeding animals low doses of certain antibiotics used in human medicine – penicillin and tetracyclines – could promote antibiotic-resistant bacteria capable of infecting people, the agency failed to act to protect human health. So on May 25, 2011, a coalition of health and consumer organizations sued the FDA to act on the agency's own safety findings and to withdraw approval for most non-therapeutic uses of penicillin and tetracyclines in animal feed. The lawsuit would not affect the use of antibiotics to treat sick animals. Denmark – the world's largest pork exporter – banned the use of antibiotics for growth promotion in broiler chickens and adult swine in 1998, and in young swine in 1999. Danish government and industry data collected since then show a sustained decrease in overall antibiotic use and in the amount of antibiotic-resistant bacteria found in livestock and meat products, while livestock production has increased. (“Superbug Suit: Groups Sue FDA Over Risky Use of Human Antibiotics in Animal Feed,” Natural Resources Defense Council press release, May 25, 2011; www.nrdc.org)

Multidrug-resistant bacteria occurred in 80 percent of **raw chicken** bought from Dutch grocery stores. The resistance genes were identical to those collected from hospital patients, suggesting that drug-resistant bacteria in food are creating infections that are harder to treat in people. Fewer than 12 percent of raw beef, pork and ground meat samples had the drug-resistant bacteria. (“Bacteria From Dutch Poultry Linked to Superbugs in People, Scientists Find,” by Jason Gale, June 30, 2011; www.bloomberg.com/news/2011-06-30/bacteria-from-dutch-poultry-linked-to-superbugs-in-people-scientists-find.html)

Bisphenol A (BPA), believed to disrupt hormone systems, can leach from epoxy coatings in metal food and drink cans into the food in the cans. Among food products tested from U.S. markets, **BPA was found in 71 of 78 canned food samples**, but was not found in the two frozen food samples. Fruits and tuna were lowest in BPA concentrations; and canned food solids were higher in BPA than liquid portions in the canned foods. (“Concentration of Bisphenol A in Highly Consumed Canned Foods on the US market,” by Gregory O. Noonan et al., J. Agric. Food Chem., May 20, 2011; <http://pubs.acs.org/doi/abs/10.1021/jf201076f>)

Twenty people reported their consumption of canned and packaged foods; then for three days ate foods that were not canned or packaged in plastic; and then resumed their usual diets. Urine samples collected during the three stages of the eight-day study showed significant **decreases in concentrations of bisphenol A (BPA) and bis(2-ethylhexyl) phthalate (DEHP)** metabolites in urine when subjects ate **foods with limited packaging**. BPA and DEHP, chemicals used in plastics and resins for food packaging, have been associated with hormone disruption in animals. (“Food Packaging and Bisphenol A and Bis(2-Ethylhexyl) Phthalate Exposure: Findings from a Dietary Intervention,” by Ruthann A. Rudel et al., Environ Health Perspect., March 30, 2011; <http://ehp03.niehs.nih.gov/article/info:doi/10.1289/ehp.1003170>)

Genetic Engineering (GE)

Dr. John Huber, in an in-depth interview in Acres (May 2011; www.acresusa.com/toolbox/reprints/May2011_Huber.pdf), details his concerns about **genetically engineered (GE) corn and soy**. A plant pathologist, expert on nutrient deficiency diseases of

plants and Emeritus Professor at Purdue University, Huber discusses how glyphosate (the active ingredient in the herbicide Roundup) functions by tying up essential plant nutrients. He also discusses **a pathogenic microorganism**, yet to be identified, that he believes may be associated with GE Roundup Ready corn and soy, and its **possible link to infertility and abortions** in animals ingesting contaminated corn and soy feed.

In an effort to boost exports, the **Obama White House** has entered into a joint venture with the agricultural **biotechnology industry** to remove barriers to the spread of GE crops, even on national wildlife refuges, according to documents obtained by the Public Employees for Environmental Responsibility (PEER). PEER is suing the White House Trade Representative, Office of Management & Budget (OMB) and the State Department to force release of documents detailing their partnership with industry.

In late 2010, the **White House** formed an Agriculture Biotech Working Group consisting of more than 35 officials from 10 agencies to **promote GE agriculture**. This Working Group includes officials from the White House and its Office of Management and Budget, Office of Science & Technology Policy, Council on Environmental Quality, the Trade Representative, Departments of State, Justice and Agriculture, EPA and FDA. A central task of this group is to legally insulate GE crops on wildlife refuges from further litigation. Initially, it tried to pressure the U.S. Fish & Wildlife Service, which operates the National Wildlife Refuge System, to rescind its Ecological Integrity Policy, which forbids GE planting unless essential to accomplishing a refuge purpose. These officials then helped prepare environmental assessments to start paving a legal path for GE plantings on 75 refuges in 30 states.

“With all the environmental challenges facing this country, why is the White House priority putting wildlife refuges under the thumb of Monsanto?” asks PEER Staff Counsel Kathryn Douglass, who filed the Freedom of Information Act suits. “It is frankly depressing that the top White House official for ecosystem recovery is hustling genetically altered soybeans on slivers of land set aside for wildlife.” (“White House Pact with Industry to Push GE Plants,” Public Employees for Environmental Responsibility press release, July 21, 2011; www.peer.org/news/news_id.php?row_id=1501)

In July 2011, the U.S. delegation to the Codex Alimentarius Commission, made up of the world’s food safety regulatory agencies, **dropped its opposition to labeling GE foods**.

The new Codex agreement means that countries wishing to adopt GE food labeling will no longer face the threat of a legal challenge from the World Trade Organization (WTO), because national measures based on Codex guidance or standards cannot be challenged as a barrier to trade. Dr. Michael Hansen of Consumers Union said a key reason for labeling GE foods is “so that if consumers eat modified foods, they will be able to know and report to regulators if they have an allergic or other adverse reaction.” Edita Vilcapoma of the Peruvian consumer group ASPEC, representing Consumers International at the Codex meeting in Geneva, said: “Peru’s recent introduction of GM food labeling faced the threat of a legal challenge from the WTO. This new Codex agreement now means that this threat has gone and the consumer right to be informed has been secured.” (“Consumer Rights Victory as US Ends Opposition to GM Labeling

Guidelines,” Consumers International press release, July 5, 2011;
www.consumersinternational.org)

In April 2011, **Hungary** became the first country to ensure its people’s “material and mental health” by **guaranteeing “an agriculture free of genetically modified organisms”** in its new Fundamental Law. Other countries are rejecting GE crops and bolstering their food self-sufficiency. For example:

- Seven **European countries** have rejected one or more GE crops.
- **El Salvador** has launched a program linking government, peasant organizations and NGOs to ensure that by 2014 all corn and bean seeds it needs will be produced by Salvadoran farmers, not bought from foreign companies. Salvadoran President Mauricio Funes said, “Only if we become independent in seed [production], will we become independent in food.”
- A new law in **Cyprus** mandates separate shelving and clear, prominent signs stating which foods contain GE ingredients.
- **Thailand** has had a GE-free rice policy for years.
- The **Peruvian Congress** recently set a 10-year moratorium on cultivating and breeding GE crops.
- **Bolivian** President Evo Morales has signed a law to establish state-owned companies to produce seeds and fertilizers in order to protect biodiversity and native foods (such as quinoa, potatoes and corn), to end dependence on foreign seed companies and to make food more affordable.

On the other hand:

- **Brazil** recently fast-tracked release of **GE beans** even though the government research agency that developed the beans found that organic methods could easily control pests that the GE variety was developed to control, without reducing yields.
- **Chilean legislators** recently passed a law **effectively granting Monsanto patent rights over the majority of seeds** used to grow crops in that country.
- A decade-long moratorium on GE seeds in **Mexico** was broken in 2009, when the government approved 29 applications for experimental **GE corn** plots. Another 20 plots were approved in 2010. (“To be or not to be GE-free,” Pesticide Action Network North America, June 22, 2011; www.panna.org/blog/be-or-not-be-ge-free; “El Salvadoran Government & Social Movements Say No to Monsanto,” by Carlos Martinez, May 27, 2011; <http://upsidedownworld.org/main/el-salvador-archives-74/3049-el-salvadoran-government-a-social-movements-say-no-to-monsanto>; “Bolivia moves to end dependence on foreign seed firms,” BBC News, June 27, 2011; <http://www.bbc.co.uk/news/world-latin-america-13923732>)

The Center for Food Safety (CFS) says that USDA's draft environmental assessment of **Monsanto's GE, drought-tolerant corn, MON87460** does not adequately address the environmental, health or socio-economic impacts of the crop – or the benefits offered by organic corn, and how adoption of organic corn might change if MON87460 is deregulated.

Conventional and GE corn cultivation uses far more fertilizer and herbicide and creates more pollution than any other U.S. crop, says CFS, while long-term farming trials show conclusively that organically grown corn is more drought-tolerant than non-organically grown corn. “Every acre planted to MON87460 rather than organic corn will lead to an average of 140 lbs. more

inorganic nitrogen fertilizer and over 2.3 lbs. more toxic synthetic pesticide use. USDA failed to analyze such potential impacts,” says CFS, adding that USDA also failed to address corporate control and monopolization of seed, and the cumulative impacts of "stacking" pesticide-promoting GE traits into this one GE crop. USDA further failed to assess the potential environmental impacts associated with conversion of Conservation Reserve Program land to MON87460; and ignored the interests of non-GE farmers and the American public, placing the burden to avoid GE contamination entirely on organic and non-GE farmers. Finally, CFS says USDA’s environmental assessment failed to use sound science and relied excessively on Monsanto data. (“USDA Looks to Approve First GE, Drought Tolerant Corn with no EIS,” Center for Food Safety, July 5, 2011; www.centerforfoodsafety.org)

The Bill and Melinda Gates Foundation has approved \$20 million in new monies toward developing **GE Golden Rice**; Helen Keller International (HKI), a New York-based NGO, is also supporting the effort. Golden Rice has been engineered to contain beta carotene, the precursor to vitamin A, which is deficient in diets of many poor Asians. Sarojeni V. Rengam, executive director of Pesticide Action Network Asia and the Pacific, calls Golden Rice a Trojan horse PR stunt by agribusiness corporations to garner acceptance of GE crops and food, adding that donor organizations’ money and efforts would be better spent on restoring natural and agricultural biodiversity rather than destroying it by promoting monoculture plantations and GE crops. Introducing GE rice into Asia, the center of diversity for rice, threatens cultural and biological diversity. The first Green Revolution displaced thousands of traditional and indigenous varieties of rice and knowledge of their management with a handful of hybrid varieties requiring heavy doses of synthetic chemical pesticides and fertilizers. Golden Rice threatens to speed that process, with the added risk of genetically contaminating Asia’s precious resource. Golden Rice is also pushing through GE-friendly biosafety regulations under the guise of humanitarian aid. These regulations open the door for the biotech industry to bring in commercial, patented GE crops, as USAID and Monsanto did in Kenya with sweet potatoes. Farmers and national governments then become beholden to biotech giants and lose their rights to save and exchange seed. Also, once GE rice contaminates a rice supply, countries will lose agricultural export markets to Japan and Europe. Finally, vitamin A uptake depends on the presence of fats or oils in a diet. Golden Rice is useless when people can’t access or afford the diet they need to metabolize it, especially when it comes packaged in a monocultural production system that undermines the dietary diversity they need. Smarter, cheaper alternatives exist. Most important is recognizing that poverty, the underlying reason for nutritional deficiencies, can't be solved with a technological fix. (“Golden Rice,’ or Trojan Horse?” by Marcia Ishii-Eiteman, Pesticide Action Network North America, June 2, 2011; www.panna.org/blog/golden-rice-or-trojan-horse)

Because of new threats by Monsanto, the Public Patent Foundation (PUBPAT) has amended its **suit** on behalf of family farmers, seed businesses and organic agricultural organizations **challenging Monsanto’s patents on GE seed**, and 23 new plaintiffs have joined the original sixty. The plaintiffs in Organic Seed Growers and Trade Association (OSGATA), et al. v. Monsanto, pending in the Southern District of New York, include 36 family farmer, food, agricultural research, food safety, and environmental organizations representing hundreds of thousands of members, including several thousand family farmers and MOFGA and FEDCO Seeds.

Maine organic farmer Jim Gerritsen, president of OSGATA, says, “Americans have the right to choice in the marketplace – to decide what kind of food they will feed their families – and we are taking this action on their behalf to protect that right to choose. Organic farmers have the right to raise our organic crops for our families and our customers on our farms without the threat of invasion by Monsanto’s genetic contamination and without harassment by a reckless polluter.”

“Our clients don’t want a fight with Monsanto, they just want to be protected from the threat they will be contaminated by Monsanto’s genetically modified seed and then be accused of patent infringement,” says Daniel B. Ravicher, PUBPAT executive director and lecturer of law at Benjamin N. Cardozo School of Law in New York.

After the suit was filed in March, Monsanto said it would not assert its patents against farmers who suffer “trace” amounts of transgenic contamination. PUBPAT attorneys asked the company to make its promise legally binding. Monsanto then hired former solicitor general Seth P. Waxman of Wilmer Hale in Washington D.C., who rejected PUBPAT’s request and confirmed that Monsanto may indeed make claims of patent infringement against organic farmers whose crops become contaminated by Monsanto’s GE seed.

According to PUBPAT, “Monsanto continued in the statement to perversely characterize this suit as an ‘attack,’ when Plaintiffs seek no money from and no injunction against them. All Plaintiffs seek is peace of mind [that] if they are ever contaminated by Monsanto’s transgenic seed, the company could never sue them for patent infringement. This is not an attack by the Plaintiffs and to characterize it that way only further evidences Monsanto’s aggressive and threatening attitude with respect to its patents.”

The suit also argues that Monsanto’s transgenic Roundup Ready patents are invalid under laws requiring patented products to demonstrate clear social utility and not be dangerous to health. The original complaint asserted four basic contentions, ranging from patent invalidity, to establishing proper requirements for a finding of patent infringement, to patent unenforceability and Monsanto’s lack of entitlement to collect damages.

“The issues raised in the lawsuit are critical, not just to organic farmers and others who do not want to grow genetically-modified (transgenic) crops,” says Gerritsen, but “also to the safety of food and everyone who eats – and that includes everyone concerned about environmental protection and public health.” As Gerritsen sees the suit, “This is not just a minor dispute between a few family farmers and a powerful corporation accustomed to getting its own way; it is a debate over who offers the best and most responsible way to feed the people of the world over the decades and centuries ahead.” Monsanto offers an expedient short-cut with enormous long-term risks and consequences for public health and environmental degradation, he says; “This, we intend to prove in court.”

“We believe Monsanto has anti-competitively and improperly abused their rights under patent law and have used their patents to gain monopoly dominance over major sectors of the seed industry,” says Ravicher; “They have gained control over as much as 90 percent of the U.S. corn and soybean seed market.” Independent research on the safety of transgenic food has not been permitted because Monsanto has used its patent control to prevent that, Ravicher says, adding,

“The operation of the patent system against the public interest will be an important issue to be examined as part of this case.”

“The USDA, the White House, and the Congress have evaded responsibility to protect the public from the potential and unstudied dangers of transgenic food, not even requiring careful, long-term, independent testing nor the clear GMO labeling long demanded by the overwhelming majority of U.S. citizens,” says Bryce Stephens, a Kansas wheat farmer and OSGATA’s vice-president. “President Obama said he wanted to see mandatory GMO labeling during his 2008 presidential campaign, but he has not provided it. We need someone to act in the public’s defense if our officials will not.” (“Family Farmers Amplify Complaint Against Monsanto’s GMOs, Reinforcing Their Arguments with Two Dozen Additional Plaintiffs,” PUBPAT press release, June 1, 2011; “Organic Farmers and Seed Sellers Sue Monsanto,” PUBPAT press release, March 29, 2011; www.osgata.org/osgata-press-releases)

According to the coalition No Patents on Seeds!, the European Patent Office in May 2011 awarded **Monsanto a patent on conventionally bred melons** (EP 1 962 578) that are resistant to cucurbit yellow stunting disorder virus (CYSDV), which has been spreading through North America, Europe and North Africa for several years. “This patent is an abuse of patent law because it is not a real invention,” says Christoph Then, a spokesperson for No Patents on Seeds! “It contravenes European law excluding patents on conventional breeding. Further, it is a case of bio-piracy, since the original and most relevant plants come from India. Patents like this are blocking access to the genetic resources necessary for further breeding, and basic resources needed for daily life are subordinated to monopolisation and financial speculation.” DeRuiter, a Dutch seed company that originally developed the melons, was acquired by Monsanto in 2008. (“Melons Now a Monsanto ‘Invention,’” No Patents on Seeds!, May 17, 2011; www.no-patents-on-seeds.org/en/information/news/melons-now-monsanto-invention)

The U.S. Court of Appeals for the Ninth Circuit Court of Appeals concluded a lawsuit over the impacts of GE **Roundup Ready sugar beets** in May 2011. As a result, previous **court rulings in favor of farmers and conservation advocates** will remain, including the order requiring USDA to prepare a rigorous review of the impacts of Monsanto’s Roundup Ready sugar beets, before deciding whether to allow their future commercial use.

The Center for Food Safety (CFS), Organic Seed Alliance, High Mowing Organic Seeds and the Sierra Club, represented by CFS and Earthjustice, challenged the USDA approval in 2008. They argued that GE sugar beets would contaminate organic and non-GE farmers’ related crops, such as table beets and chard, as well as increase pesticide impacts on the environment and worsen the current Roundup-resistant “superweeds” epidemic. In September 2009, Judge Jeffrey S. White in federal district court in San Francisco agreed and ordered USDA to prepare an Environmental Impact Statement (EIS). In August 2010, after a year of litigation over the proper remedy for USDA’s unlawful approval, the court again agreed with plaintiffs, threw out USDA’s approval, and halted planting.

Monsanto and other biotech industry interveners appealed on procedural grounds, which, if granted, threatened to undo the earlier rulings. The May 2011 order dismissed that appeal and affirmed the lower court’s rulings.

Earthjustice attorney Paul Achitoff says, “Dismissal of the appeal confirms that the district court rightly concluded that in this case, as in every other case that has challenged USDA’s oversight of genetically engineered crops, the agency has flouted the law, favoring the interests of Monsanto over those of American people. With every court decision the need for fundamental reform in this area becomes ever more obvious.”

This EIS is only the second that USDA has undertaken for any GE crop in more than 15 years of approving such crops for human consumption. Both were court-ordered. USDA expects to finish the GE sugar beet EIS and have a new decision on commercialization in 2012.

Despite the absence of lawful review or a new agency decision, in summer 2010, USDA and the biotech industry demanded the court allow planting to continue. The district court refused to do so and instead set aside USDA’s approval of the crop based on the agency’s failure to comply with environmental laws. That ruling was also preserved by the May 2011 order.

During this case’s appeal, USDA approved 2011-2012 planting of GE sugar beets under the terms of a novel permitting and “partial deregulation” scheme while it conducted the court-ordered analysis. That decision is the subject of separate litigation. (“Court of Appeals Dismisses Monsanto’s Appeal of Biotech Beets Case, Preserves Victory for Farmers, Environment,” Center for Food Safety press release, May 20, 2011; www.centerforfoodsafety.org/2011/05/20/court-of-appeals-dismisses-monsantos-appeal-of-biotech-beets-case-preserves-victory-for-farmers-environment)

Monsanto could begin field testing **GE wheat** within one to two years, says Claire CaJacob, Monsanto's global wheat technology lead executive. Traits of interest include yield and resistance to stress (including drought). Syngenta, BASF and other companies are also developing GE wheat. Monsanto halted GE wheat work in 2004 due to opposition from U.S. farmers and wheat buyers. (“Monsanto sees "right time" for GMO wheat,” by Carey Gillam, Nov. 4, 2010; www.reuters.com/article/2010/11/04/us-monsanto-wheat-gmoidUSTRE6A34K220101104)

The **USDA has exempted a GE Roundup-tolerant Kentucky bluegrass** produced by **Scotts Miracle-Gro** from federal regulation. USDA said the bluegrass did not use any plant pests, so was not subject to federal regulation. When sprayed with the herbicide Roundup, the GE bluegrass will survive but weeds won’t. While many GE crops use DNA from a plant virus to activate other inserted genes, Scotts used only plant genes, and inserted those with a gene gun instead of with a bacterium. USDA also declined to regulate the bluegrass as a noxious weed, as the Center for Food Safety requested. Another GE grass from Scotts, a bentgrass, has escaped from field tests in Oregon and become established in the wild. (“U.S.D.A. Ruling on Bluegrass Stirs Cries of Lax Regulation,” by Andrew Pollack, The New York Times, July 6, 2011; www.nytimes.com/2011/07/07/business/energy-environment/cries-of-lax-regulation-after-usda-ruling-on-bluegrass.html?_r=1&adxnnl=1&hpw=&adxnnlx=1310040092-CIwDth7mqAaiVRau5FhYVQ)

Pesticides

Maine Board of Pesticide Control News

By Katy Green

The Maine Board of Pesticides Control (BPC) must act on several pesticide issues passed in the last legislative session. LD 228 repealed the state's Aerial and Air Carrier Pesticide Spray Notification Registry and requires BPC action by January 1, 2012, to allow for "by request" notification when aerial spraying will occur. So residents and property owners wishing to be notified will have to pay to be notified or confront pesticide sprayers directly, depending on the population density of the area being sprayed. The legislature also shortened the distance for which neighbors can receive notification to 1,000 feet. The board will be adopting these changes into its rule and notifying citizens on the registry that notification rules have changed again. Despite the repeal, Maine legislators have promised to introduce legislation in the coming session to create an improved registry. MOFGA will continue defending the public's right to know and developing strong protections from public exposures to pesticides.

The legislature defeated a bill to protect children from pesticides sprayed on playgrounds and at day care facilities. The bill would have required that the use of pesticides on school grounds be restricted to situations that pose a health threat to a student or staff member and to when the presence of animals (including insects) had been identified as a public health nuisance. It would have required the Commissioner of Health and Human Services to adopt rules to provide similar restrictions on the grounds of child care facilities and nursery schools. The majority of the Agriculture, Conservation and Forestry Committee changed the bill into a resolve to promote integrated pest management on school grounds, rather than prohibit cosmetic use of pesticides. The amended version of the bill prevailed in the House. MOFGA supported the minority report (the original text), not the amended report.

According to the version of LD 837 that passed, the BPC must develop best management practices (BMPs) for school lawns, playgrounds and playing fields. The board will seek limited input from stakeholder groups on those BMPs. MOFGA will remind the BPC of its testimony regarding this issue.

LD 975 requires that the board revise Chapter 32 to include standards for certification and licensing of private applicators using general use pesticides in commercial production of food intended for human consumption if they derive \$1,000 or more per year from sales of those commodities. Over the next few months, the BPC will work on licensing requirements to comply with this law and logistics of implementing it.

For more information on Maine legislation related to pesticides, see www.mofga.org/Programs/PublicPolicyInitiatives/PesticidesAction/CurrentPesticideLegislationInMaine/tabid/1505/Default.aspx.

Chapter 41 requires training for those who purchase genetically engineered Bt corn. Lauchlin Titus of AgMatters LLC has requested abolishing that requirement. The board began discussing this in July and will likely continue the discussion this fall and winter.

Pesticide Registrations

In June the BPC unanimously approved a special local need request for the pesticide diazinon on Christmas trees. (See sidebar.)

Variance Requests

In May the BPC approved a variance request for DeAngelo Brothers, Inc., of Hazleton, Pennsylvania, for vegetation control along the St. Lawrence and Atlantic Railroad. When BPC staff asked the company to remove Diuron from its list of herbicides, the company replaced it with pyraflufen-ethyl, which the Maine Department of Transportation (DOT) does not use on its sections of rail because California lists it as a possible human carcinogen. The board approved the request but asked that future variance requests of this nature model Maine DOT BMPs.

In May the BPC approved a variance request for RWC, Inc., to maintain railways along several tracks. By BPC policy, once a request is granted, the staff may renew the variance unless it receives complaints. In this case, several citizens said at a BPC meeting in Portland in 2010 that they were concerned about pesticide applications along part of the Gorham Rail Trail, so the board did not automatically approve the renewal request. A local group called Friends of the Rails to Trails has been working with the Maine DOT and has agreed to maintain this section of rail without herbicides as long as possible. If the rail becomes an active line for freight, the group will no longer be allowed to maintain the section, and herbicides will be used. Alternative methods for controlling vegetation along the rail, such as steam and infrared light, have been deemed cost prohibitive.

In June the board approved a variance request for DuBois Contracting of Fort Kent to apply pesticides within 25 feet of the high water mark on the St. John River. DuBois will use the herbicide Rodeo (active ingredient, glyphosate) and the drift control agent Liberate, which according to the variance request will cause “total elimination of all vegetation along the rocky portion of the river side of the dike per regulations of the federal government.” Although no BPC board or staff member could cite such a regulation, the BPC approved the request. In July, the board provided the Army Corps of Engineers federal regulation related to the request. The Corps requires a vegetation-free zone, but the zone can include grasses. The board did not discuss options that would retain grasses.

In July, Green Thumb Lawn Service of Brewer asked for a variance to treat poison ivy at a home on Pushaw Lake with Roundup Pro herbicide (active ingredient, glyphosate). Because the poison ivy encompassed about 560 square feet immediately adjacent to the lake and within the 25-foot high water mark, a variance was needed. The BPC unanimously approved the request but questioned the efficacy of glyphosate to control poison ivy and gave Green Thumb other suggestions and the flexibility to find a chemical that would work well.

Consent Agreements

Egbert’s Lawncare LLC of Gorham, Maine, was cited for applying pesticides to a Portland property without consent. George Egbert applied Triplet Premium Selective Herbicide to

property neighboring his mother's. Those neighbors contacted the BPC, and Egbert was fined \$350.

Northeast Agricultural Sales, Inc., of Detroit, Maine, a pesticide dealer and custom applicator, was fined \$250 for a pesticide that drifted in May 2010. Northeast had been contracted to apply Atrazine to a Skowhegan corn field. During the application, the complainant, who lives adjacent to the field, noted that her property was engulfed in a white dust, which a BPC investigation later confirmed as Atrazine.

In 2009 the BPC reached a consent agreement with A-One Exclusion of Gorham, New Hampshire, for a pesticide application violation. A-One signed the agreement but never paid the fine and did not respond to the board's repeated requests. In May the BPC voted to refer the case to the Attorney General's office.

Sidebar

What Would Christmas Be Without Diazinon?

By Katy Green

At its June meeting the Maine Board of Pesticides Control (BPC) unanimously approved a Special Local Need 24[c] registration for use of diazinon to control balsam gall midge on balsam fir trees grown in nurseries in Maine. Balsam fir is grown for Christmas trees and for wreath brush and will be shipped all over the country this holiday season. The BPC approves several Special Local Need registrations each year, generally to allow the pesticide user to apply the pesticide in a way that is not consistent with the label – in this case on a crop that is not listed on the label.

This registration warrants special attention because of diazinon's particular toxicity and pervasiveness in natural ecosystems. Diazinon is an organophosphate insecticide, a class of chemicals that affect the nervous system. Organophosphates are neurotoxins, developmental and reproductive toxins, and suspected endocrine disruptors in humans. Recent studies have linked organophosphates to an increased risk of ADHD in children. In 2004 the U.S. Environmental Protection Agency canceled all residential uses of diazinon, specifically citing risks to children. Until then, diazinon was widely used in residential settings and was regularly detected in surface waters. A 1999 report from California found that even when applied according to label directions, diazinon was prone to run off and pollute nearby waters. (Schueler, T.R. 1999. Diazinon sources in runoff from the San Francisco Bay region. Watershed Protection Techniques, 3:613-616)

Maine's 24[c] instructions for using diazinon on balsam fir recommend the applicator "try to spray underside of leaves and penetrate dense foliage." In other words, treat every needle as thoroughly as possible. In Maine, diazinon will be applied using air carrier equipment, and the droplets will touch not only Christmas trees, but surrounding areas. The label for this chemical says it is "highly toxic" to wildlife, ranging from fish, including Atlantic salmon, to birds and bees, and warns the applicator to "not apply this pesticide or allow it to drift to blooming crops or weeds if bees are visiting the treatment area."

Diazinon can also harm applicators. The Journal of Pesticide Reform fact sheet on diazinon (www.pesticide.org/get-the-facts/pesticide-factsheets/factsheets/diazinon) details potential health effects to applicators, including an increasing risk of non-Hodgkin's lymphoma, the longer the farmer uses diazinon.

In June, one BPC member commented that organophosphates would likely continue to be phased out over time and asked whether Christmas tree growers had considered an alternative. The response was that nothing worked like that class of chemicals and that Christmas trees aren't food crops – implying less risk. Diazinon is also used on conventionally grown food crops, however, including apples, cranberries, blueberries and strawberries.

The BPC spent less than 20 minutes discussing this use of diazinon and didn't mention risks to wildlife or farm workers.

For more information on growing Christmas trees sustainably, see Jean English's editorial in this newspaper.

[End of BPC news]

The Earth Open Source (EOS) report "**Roundup and birth defects: Is the public being kept in the dark?**" says that industry has known but denied since the 1980s that glyphosate (the active ingredient in the herbicide Roundup) causes birth defects. Monsanto responded at its Monsanto blog, "Regulatory authorities and independent experts around the world agree that glyphosate does not cause adverse reproductive effects in adult animals or birth defects in offspring of these adults exposed to glyphosate, even at doses far higher than relevant environmental or occupational exposures." On June 14, 2011, EOS noted on Facebook (<http://on.fb.me/machCY>) that a main point of its report is that regulatory authorities have indeed agreed that glyphosate does not cause birth defects – but that conclusion is contradicted by industry's own studies, which show birth defects in experimental animals at high, mid and lower doses. The EOS report also details independent scientific literature showing that glyphosate and Roundup cause birth defects in experimental animals, as well as cancer, genetic damage, endocrine disruption and other serious health effects – even at very low, physiologically relevant doses. EOS has asked the European Commission to appoint independent scientists to review industry and independent studies on glyphosate and Roundup. ("Earth Open Source response to Monsanto," "Earth Open Source Report on Roundup – Monsanto Response," GMWatch, gmwatch-daily@gmwatch.eu; "Roundup and birth defects: Is the public being kept in the dark?" Earth Open Source, June 2011; www.scribd.com/doc/57277946/RoundupandBirthDefectsv5)

Tests of umbilical cord blood of 494 newborns in Valencia, Spain, between 2003 and 2006 showed that those with higher levels of residues of DDT and three other **organochlorine pesticides** tended to be **smaller at birth**. The pesticides are now banned because of their links to cancer and other potential health risks, but they persist in the environment and in foods – especially fatty foods, such as dairy products and oily fish. Higher levels of DDT were also linked to a smaller head circumference, and hexachlorobenzene (HCB) was linked to a shorter birth length. The other two pesticides measured were DDE and beta-hexachlorocyclohexane. The

correlations do not prove that the pesticides affected fetuses but may just indicate the presence of greater chemical exposure generally. Similarly, in 2009, U.S. researchers found that babies conceived during the **atrazine** spray season are more likely than others to suffer a range of **birth defects**. Syngenta's atrazine is one of the most widely used herbicides in the United States, applied mostly in corn fields. Now researchers in Indiana are finding that a rare birth defect called "gastroschisis" occurs more often among babies conceived when atrazine levels are high. Gastroschisis causes an infant's intestines to grow outside the body. A similar study in Washington state found that women living near atrazine-contaminated water were more likely to have a baby with gastroschisis, with the risk especially high if pregnancy started in spring. Pesticide Action Network is collecting signatures on a letter to the CEO of Syngenta, demanding that the company pay attention to recent evidence that its flagship herbicide causes birth defects and other harm. Syngenta calls concerns about the health effects of atrazine "alarmist." ("Birth defects linked to pesticides, again," by Kristin Schafer, June 23, 2011, Pesticide Action Network North America, <http://www.panna.org/blog/birth-defects-linked-pesticides-again>; "Prenatal pesticide exposure tied to birth size," June 14, 2011, www.reuters.com/article/2011/06/14/us-prenatal-pesticide-exposure-idUSTRE75D61820110614)

The **Environmental Working Group's Shopper's Guide to Pesticides** ranks pesticide contamination in 53 popular fruits and vegetables based on an analysis of 51,000 tests conducted from 2000 to 2009 by USDA and FDA. Nearly all the studies on which the guide is based tested rinsed or peeled produce. Choosing five servings of produce a day from EWG's Clean 15 rather than the Dirty Dozen can lower the volume of measured pesticide consumed daily by 92 percent, according to EWG calculations. Picking five servings from the 12 most contaminated would result in consuming an average of 14 different pesticides a day, while choosing five servings from the 15 least contaminated would result in consuming fewer than two pesticides per day (among those measured).

The 12 most contaminated items are apples, strawberries, peaches, domestic nectarines, imported grapes, domestic blueberries, celery, spinach, sweet bell peppers, potatoes, lettuce and greens (kale and collards).

Produce least likely to test positive for the measured pesticides are onions, sweet corn, asparagus, sweet peas, eggplant, cabbage, sweet potatoes, mushrooms, pineapples, avocados, mangoes, domestic cantaloupe, kiwi, watermelon and grapefruit. Asparagus, sweet corn and onions had no detectable pesticide residues on 90 percent or more of samples.

In 2009, USDA sampled organic lettuce. Of 387 samples, six different residues (including metabolites) representing five pesticides were detected. Most frequent were spinosad (18.3 percent of samples) and azadirachtin A/B (1.8 percent and 0.3 percent, respectively), both allowed for use in organic practices. Cypermethrin was found in one organic lettuce sample at 0.06 parts per million (ppm) where a tolerance of 10 ppm is established for conventionally-grown lettuce. DDE p,p', an environmental contaminant, was detected in one sample of organic lettuce. Three samples contained violative residues of phosmet oxygen analog; no tolerance is established for the parent compound, phosmet, in conventionally-grown lettuce.

Routine USDA testing also found at least **34 unapproved pesticides on washed cilantro**, the first fresh herb to be tested in the 20-year-old program. Of 184 cilantro samples (81 percent from the United States, 17 percent imported, and 2 percent of unknown origin), 94 percent had residue of at least one pesticide. Among the pesticides detected were diazinon and chlorpyrifos. In a separate issue, in March 2011, cilantro growers and distributors received a "guidance letter" from the FDA citing 28 positive salmonella findings in cilantro since 2004.

The conventional produce industry is countering EWG's message with its own message, as in this sentiment taken from The Packer: "The truth may be unpleasant, and counterintuitive, but eating fresh produce, with trace levels of pesticides, is indeed healthy. Consumers should fill half their plate with it. That message is worth spreading."

And consumers convey their message through their spending. The market share for organic produce increased from 3 percent in 2000 to 11.4 percent in 2009. ("EWG'S 2011 Shopper's Guide Helps Cut Consumer Pesticide Exposure," Environmental Working Group press release, June 13, 2011; www.ewg.org/foodnews/press/; "Best Friends Forever? Produce Growers and Pesticide Makers Deepen Their Bond," by Ken Cook, The Huffington Post, June 7, 2011; www.huffingtonpost.com/don-carr/produce-pesticides-_b_871749.html; "Fighting the good fight," The Packer, May 20, 2011; www.thepacker.com/opinion/fresh-produce-opinion/Fighting-the-good-fight-122358019.html; USDA Pesticide Data Program, Annual Summary, Calendar Year 2009; <http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELPRDC5091055>; "USDA testing finds 30-plus unapproved pesticides on the herb cilantro," by Monica Eng, Chicago Tribune, May 31, 2011; www.chicagotribune.com/health/ct-met-cilantro-pesticide-20110531,0,3058450.story?page=1)

In June 2011, in response to FDA tests showing residues of inorganic **arsenic in chicken** liver, Pfizer said it would suspend sales of 3-nitro roxarsone, an arsenic-containing drug used to kill parasites and promote growth in pigs and poultry. Organic arsenic, such as that used in roxarsone, can be irreversibly converted to the carcinogenic inorganic form of arsenic. Tests published by Consumer Reports in 2005 showed that arsenic was present in many chicken livers on the market but was not detectable in organic livers. Several other arsenic containing drugs for animals remain on the market in the United States (but are not used in organic production). This arsenic can harm human health and can end up in chicken manure that is routinely spread on agricultural land as fertilizer and in litter that is swept up and recycled as feed to cows on large-scale feedlots. ("Consumers Union Commends Pfizer Withdrawal of Arsenic-Containing Animal Drug," Consumers Union, June 8, 2011; "Pfizer Suspends Sales of Chicken Drug With Arsenic," by Gardiner Harris and Denise Grady, The New York Times, June 8, 2011; www.nytimes.com/2011/06/09/business/09arsenic.html?hpws)

The Rochester, N.Y.-based Empire State Consumer Project had five brands of apple juice and five of applesauce tested for arsenic. **Mott's apple juice** had five times the concentration of **arsenic** allowed in drinking water. No other samples tested positive. Motts uses apple concentrate from China, where arsenic-based pesticides are used. Last year the St. Petersburg Times found that Mott's had the highest arsenic concentrations among nine boxed apple juices tested. ("Group: Arsenic found in Mott's apple juice," by Steve Orr, Democrat and Chronicle,

July 22, 2011;

<http://www.democratandchronicle.com/article/20110722/NEWS01/107220338/Group-Arsenic-found-Mott-s-apple-juice?odyssey=tab|topnews|text|News>)

Exposure to three **pesticides** – paraquat, maneb and ziram – over several years increased the risk of **Parkinson's disease**. Researchers say their findings are the first strong evidence in humans that exposure to several pesticides increases risk of Parkinson's more than exposure to individual chemicals alone. Study subjects either worked or lived – or both – near fields sprayed with the chemicals. Those exposed at work had a greater risk of the disease than those exposed at home, while those who both live and work near treated fields were at greatest risk. A 2009 study found that people who lived near fields where maneb and paraquat were sprayed had a 75 percent increase in their risk for Parkinson's; and another published in 2011 found that people who used either paraquat or rotenone were 2 1/2 times more likely to suffer from Parkinson's. ("New science: More evidence on the Parkinson's link," Pesticide Action Network North America, June 2, 2011; www.panna.org/blog/new-science-more-evidence-parkinsons-link)

Environment Minister Ross Wiseman of **Newfoundland and Labrador** says the sale and cosmetic use of **2,4-D, carbaryl, mecoprop, dicamba and MCPA will be banned** for household lawns as of the 2012 lawn care season. The pesticides will still be allowed in agriculture, along roads and transmission lines, and on golf courses.

The World Health Organization classifies 2,4-D as a possible human carcinogen and potential hormone disruptor. The provinces of Quebec, Ontario, Nova Scotia, New Brunswick and Prince Edward Island have also banned 2,4-D use on lawns. ("Newfoundland and Labrador joins provinces outlawing cosmetic pesticides on lawns," by Sue Bailey, The Canadian Press, Newstalk 1290, CJBK radio, London, Ontario, July 14, 2011; www.cjbk.com/NationalCP/Article.aspx?id=294354)

Farm Bill

The Environmental Working Group (EWG) has listed information about the **farm bill**, which drives federal spending for farm, nutrition and conservation programs and is up for renewal in 2012. In 2010 alone, farm bill programs spent \$96.3 billion. Among the points the EWG makes are these:

- The farm bill doles out billions of taxpayer dollars in subsidies to the largest five commodity crops: corn, cotton, rice, wheat and soybeans – regardless of need. The payments mostly fail to help the nation's real working farm and ranch families. Since 1995, just 10 percent of subsidized farms – the largest and wealthiest operations – have gotten 74 percent of all subsidy payments.
- The Obama Administration says we should each eat half a plate of produce at meals. Yet only a tiny fraction of farm bill funding is for programs that support growing healthy produce.
- Some 90,000 checks went to wealthy investors and absentee landowners in more than 350 U.S. cities in 2010.
- The flawed subsidy system encourages farmers to grow as much acreage of industrial-scale, fertilizer- and pesticide-intensive crops as possible, with harmful effects on our environment and drinking water – and limiting the availability of organic food.

The Farm Bill does support the Supplemental Nutrition Assistance Program (formerly known as

the food stamp program); the Senior Farmers' Market Nutrition Program, which gives vouchers to seniors to buy food at farmers' markets; and the Fresh Fruit and Vegetable Program, which provides produce to schools.

Although conservation programs to protect water, soil and wildlife habitat largely go underfunded and unfulfilled, the farm bill provided more than \$4 billion in 2011 to help farmers conserve soil, clean up water and protect habitat for wildlife.

The EWG suggests calling the farm bill a food and farm bill. It wants the next farm bill to protect food assistance programs for those most in need; to shift a large chunk of farm subsidy dollars into conservation programs; to reform crop insurance – another lavish subsidy for producers, it says; and to encourage truly sustainable biofuels and biomass energy alternatives, instead of heavily subsidized and inefficient corn ethanol. (“Top 10 Things You Should Know About The Farm Bill,” June 27, 2011, Environmental Working Group; www.ewg.org)

Winter 2011-2012

The Good News

Organic farmer and U.S. **Rep. Chellie Pingree** has introduced the **Local Farms, Food and Jobs Act**, which addresses building slaughterhouses for local food processing, developing crop insurance programs for farmers who grow diverse crops, enabling schools to more easily serve local foods, and enabling the use of electronic benefit cards at farmers' markets. Pingree hopes that provisions in the Act will become part of the next Farm Bill. As we went to press, a companion bill was expected to be introduced in the Senate. (“Pingree unveils bill to benefit tens of thousands of local farmers,” by Jonathan Riskind, Portland Press Herald, Oct. 25, 2011; www.pressherald.com/news/pingree-unveils-bill-to-benefit-tens-of-thousands-of-local-farmers_2011-10-25.html)

Hatchet Cove Farm and Oyster River Farm, both in Warren and both conserved by the Georges River Land Trust, have been recognized as "**Forever Farms**" by Maine Farmland Trust – that is, farmland preserved through agricultural easements ensuring that the land will always be available for farming. Maine Farmland Trust is raising awareness of preserved farmland by increased publicity and signage for such farms. (“Two Warren farms to be preserved forever,” Village Soup, Oct. 18, 2011; <http://knox.villagesoup.com/news/story/two-warren-farms-to-be-preserved-forever/460155>; FMI: www.foreverfarms.org and www.maineFarmlandtrust.org)

The Maine YardScaping Partnership officially opened its 2.5-acre demonstration **YardScaping Gardens at Back Cove in Portland** in October. The intensive landscaping project showcases trees, shrubs and perennials – mostly native – that can make Maine gardens more sustainable through reduced use of fertilizers, pesticides and irrigation water. The gardens were made possible by grants from the U.S. EPA—Region 1 Pesticide Environmental Stewardship Program, the Davis Conservation Foundation, generous donations from local businesses and garden clubs, and the efforts of many local volunteers, including Master Gardeners and dedicated members of the more than 30 YardScaping partners. The gardens received the Friend of Casco Bay award from Friends of Casco Bay and the Gold Leaf Award for Outstanding Landscape Beautification

Activities from the International Society of Arboriculture, the latter presented to Gary Fish of the Maine Board of Pesticides Control staff. (“Award-Winning Back Cove Gardens Ready to Inspire More Sustainable Gardening,” Press Release, Maine Yardscaping Partnership, Oct. 14, 2011; www.yardscaping.org)

Four banks in Belfast, Maine – Bangor Savings, Camden National, Damariscotta Bank and Trust and Key Bank, have started **fee-free savings accounts for community-supported agriculture (CSA) programs**. The accounts are like Christmas Club savings accounts: Customers deposit money regularly so that it is set aside for joining a CSA program. Those enrolling in the accounts also get free membership in Maine Farmland Trust. (“New initiative designed to help connect farmers, customers,” by Abigail Curtis, Bangor Daily News, Oct. 13, 2011; <http://bangordailynews.com/2011/10/13/business/new-initiative-designed-to-help-connect-farmers-customers/>)

The USDA has awarded 36 **grants** totaling \$18 million to organizations that will **train and assist beginning farmers** and ranchers to help them run successful and sustainable farms and to become the next generation of U.S. farmers. “American agriculture supports 1 in 12 jobs in America, a critical contribution to the strength and prosperity of the country,” says Agriculture Deputy Secretary Kathleen Merrigan.

Among the grants, MOFGA and the Northeast Organic Farming Associations of New York, Vermont, Connecticut, Massachusetts, New Hampshire and New Jersey have been granted funds for their proposed project, “Cultivating a New Crop of Farmers from Apprenticeship to Independence.” This collaborative project will allow each organization to boost its beginning farmer outreach through educational programs, networking and overall support to aspiring and beginning farmers and to experienced farmers who help to train them.

All state chapters will launch an online apprentice and host farm directory to help match apprentices with host farms and farmer-trainers, and NOFA-NY will design, test and publish a tracking tool to guide beginning farmers’ progress through core farming competencies. In future years, a similar directory will be available to help experienced and new farmers find each other.

Each chapter will organize a Beginning Farmer workshop track at its annual educational winter conference and provide scholarships to beginning farmers. The NOFA Summer Conference will include similar opportunities. Spring, summer and fall in-field technical skills workshops will be held in each state, with opportunities in summer for participants to network with peers.

All chapters will develop a Journeyperson Farmer program, following MOFGA’s highly successful program that provides an educational stipend, resources and targeted support to newly independent farmers for two years. (USDA news release, Sept. 30, 2011; http://www.nifa.usda.gov/newsroom/news/2011news/09261_beginning_farmers.html; NOFA-NY press release, Oct. 4, 2011)

The Rodale Institute’s 30-year-long Farming Systems Trial of corn and soy production has shown that **organic farming can feed us better than conventional**, now and in the future. The trial has demonstrated that organic yields match conventional yields and, during droughts,

outperform conventional. Organic systems build rather than deplete soil organic matter; use 45 percent less energy and are more profitable than conventional. Conventional systems, meanwhile, produce 40 percent more greenhouse gases. (“The Farming Systems Trial, Celebrating 30 Years,” Rodale Institute, 2011; www.rodaleinstitute.org/fst30years)

An article in the Sept.-Oct. issue of *Agronomy Journal* that analyzes 18 years of crop yield and farm management data from a University of Minnesota trial shows that **an organic crop rotation was consistently more profitable and carried less risk** of low returns than conventional corn and soy production, even when organic price premiums were cut by half. (“Economic analysis reveals organic farming profitable in long term,” *The Independent*, Sept. 4, 2011; www.theindependent.com/articles/2011/09/04/news/ag/13854539.txt)

The USDA’s 2011 National Farmers Market Directory (<http://farmersmarkets.usda.gov>) shows **more than 1,000 new farmers’ markets** in the country. The annual report indicates that 7,175 farmers’ markets operate throughout the United States as more farmers are marketing their products directly to consumers than ever before. Last year, the USDA reported that 6,132 markets were operating across the country. (“More than 1,000 New Farmers Markets Recorded Across Country as USDA Directory Reveals 17 Percent Growth,” USDA news release, Aug. 5, 2011; www.usda.gov/wps/portal/usda/usdahome?contentid=2011/08/0338.xml)

Growing food locally creates jobs, keeps money in local economies, promotes community development, and can reduce the environmental and public health costs of the food we eat. Maximizing these benefits requires new policies to help local and regional food systems thrive and expand, according to “Market Forces,” a Union of Concerned Scientists report. The report recommends increasing funding for programs that support local and regional food systems; raising the level of research on the impacts of local and regional food systems; restructuring the safety net and ensuring credit accessibility for local food system farmers; fostering local capacity to help implement local and regional food system plans; and supporting the realization of farmers’ market certification standards.

Modest public support for up to 500 farmers’ markets each year could create as many as 13,500 jobs over a five-year period, says the report. Such local and regional food systems create jobs and raise incomes in the areas they serve, keeping customers’ food dollars active in the local economy as farmers increase spending on inputs and equipment to meet growing demand.

Local food outlets can also catalyze local economic development, as people who shop at farmers’ markets will likely patronize neighboring businesses as well.

The growth of local and regional food systems also promotes healthier eating habits. People who shop at farmers’ markets tend to have more produce in their shopping bags. Also, food sold through direct marketing channels tends to be relatively less processed, which can save energy.

Challenges to expanding local and regional food systems include geographical and seasonal constraints, logistical and marketing issues, and policies geared toward commodity crop producers. (“Market Forces: Creating Jobs through Public Investment in Local and Regional Food Systems,” Union of Concerned Scientists,” Union of Concerned Scientists, July 27, 2011;

www.ucsusa.org/food_and_agriculture/solutions/big_picture_solutions/market-forces.html?utm_source=SP&utm_medium=more&utm_campaign=sp-more-marketforces-08-04-11)

Maine’s medical marijuana statute LD 1296, “An Act to Amend the Maine Medical Use of Marijuana Act To Protect Patient Privacy,” became law in September.

The amended law eliminates mandatory state registration for medical marijuana users and requirements that patients disclose their medical condition; makes registration optional for primary caregivers growing medical marijuana for family or household members; allows outside cultivation for those who grow their own; and adds provisions that protect patients from search, seizure and prosecution. The Medical Marijuana Caregivers of Maine (mmcmonline.org) provides more information about the subject. (“Medical pot farmers seek advice, share tips,” by Nok-Noi Ricker, Bangor Daily News, Aug. 10, 2011; <http://bangordailynews.com/2011/08/10/news/bangor/farmers-potential-caregivers-attend-brewer-medical-marijuana-meeting/>)

The Organic Center’s report “Transforming Jane Doe’s Diet” determines the **nutritional quality and pesticide risk of a typical diet** for a 30-year-old woman and shows how modest changes can deliver immediate nutritional benefits and improve an average person’s long-term health.

Jane Doe’s “before” diet mirrors what an average woman may eat in her 20s. By age 30, Doe has gained 10 pounds due to her diet. To prevent further weight gain and to plan for her first pregnancy, she pays closer attention to her dietary choices. Her “after” diet replaces several high-calorie foods with nutrient-dense produce-based products, and she purchases mostly organic produce and grain-based products. More than half of Jane’s “before” diet remains unchanged. Her few simple modifications increase her daily intake of fruits and vegetables from 3.6 to 12.3 servings, her overall nutritional quality by 79 percent (based on comparing intakes of 27 essential nutrients), and reduce her pesticide risk by more than two-thirds. Jane Doe also consumed 10 fewer calories per day – enough to prevent long-term weight gain approaching 10 pounds per decade, assuming she remains at least as active as in her 20s.

These are the top changes Jane made:

1. Whole wheat instead of white bread
2. Peanut butter instead of butter
3. Fresh, organic strawberries instead of strawberry jam
4. Plain yogurt topped with fruit instead of fruit-filled yogurt
5. Tomato juice instead of a lemon-lime soda
6. 50 percent whole wheat pasta instead of white pasta
7. One whole apple instead of apple pie
8. Light cream instead of coffee creamer

(“The Organic Center Releases Groundbreaking Report Quantifying the Nutritional and Quality and Pesticide Risk Level of an Average Daily Diet,” www.organic-center.org/science.nutri.php?action=view&report_id=190)

Scarborough's public properties will no longer be treated with synthetic pesticides, except in an emergency, thanks to Citizens for a Green Scarborough. Instead, the town will use only organic pesticides. The town will create a Pest Management Advisory Committee and a policy to alert residents when any pest management product is used on town land. ("Scarborough bans synthetic pesticides on town property," by Mario Moretto, The Forecaster, Sept. 22, 2011; www.theforecaster.net/content/s-scarborough-town-council-092311)

Projected demand for organic foods may require up to 42,000 organic farmers by 2015, triple the 14,000 of today, says a Sept. 2011 report called "**Organic Farming for Health and Prosperity**" from the Organic Farming Research Foundation (OFRF). The United States currently has 980,000 farmers. The growth of the organic sector, from \$3.6 billion in 1997 to \$29 billion in 2010, and the increased labor intensity on some organic farms will fuel the job growth. Organic farming has health and environmental benefits, too. For example, "The world's soils, if managed carefully, could capture an estimated 5-15 percent of global emissions released by burning fossil fuels, or 0.4-1.2 gigatons of carbon per year," says the report. The OFRF wants Congress to increase funding for organic research; create fair and appropriate insurance options for organic farms – including coverage for contamination by neighboring genetically engineered crops, extended coverage for cover crops and double crops; increase regulations on pesticides and genetically engineered crops; and enable government institutions to buy more organic foods. ("Organic Farming for Health and Prosperity," Organic Farming Research Foundation, Sept. 2011; <http://ofrf.org/publications/OrganicFarmingforHealthandProsperity.pdf>)

Belfast Cohousing & Ecovillage, a socially and environmentally innovative neighborhood in Belfast, Maine, will feature 36 furnace-free homes with a 90 percent savings in home heating that will not require the use of fossil fuels. The clustered homes, expected to be completed by December 2013, will be based on the German "Passive House" (energy) Standard and will be so energy efficient that it is said a hairdryer could heat the homes in winter. With only 13 certified Passive House homes in the country, if the residents choose to certify their homes, the project may become the largest of its kind in the nation.

In recognition of Belfast Cohousing and Ecovillage's creative and forward-thinking approach to development, the project recently received the People's Choice Award from the Natural Resources Council of Maine, given annually to an individual or group whose actions have made a real difference in protecting Maine's environment. The 36 private homes, two-third of them spoken for already, will range from 500 to 1,700 square feet, with current base prices ranging from \$150,000 to \$333,000. A Common House also planned for the 42-acre parcel will have a commercial kitchen for optional group meals, root cellar, freezer room, laundry, office and studio space, library, children's playroom and guest rooms. Belfast Cohousing & Ecovillage is reserving 85 percent of its land for agricultural use and open space. Some future residents plan to farm collaboratively, and the group is seeking a farmer to be part of the neighborhood. (www.mainecohousing.org)

Researchers say that **we will be able to feed Earth's 9 billion** population expected by 2050 if we halt farmland expansion in the tropics, close yield gaps on underperforming lands, use agricultural inputs more strategically, shift diets and reduce food waste. A team of scientists from the University of Minnesota, University of Wisconsin, McGill University, UC Santa Barbara, Arizona State University, Stockholm Resilience Centre at Stockholm University, Stockholm

Environment Institute and the University of Bonn say that farm and ranch lands now cover nearly 40 percent of Earth's land area. Modern agriculture has increased crop yields, but those increases are slowing; and one-third of crops are used for livestock feed, biofuels and other nonfood products. Modern agriculture has cleared 70 percent of all grasslands, half of all savannas, 45 percent of temperate deciduous forests and 27 percent of tropical forests. Irrigation, fertilizer use and other practices have increased water pollution, local water shortages and energy use and are large contributors to greenhouse gases. The researchers propose halting farmland expansion, particularly in tropical rainforests, through incentives such as paying for ecosystem services, certification and ecotourism; closing yield gaps in parts of Africa, Latin America and Eastern Europe by improving use of existing crop varieties, better management and improved genetics; using inputs more strategically; dedicating croplands to direct human food production or shifting animal feed and biofuel crops away from prime cropland; and reducing waste (one-third of the food farms produce is discarded, spoiled or eaten by pests). The team recommends using the best of conventional, organic, industrial, local, biotech and other methods to create a sustainably intensified global food system without compromising the global environment. ("International team crafts plan to feed world and protect planet," by Jeff Falk, University News Service, Oct. 12, 2011; www1.umn.edu/news/news-releases/2011/UR_CONTENT_358824.html)

Genetic Engineering (GE)

The USDA Animal and Plant Health Inspection Service (APHIS) has determined that Bayer CropScience's TwinLink **cotton**, engineered to tolerate the herbicide glufosinate and to resist several insect pests, and Monsanto's insect resistant **soybean**, MON 87701, are no longer subject to APHIS regulations as they are unlikely to pose a plant pest risk. (USDA Animal and Plant Health Inspection Service news releases; www.aphis.usda.gov/newsroom/2011/10/status_insect_resistant_soybean.shtml; www.aphis.usda.gov/newsroom/2011/10/status_pest_resistant_cotton.shtml)

Twenty Indian, Southeast Asian, African and Latin American food and conservation groups say that genetic engineering has not increased yields of food crops but has **increased synthetic chemical use and growth of superweeds** – which farmers are fighting with even more herbicides. Soy growers in Argentina and Brazil use twice as much herbicide on GE crops as on non-GE, says one study, and Indian growers use 13 times more pesticide since insect resistant Bt cotton was introduced, according to another. Farmers use GE seeds because governments are heavily lobbied to encourage them to do so, and because GE companies are buying local seed companies and removing non-GE seeds from the market. Monsanto, Dupont and Syngenta now control almost 70 percent of global seed sales. Friends of the Earth International, the Center for Food Safety, Confédération Paysanne, the Gaia Foundation and others back the report, which also cites studies and reports suggesting that people and animals have had allergic reactions to GE crops. ("GM crops promote superweeds, food insecurity and pesticides, say NGOs," by John Vidal, The Guardian, Oct. 19, 2011; www.guardian.co.uk/environment/2011/oct/19/gm-crops-insecurity-superweeds-pesticides)

In October, the Center for Food Safety (CFS) filed a legal petition with the U.S. FDA demanding that the agency require the **labeling of all food produced using genetic engineering**. CFS prepared the legal action on behalf of the Just Label It campaign, a coalition of more than 350

companies, organizations, scientists, doctors and individuals dedicated to food safety and consumer rights. In 1992, the FDA issued a policy statement that GE foods were not “materially” different and thus did not need to be labeled. It defined “material” as the ability of a change to be tasted, smelled or known through the other senses. The differences between GE and conventional foods are underscored by the fact that they are patented for their novelty, yet they remain unlabeled. GE crops also carry significant novel environmental harms, such as transgenic contamination of natural crops and massive increases in pesticide use. (“Groups File Legal Petition With FDA Demanding Labeling of Genetically Engineered Foods,” Center for Food Safety, Oct. 4, 2011; www.centerforfoodsafety.org)

The National Biodiversity Authority of India **is suing Monsanto over its GE insect-resistant eggplant**. The Bangalore-based Environment Support Group alleges that Monsanto violated India’s Biological Diversity Act of 2002 by engineering nine local eggplant varieties to produce the Bt toxin without approval from the Biodiversity Authority. The Maharashtra Hybrid Company in Mumbai, Monsanto’s Indian partner, says it incorporated the Bt gene into varieties provided by the University of Agricultural Sciences at Dharwad in Karnataka state and provided the technology “royalty free.” (“India Sues Monsanto Over Genetically-Modified Eggplant,” by William Pentland, Forbes, Aug. 12, 2011; www.forbes.com/sites/williampentland/2011/08/12/india-sues-monsanto-over-genetically-modified-eggplant/)

After Bavarian beekeepers who live near a test plot of Monsanto’s GE Bt corn said that their **honey was contaminated by the corn pollen**, the EU’s highest court ruled that honey with trace amounts of pollen from GE corn must be labeled and authorized for safety before it can be sold as food. (“EU bans GM-contaminated honey from general sale,” by Leigh Phillips, The Guardian, Sept. 7, 2011; www.guardian.co.uk/environment/2011/sep/07/europe-honey-gm)

Some **western corn rootworms** in Iowa have become **resistant to Bt** since Monsanto’s GE Bt corn, which makes a crystalline protein called Cry3Bb1, has been widely grown. Genetic engineers are now studying a technique called RNA interference to create plants that would turn off an essential gene in insects. (“Monsanto Corn Plant Losing Bug Resistance,” by Scott Kilman, Wall Street Journal, Aug. 29, 2011; <http://online.wsj.com/article/SB10001424053111904009304576532742267732046.html>)

Agri-Mark Inc., the parent company of Vermont’s Cabot Creamery Cooperative, is being **fined \$65,000** by the state of Vermont for overstating claims that some of its products come from cows that were not treated with the **GE hormone rBST** (recombinant Bovine Somatotropin, or recombinant Bovine Growth Hormone). The company will also have to donate \$75,000 worth of dairy products to food banks and must change its labels to accurately reflect the rBST status of its products. (“Vt. cheese maker to scale back hormone claims,” The Associated Press, Aug. 3, 2011; www.pressherald.com/business/Vt-cheese-maker-to-scale-back-hormone-claims-.html)

Monsanto’s GE sweet corn, engineered to express the Bt toxin in all plant parts and to resist Roundup herbicide, was slated **to enter the U.S. fresh corn market this fall**. Syngenta has had GE Bt sweet corn on the market for more than a decade. (“Monsanto to Sell Biotech Sweet Corn for U.S. Consumers,” by Jack Kaskey, Bloomberg, Aug. 4, 2011)

www.bloomberg.com/news/2011-08-04/monsanto-to-introduce-engineered-sweet-corn-in-u-s-this-year.html)

The **Obama administration awarded a \$500,000** National Institute of Food and Agriculture research grant to financially strapped AquaBounty, which wants the FDA to approve its **GE salmon** for sale. The engineered salmon contains a growth hormone gene from the Chinook salmon and DNA from the ocean pout. Together, the genes promote nonstop growth in the engineered salmon, which grow up to six times as fast as non-engineered salmon. (“Obama administration 'bailed out' GM salmon firm,” Suzanne Goldenberg, The Guardian, Oct. 18, 2011; www.guardian.co.uk/environment/2011/oct/18/gm-salmon-aquabounty)

Antibiotics

University of Maryland School of Public Health scientists tested for **enterococci bacteria** in poultry litter, feed and water **on 10 conventional and 10 farms that had recently become organic**. On conventional farms, 67 percent of *Enterococcus faecalis* were resistant to the antibiotic erythromycin; on organic farms, 18 percent. Forty-two percent of the bacteria from conventional farms were resistant to multiple drugs, compared with 10 percent from organic farms. (“Organic farming reduces resistance of bacteria to antibiotics, study finds,” by Rob Stein, Washington Post, Aug. 10, 2011; www.washingtonpost.com/blogs/the-checkup/post/organic-farming-reduces-resistance-of-bacteria-to-antibiotics-study-finds/2011/08/09/gIQAyMd74I_blog.html)

Recently, the USDA posted but later removed from its National Agricultural Library website a technical review of the link between **factory farmed animals** and increasing **antibiotic-resistant infections**. The Union of Concerned Scientists retained a cached version of the review, written by Vaishali Dharmarha of the University of Maryland. The U.S. meat industry uses 29 million pounds of antibiotics per year – 80 percent of U.S. antibiotic use – largely to promote growth, not to treat infections; while U.S. humans use just over 7 million pounds per year. Justin Tatham of the Union of Concerned Scientists told Tom Philpott of Mother Jones: “As a science-based group, we're concerned about how the USDA is withholding this information from the public.” (“What the USDA Doesn't Want You to Know About Antibiotics and Factory Farms,” by Tom Philpott, Mother Jones, July 29, 2011; <http://motherjones.com/tom-philpott/2011/07/what-usda-doesnt-want-you-know-about-antibiotics-and-factory-farms>; Original report: www.bibliotecapleyades.net/archivos_pdf/focus-antimicrobial-resistance.pdf)

Food Safety

Purdue University researchers have found that **E. coli and Salmonella can live inside plant tissues** as well as on the surface, so just washing produce may not eliminate all bacteria. The researchers exposed peanut seedlings to *Salmonella* and mung bean sprouts to *E. coli* O157:H7. After growing the plants, they used a process called immunocytochemistry to observe bacteria inside the plant. The process keeps bacteria where they originally were when researchers cut plants, preventing contamination of internal tissues with surface bacteria. The bacteria appeared in all major plant tissues. The researchers emphasize that cooking can kill these pathogens, and that the risk of illness from eating contaminated food is relatively low – but it is increasing.

("Illness-causing bacteria may linger inside fresh produce," by Taya Flores, Journal and Courier online, Aug. 22, 2011; www.jconline.com)

Animal ID

The USDA already has **traceability requirements** as part of existing **animal disease** control programs. Now a proposed rule expands which animals must be identified, including young feeder cattle, which are processed at a young age and never enter the breeding herd. The proposed rule would require livestock producers, related businesses, and state livestock agencies to track animals that cross state lines – with few tangible benefits to farmers or customers. The deadline for commenting on the rule is Dec. 9, 2011, at

www.regulations.gov/#!submitComment;D=APHIS-2009-0091-0001; or Docket No. APHIS–2009–0091 Regulatory Analysis and Development PPD, APHIS, Station 3A–03.8 River Road Unit 118 Riverdale, MD 20737–1238

The proposed rule is posted at

www.aphis.usda.gov/traceability/downloads/2011/Proposed%20Rule.pdf. USDA's regulatory analysis, including its analysis of costs of the program and alleged benefits to the export market, are posted at

www.aphis.usda.gov/traceability/downloads/2011/Regulatory%20Impact%20Analysis.pdf.

("USDA Extends Deadline for Public Comments on New Animal ID Rule," Cornucopia Institute, Oct. 7, 2011; www.cornucopia.org)

Big Ag

A new organization called the **U.S. Farmers & Ranchers Alliance** (www.fooddialogues.com) wants to use its \$11 million annual budget to "reshape the dialogue" about U.S. food and **to fight criticism of industrial agriculture**. Its members come from such big ag entities as the American Egg Board and the National Pork Board. Founding member Chris Galen from the National Milk Producers Federation was quoted as saying that Americans' concerns about the food supply "are best addressed by farmers." The Alliance's budget comes in part from marketing fees and from corporations, including an annual \$500,000 each from Monsanto and DuPont. Bob Stallman, president of the American Farm Bureau, chairs the Alliance, and state Farm Bureau federations make up many of the Alliance's members. ("In Debate About Food, a Monied New Player," by Charlotte Richardson, The New York Times, Sept. 27, 2011;

www.nytimes.com/2011/09/28/dining/in-debate-about-food-a-monied-new-player.html?_r=1)

Monsanto began marketing its ready-to-eat **Beneforté broccoli** last year, a conventionally bred (non-GE) hybrid advertised as a "naturally better broccoli" that "boosts the body's antioxidant enzymes at least 2 times more than other broccoli" because it has, per serving, two to three times more of the phytonutrient glucoraphanin [a type of glucosinolate] than other leading broccoli varieties grown under similar conditions, according to Monsanto. The company says this antioxidant "help[s] maintain your body's defenses against the damage of environmental pollutants and free radicals." Grist writer Andy Bellatti asks whether Monsanto's broccoli will help fight against health problems related to herbicides; and how the broccoli compares with other varieties grown under organic conditions. ("Busting Monsanto's 'better' broccoli," by Andy

Bellatti, Grist, Sept. 28, 2011; www.grist.org/industrial-agriculture/2011-09-28-busting-monsantos-better-broccoli)

Nanoparticles

Nanomaterials – particles from 1 to 300 nanometers in size – are as small as 1/100,000 the width of a human hair and can move into skin, lungs and blood. They have been used in foods, cosmetics, computers, clothes and more since the 1990s, with almost no regulation and without required labeling. Now scientists are questioning their safety, and in June 2011, the EPA and FDA announced their intent to issue voluntary guidance to industry on these products. Nanomaterials include titanium dioxide used in food, toothpaste, medications and more, and nanosilver used to counter bacteria, mold and mites in socks, toys, baby products and more. Nanoparticles can also make poisons more bio-available in **pesticides**. Scientist Robert Schiestl from UCLA has found that mice exposed to nano-sized titanium dioxide, zinc oxide and cadmium oxide suffered DNA and chromosomal damage. Other studies have found that rats that inhaled nanoparticle titanium dioxide developed lung cancer, while mice had organ damage. Still others associate nanoparticles with eczema and possibly with some cancers; and nanosilver was highly toxic to soil bacteria, including a nitrogen fixing bacterium, and may be toxic to aquatic organisms. The U.S. government provided a \$1.6 billion subsidy to the nanotech industry last year. The Project on Emerging Technologies (www.nanotechproject.org/) lists many products that contain nanoparticles. (“Tiny nanoparticles could be a big problem,” by Alex Roslin, July 21, 2011

www.straight.com/article-404589/vancouver/tiny-nanoparticles-could-be-big-problem; “Racing Ahead: U.S. Agri-Nanotechnology in the Absence of Regulation,” by Dr. Steve Suppan, June 29, 2011, Institute for Agriculture and Trade Policy, www.iatp.org/documents/racing-ahead-us-agri-nanotechnology-in-the-absence-of-regulation)

Pesticides

Maine Board of Pesticides Control News

By Katy Green

On October 7, the Maine Board of Pesticides Control (BPC) held a public hearing to discuss three proposed rule changes and one new rule chapter. Laws passed by the Maine State Legislature last session, which left little room for discussion at the board level, mandated two of the changes. One specifies that the current 500-foot notification distance contained in Chapter 28 of the board’s rules be modified to allow for notification up to 1,000 feet for aerial applications. This seems good on the surface, but, as MOFGA’s associate director Heather Spalding noted in her comments, this is really a loss, because the distance for the notification registry that was abolished with this bill was 1,320 feet. Representatives Jim Dill (D-Old Town) and Jeffrey Timberlake (R-Turner) attended the meeting and did not provide public comment during the hearing, but did speak in support of notification as a needed process. Both, who previously voted to repeal the registry, are on the Joint Standing Committee on Agriculture, Conservation and Forestry and are in a good position to bring back the notification registry if they stand by their statements to the board and choose to do so.

Another agenda item at the public hearing was a request from Laughlin Titus of Ag Matters LLC to eliminate the current BPC requirement for training before purchasing or using genetically engineered corn containing *Bacillus thuringiensis* (Bt) genes. Since this item was at the request of a member of the public, rather than mandated by law, the board has flexibility in how it deals with the request and with the public comments. Spencer Aitel, who owns and operates the certified organic Two Loons Farm in South China, spoke in opposition to the rule change, as did MOFGA, citing among other things recent findings of pest resistance to Bt corn in the Midwest.

The board has changed composition since its last meeting. Leaving are Dan Simonds, who was the chair and a forestry consultant from Rangeley, and Tom Qualey, a potato grower from Sherman. Governor LePage appointed Clark Granger of Woolwich to provide forestry expertise and Bruce V. Flewelling, a potato grower from Easton, to provide agricultural expertise. Granger is not a stranger to BPC activities, having recently submitted comments supporting the Special Local Need registration for the use of Diazinon on balsam fir, an issue highlighted in the fall 2011 issue of *The Maine Organic Farmer & Gardener*.

Consent Agreements

Board staff recently negotiated a consent agreement with William Gurrisi of Winchester, Mass., for an alleged pesticide application into Lake Sherburne in Waterboro, Maine. This agreement was unusual in that the person who contacted the BPC did not witness the incident, but was alerted to it by someone who did. Gurrisi was allegedly seen flinging something into the water, and when asked what it was by the witness, he allegedly said it was a weed killer. When a BPC inspector confronted Gurrisi about that statement, Gurrisi denied making the application. The BPC inspector returned a week later with a Department of Environmental Protection staffer to collect a water sample from the location where the application was supposedly made. The sample tested positive for 2, 4-D, an aquatic herbicide that by law should be sold in Maine only to licensed applicators. Gurrisi maintains he did not apply the pesticide, but agreed to pay the \$250 fine in an effort to end this matter.

[End of BPC news]

Glyphosate, the active ingredient in Monsanto's herbicide **Roundup, has been found in every stream** sampled and in most air samples taken in Mississippi, according to two recent United States Geological Survey studies. Agricultural use of glyphosate increased from less than 11,000 tons in 1992 to more than 88,000 tons in 2007. "Though glyphosate is the mostly widely used herbicide in the world, we know very little about its long term effects to the environment," says USGS chemist Paul Capel. "This study is one of the first to document the consistent occurrence of this chemical in streams, rain and air throughout the growing season." The EPA is assessing the safety and effectiveness of the herbicide. Meanwhile, USDA microbiologist Bob Kremer says that continued use of glyphosate may cause fungal diseases in crop roots, leading to nutrient deficiencies that may limit yield. ("Widely Used Herbicide Commonly Found in Rain and Streams in the Mississippi River Basin," USGS Newsroom, Aug. 29, 2011; <http://www.usgs.gov/newsroom/article.asp?ID=2909>; "Roundup herbicide research shows plant, soil problems," by Carey Gillam, Reuters, Aug. 12, 2011; www.reuters.com/article/2011/08/12/us-glyphosate-idUSTRE77B58A20110812)

Data from 1,988 participants in a Finnish study showed a higher risk for **type 2 diabetes** among overweight adults with highest concentrations of some **organochlorine pesticides** in their blood, suggesting that pollutants and body fat may act synergistically. Organochlorine chemicals are known to affect hormone function and to concentrate in fatty tissues. (“Association Between Type 2 Diabetes and Exposure to Persistent Organic Pollutants,” by Riikka Airaksinen et al., Diabetes Care, American Diabetes Assoc., Aug. 4, 2011; <http://care.diabetesjournals.org/content/early/2011/07/26/dc10-2303.abstract>; “More evidence links pesticides, diabetes,” by Amy Norton, Reuters, Aug. 17, 2011; www.reuters.com/article/2011/08/17/us-more-evidence-links-pesticides-diabet-idUSTRE77G45120110817)

The EPA has banned the sale of **DuPont’s herbicide Imprelis, linked to thousands of U.S. tree deaths**, while it reviews the broadleaf weed killer. DuPont is planning a refund program and is facing lawsuits because of the damage. Balsam fir, Norway spruce and white pines were especially susceptible to the herbicide. Imprelis can also persist in grass clippings from treated lawns, so these should not be added to compost. (“E.P.A. Bans Sale of Tree-Killing Herbicide,” by Jim Robbins, The New York Times, Aug. 11, 2011; www.nytimes.com/2011/08/12/science/earth/12herbicide.html?hpw)

In a case involving a 12,000-acre organic farm, the Minnesota Court of Appeals has ruled that **pesticides that cross property lines constitute trespassing**; furthermore, when grower Oluf Johnson couldn’t sell the crop in the organic market, he was entitled to damages from the pesticide applicator. Most jurisdictions consider pesticide drift as trespass. (“Wafting poison makes fertile ground for suit in Stearns County,” by Josephine Marcotty, Star Tribune, July 25, 2011; www.startribune.com/126151483.html)

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The Good News

A gift of **\$10.85 million from the Harold Alfond Foundation** will help **the Kennebec Valley Community College (KVCC)** in Fairfield expand, and will support the Good Will-Hinckley school's new **Maine Academy of Natural Sciences**. The money will be used to buy 600 acres (including an organic farm for KVCC’s associate degree in agricultural sciences) and 13 buildings at Good Will-Hinckley so that KVCC can enroll up to 2,000 more students. The state of Maine has also appropriated \$750,000 to support the new college campus, and \$530,000 annually to Good Will-Hinckley for operating costs. (“Alfond Gift to Benefit Maine Community College and Magnet High School,” Maine Public Broadcasting Network, Jan. 23, 2012; www.mpbnet.com/News/MaineHeadlineNews/tabid/968/ctl/ViewItem/mid/3479/ItemId/19917/Default.aspx#.Tx2gWAO1N9Y.facebook)

A \$200,000 grant from the federal Northern Border Regional Commission will help build a \$1 million **vegetable processing plant in Van Buren, Maine**. The USDA’s Rural Development loan program and local contributions are also helping fund the plant. The town of Van Buren will own the structure, leasing to Northern Girl, LLC, which will process Maine-grown produce,

according to Marada Cook of Northern Girl and Crown O' Maine Organic Coop. Northern Girl has been working on its product line in a leased kitchen in Limestone. The new plant will employ up to 40 people. ("Federal grant helps fund \$1 million food processing plant in Van Buren," by Julia Bayly, Bangor Daily News, Nov. 19, 2011;

<http://bangordailynews.com/2011/11/19/business/federal-grant-helps-fund-1-million-food-processing-plant-in-van-buren>)

Maine Feeding Mainers is looking for individuals or a team of people who are available and willing to **glean** at farms that have produce left in their fields. Contact Nancy Perry at the Good Shepherd Food Bank, nperry@gsfb.org or 782-3554 ext. 1109.

MOFGA certified organic farmer **Jim Gerritsen**, president of the Organic Seed Growers and Trade Association, was a prominent part of a march organized by the **Occupy Wall Street** food justice committee and Food Democracy Now this winter. Gerritsen told The New York Times, "I have not spoken to one farmer who doesn't understand the message of Occupy Wall Street... It's very clear. Because of business and corporate participation in agriculture, farmers are losing their livelihoods... if it goes on like this, all we're going to have to eat in this country is unregulated, imported, genetically modified produce. That's not a healthy food system." ("A Maine Farmer Speaks to Wall Street," by Julia Moskin, Dec. 5, 2011;

<http://dinersjournal.blogs.nytimes.com/2011/12/05/a-maine-farmer-speaks-to-wall-street/>. A video of Gerritsen's speech appears at www.huffingtonpost.com/dave-murphy/video-farmers-march-with-b_1149622.html)

The Maine Center for Economic Policy has found that **every \$100 spent at locally owned Portland businesses contributes an additional \$58 to the local economy**, while \$100 spent at a representative national chain store in Portland yields just \$33 in local economic impact. Also, based on 2007 retail sales figures, shifting just 10 percent of consumer spending in Cumberland County from national chains to locally owned businesses would add \$127 million in economic activity, supporting 874 new jobs and generating more than \$35 million in wages. The study was commissioned by the Portland Independent Business & Community Alliance. ("New Study Finds Buying Locally Pays Big Dividends for Maine's Economy," Portland Downtown press release, Dec. 6, 2011; www.portlandbuylocal.org)

College of the Atlantic on Mount Desert Island is receiving \$1 million from the Partridge Foundation **to expand its work in sustainable agriculture**. About 75 percent of the money will fund scholarships for rural New England students interested in focusing on sustainable agriculture. The grant will expand the college's Sustainable Agriculture program and will help support its Beech Hill Farm, an organic farm and orchard that provides produce for the college, often employing COA students and graduates. The grant will also offer on-site farm housing for students and interns; will enable the college to buy some abutting acreage; will be used to purchase a dedicated farm van; and will cover development of a multi-disciplinary, farm-based high school summer program for college credit. (College of the Atlantic press release, Sept. 13, 2011)

In 2010,

Alice Elliott of Richmond, Maine, harvested **642 pounds of vegetables**, with a value of \$2,102.48 according to mean prices in MOFGA's organic price report, from her **500-square-foot**

garden. Her gardening expenses for the year were \$317. Follow Elliott's gardening experiences on her blog, www.henbogle.com. ("Harvests offer payoffs for gardeners at many levels," by Henry Homeyer, Nashua Telegraph, Nov. 2, 2011; www.nashuatelegraph.com/livinglifestyles/938490-224/harvests-offer-payoffs-for-gardeners-at-many.html)

In January 2011, Clif Bar Family Foundation, through its Seed Matters initiative, awarded \$375,000 in grants to fund three Ph.D. fellowship students in organic plant breeding – the **first fellowships in organic plant breeding** ever granted in the United States. Seed Matters seeks to reinvigorate public seed research and education in order to provide organic farmers with new varieties of seed adapted to organic systems and to cultivate the next generation of thought leadership in organic research, education and entrepreneurship. The fellowship recipients were Brook Brouwer of Washington State University and two recipients who will begin this fall at University of Wisconsin-Madison and Washington State University. Students will work under noted organic plant breeders Dr. Stephen Jones and Dr. Kevin Murphy at Washington State and Dr. William Tracy at University of Wisconsin-Madison. (Press release, Seed Matters, Jan. 17, 2012; www.seedmatters.org; for information about Clif Bar Family Foundation grants that support the food system and communities, enhance public health and safeguard the environment and natural resources, visit www.clifbarfamilyfoundation.org.)

Organic crop systems can have similar yields and much higher economic returns than a conventional corn-soybean rotation, according to 13 years of data from Iowa State University's Neely-Kinyon Research and Demonstration Farm. The Long-Term Agroecological Research Experiment (LTAR) is led by Iowa State professor Kathleen Delate, who says that the transitioning years are the hardest but can be competitive with conventional crops even then. Over 13 years, mean yields of organic corn, soy and oats equaled or slightly exceeded conventional, and a 12-year mean for alfalfa and an 8-year mean for winter wheat showed no significant difference between organic yields and the Adair County average. Also, mean returns from organic systems were calculated to be roughly \$200 per acre more than for conventional. Total nitrogen increased by 33 percent in the organic (manure amended) plots, which also had higher concentrations of carbon, potassium, phosphorous, magnesium and calcium. The results suggest that organic farming can foster more efficient nutrient use and higher carbon sequestration. Weed control in organic plots included timely tillage and longer rotations. Allelopathic chemicals from rye and alfalfa help control weeds, as does growing an alfalfa cover crop in winter, which provided cover for beneficial insects and animals. LTAR's findings concur with those from the Rodale Institute's 30-year Farming Systems Trial in Pennsylvania, which concluded that organic systems can provide similar yields to and greater profits than conventional. In addition, organic crops required 45 percent less energy, and contributed significantly less to greenhouse gas emissions. Organic corn was especially profitable during droughts, when yields were 31 percent higher than conventional. ("Long-running experiment shows organic farming is profitable," Nov. 15, 2011; www.leopold.iastate.edu/news/11-15-2011/long-running-experiment)

In a Thomson Reuters-NPR poll, **58 percent** of respondents said that given a choice, they **prefer to eat organic food** – about one-third to support local farms and one-third to avoid toxins (sic) in their food. Others cited environmental reasons and taste. Of those who preferred non-organic

food, 54 percent cited price as the main reason; 21 percent, availability; 13 percent, better taste; and 11 percent said non-organic foods are safer. Respondents prefer to get produce at a farmers' market (43 percent), followed by supermarkets (32 percent), home gardens (20 percent) and farm co-ops (5 percent). (Thomson Reuters-NPR Health Poll: Organic Food. June 2011; www.factsforhealthcare.com/pressroom/NPR_report_OrganicFoods.pdf)

A poll of almost 1,300 U.S. families, conducted for the Organic Trade Association (OTA) and Kiwi Magazine, found that **78 percent of U.S. families say they are choosing organic foods**. Four in 10 families say they are buying more organic products than they were a year ago – in line with OTA's 2011 Organic Industry Survey, which showed U.S. organic industry growth of 8 percent in 2010. Forty-eight percent of parents surveyed said their strongest motivator for buying organic is their belief that organic products “are healthier for me and my children.” Other motivators included concern over effects of pesticides, hormones and antibiotics on children, and the desire to avoid highly processed or artificial ingredients. Nearly a decade after the federal rules for organic were implemented, 72 percent of parents are now familiar with the USDA Organic seal; three in 10 U.S. families are new entrants to the organic marketplace. (Organic Trade Assoc. press release, Nov. 2, 2011; www.ota.com)

Customer loyalty is pushing organic produce sales more than those of conventional produce, according to The Packer. Organic produce represented 5.5 percent of produce department dollar sales in year ending July 30, 2011, with mean sales of \$2,338 per store per week, 10.1 percent more than in the previous year. Between 2006 to 2010, organic produce sales increased 173 percent, with greatest growth in packaged salads, berries, apples, lettuce and cooking greens. Among organic fruits, top sellers are, in descending order, berries, apples, bananas, citrus and grapes. A 2010 Internet survey of 1,000 consumers by Perishables Group found that 6 percent regularly thought about purchasing organic produce; 10 percent sometimes look for and purchase organic produce; and 57 percent rarely or never purchase organic items in the produce department. Nineteen percent purchase organic produce only when they believe the price is a value. Twelve percent said they were purchasing “significantly more” or “more” organic produce than in the previous year, while 29 percent said they were purchasing “significantly more” or “more” locally-grown produce. Berries constitute 32.3 percent of organic fruit sales, and from 2006 to 2010, the mean weekly sales of berries increased 193.2 percent. Organic blueberry sales grew 40 percent in a year; strawberries 20 percent (vs. 1 percent for conventional strawberries). (“Category Spotlight – Organic Produce,” Nov. 1, 2011, The Packer; www.thepacker.com/commodity-fruits/organic-fruits/CATEGORY-SPOTLIGHT-Organic-Produce-132947073.html?ref=073)

The American Seed Trade Assoc., Organic Seed Alliance and the Organic Trade Assoc. are working on a revised **Organic Seed Availability Database** that will enable searching by seed type, organic certification and region of adaptation. (“Groups to Develop Organic Seed Availability Database, USAgNet, Dec. 13, 2011; www.usagnet.com/story-national.php?Id=2624&yr=2011)

Pennsylvania farmer Steve Groff has grown **190 bushels of corn** per acre **without using nitrogen fertilizer** but with sustained use of no-till practices and N-fixing cover crops. Groff worked for more than 10 years with Dr. Ray Weil at the University of Maryland to develop and

bring to market the Tillage Radish®, a brassica cover crop with an aggressive single taproot that grows through compacted soils. Groff's research shows that strategically selected blends of the Tillage Radish, legumes such as Austrian winter peas, and soil-building plants such as Phacelia and others can dramatically reduce or replace the need for additional fertilizer. Tillage Radish planted as a fall cover crop attracts earthworms, which feed on them as they decompose in the spring and move collected nutrients deep into the root zone for following row crops. Some cover crops can also provide forage for cattle. (Press release, Steve Groff, Cedar Meadow Farm, Nov. 16, 2011; CoverCropSolutions.com and TillageRadish.com)

Ketchup made from organically grown tomatoes has more polyphenols than that made from conventional tomatoes, say researchers at the Universitat de Barcelona. Organic ketchup had higher concentrations of flavonols, flavanones and phenolic acids, biomolecules that benefit human and plant health. Conventional ketchup had higher concentrations of nitrogen compounds used to synthesize proteins and other biomolecules, probably because of soluble N fertilizer applications. The same researchers previously found higher concentrations of polyphenols in organic tomato juice than in conventional. ("Conventional or organic crops: Differences in commercial ketchups," by Olga Jáuregui et al., Dec. 12, 2011; www.ub.edu/web/ub/en/menu_eines/noticies/2011/12/005.html; Vallverdú-Queralt, A. et al., "A metabolomic approach differentiates between conventional and organic ketchups," J. Agricultural and Food Chemistry, 2011, 59 (21), pp. 11703–11710)

Organic Valley has hired Steve Getz as its New England East Pool Coordinator, to help expand Organic Valley's Northeast reach. Organic Valley has 173 farmer owners in New England, selling under the Northeast Pastures label. Getz and his wife, Karen, ran an organic dairy farm and farmstead cheese facility in Vermont, where they still reside. Getz's tasks include milk procurement, visiting farms, auditing pastures, and interacting with industry partners. (Organic Valley press release, Nov. 10, 2011)

The USDA has new, improved nutrition standards for school lunches as part of the Healthy, Hunger-Free Kids Act that President Obama signed into law last year. The standards ensure that children are offered fruits and vegetables every day of the week, more whole grain-rich foods, only fat-free or low-fat milk, and proper portion sizes. (USDA media advisory, Jan. 20, 2012)

USDA scientists used peanut hulls, pecan shells, poultry litter, switchgrass and hardwood waste products to make nine types of **biochar**, pyrolysing (rapidly heating in the absence of oxygen) the materials at two temperatures. They mixed about 20 tons per acre of the biochars into a sandy soil and two silt loam soils. After four months, biochars made from switchgrass and hardwoods increased moisture storage in all three soils. The greatest increase – almost 3 to 6 percent higher than in a control soil sample – occurred in soils amended with switchgrass biochar produced at the high temperature. Biochars made at higher temperatures increased soil pH, and biochar made from poultry litter greatly increased available soil phosphorus and sodium. The researchers believe that producers could someday select feedstocks and pyrolysis processes to make "designer" biochars for specific soils. ("Using Biochar to Boost Soil Moisture," by Ann Perry, Agricultural Research, Nov. 8, 2011; www.ars.usda.gov/is/pr/2011/111108.htm)

The **USDA released its National Nutrient Management Standard** in December 2011 to address the problem of nitrogen and phosphorus fertilizers polluting waterways. Excess nutrients are the main contributors to algal blooms in these waters, which result in low-oxygen conditions that kill other organisms. Dead zones in the Gulf of Mexico and the Chesapeake Bay are examples. The USDA guidelines (at www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046433.pdf) guide farmers in applying the right nutrient source at the rate crops require, when they need it, and in the right place so that nutrients will not leave farm fields. (“Putting Farmland On A Fertilizer Diet,” by Dan Charles, NPR, Dec. 14, 2011; www.npr.org/blogs/thesalt/2011/12/13/143659204/putting-farmland-on-a-fertilizer-diet; “USDA Revises National Nutrient Management Standard to Achieve Maximum Agricultural, Environmental Benefits,” USDA, Dec. 13, 2011; www.usda.gov/wps/portal/usda/usdahome?contentid=2011/12/0513.xml&contentidonly=true)

Young Farmers

A National Young Farmer’s Coalition study of 1,000 farmers shows that **for young and beginning U.S. farmers**, access to capital, land and health insurance are their greatest **obstacles**. The coalition cites slow USDA Farm Service Loan transactions and a loan limit of \$300,000 as problematic. This population’s most valuable programs are farm apprenticeships, local partnerships and Community Supported Agriculture (CSA). The report recommends that communities start CSA groups, shop at farmers’ markets and protect existing farmland; and that Congress include the Beginning Farmers and Ranchers Opportunity Act in the next Farm Bill. (National Young Farmers Coalition Releases Survey of 1,000 Young and Beginning Farmers,” by Lindsey Lusher Shute, Nov. 9, 2011; www.youngfarmers.org/blog/2011/11/09/nyfc-releases-survey-of-1000-young-and-beginning-farmers/)

The USDA Farm Service Agency (FSA) is **expanding loan opportunities for beginning and socially disadvantaged farmers and ranchers**, and is establishing a new Land Contract Guarantee Program. The rule provides additional flexibility allowing FSA loan officers to consider all prior farming experience, including on-the-job training and formal education, when determining eligibility for FSA farm operating and ownership loans. It also expands a previous pilot program, the Land Contract Guarantee Program, from six to 50 states. This program is designed to encourage farmers and ranchers to sell their property to beginning and socially disadvantaged farmers and ranchers through seller financing. The new rule enables landowners to sell their farmland to the next generation on a contract for deed with a 90 percent guarantee against losses to the seller. Alternatively, the agency can provide a guarantee of three years’ amortized loan installments, plus payment of real estate taxes and hazard insurance premiums for the same three-year period. (“USDA Announces Greater Flexibility and Additional Tools for Beginning Farmers and Ranchers,” USDA press release, Jan. 20, 2012; www.fsa.usda.gov)

Climate

The **USDA’s Plant Hardiness Zone Map**, at www.planthardiness.ars.usda.gov, has been updated for the first time since 1990 with greater accuracy and detail. The new map offers a

Geographic Information System-based interactive format, and the map website enables users to find their hardiness zone by ZIP code. Plant hardiness zone designations represent the average annual extreme minimum temperatures at a given location during a particular time period. The new map includes 13 zones, with, for the first time, zones 12 (50-60 F) and 13 (60-70 F). Each zone is a 10-degree F band, further divided into 5-degree "A" and "B" zones. Compared to the 1990 map, 18 of the 26 half-zone boundaries have shifted one 5-degree F half-zone warmer. The new map uses data from 1976 to 2005, while the 1990 map used data from 1974 to 1986. Some changes in the zones result from the longer time period; others from more sophisticated methods for mapping zones between weather stations, factoring in, for example, changes in elevation, nearness to large bodies of water, and position on the terrain, such as valley bottoms and ridge tops. The new map used temperature data from many more stations than did the 1990 map. The map helps gardeners, plant breeders, plant and animal population researchers, and the USDA Risk Management Agency, which uses hardiness zones to set some crop insurance standards. ("USDA Unveils New Plant Hardiness Zone Map," by Kim Kaplan, USDA Agricultural Research Service News Service, Jan. 25, 2012; www.ars.usda.gov/news; "New map for what to plant reflects global warming, by Seth Borenstein, AP, Jan. 26, 2012; www.google.com/hostednews/ap/article/ALeqM5iFwYa8UxfWPb_dstbvmDMr8ZZfwA)

"There is justifiable concern that the current dependence of the food sector on fossil fuels may limit the sector's ability to meet global food demands," says an FAO paper published in November 2011 during the U.N. Conference on Climate Change. The report, "**Energy-Smart Food for People and Climate**," urges that food production systems stop using 30 percent of global energy while producing more than 20 percent of global greenhouse gas emissions by using more fuel-efficient engines, compost and precision fertilizers, more-efficient irrigation, no-till practices, and crop varieties and animal breeds that require fewer inputs. Postharvest improvements in transportation and infrastructure, better insulated food storage facilities, reduced packaging and food waste, and more-efficient cooking devices may help further. Depending on the location, fossil fuels can be replaced by solar, wind, hydro, geothermal or biomass energy. For example, sugar mills often use residue materials for heat and power generation; tomato rejects and skins, or pulp from juice processing, can be digested anaerobically to produce biogas. Reducing food losses will also improve energy efficiency in the agri-food chain. ("Energy-smart' agriculture needed to escape fossil fuel trap," www.fao.org/news/story/en/item/95161/icode/)

Rutgers researchers found that 10 species of **wild bees** they studied in northeastern North America are **emerging a mean of 10.4 days earlier in spring** than they did 130 years ago, with the greatest advance since 1970, "paralleling global temperature increases." The bees' host plants are also seem to be flowering earlier. ("Climate-associated phenological advances in bee pollinators and bee-pollinated plants," by Ignasi Bartomeusa et al., Proceedings of the National Academy of Sciences; www.pnas.org/content/early/2011/11/29/1115559108.abstract)

Local vs. State Control

A lawsuit filed in Maine Superior Court in November 2011 accused **Dan Brown** of Gravelwood Farm in Blue Hill, Maine, of distributing and **selling unlicensed raw milk**, unlabeled as such,

and food products. Brown sells leftover milk from his one cow locally. Last April, Blue Hill passed a Local Food and Community Self-Governance Ordinance, which, supporters say, permits sales such as Brown's; but Walter Whitcomb, commissioner of the Maine Department of Agriculture, Food & Rural Resources, informed the town of Blue Hill in April 2011 that "town residents involved in food processing and sales activities which are subject to state licensing and inspection are not exempt from those requirements."

Represented by the Virginia-based Farm-to-Consumer Legal Defense Fund, Brown is challenging the lawsuit; and Food for Maine's Future is petitioning Gov. LePage to drop the suit.

Hal Prince, director of the Division of Quality Assurance and Regulations at the Maine Department of Agriculture, wrote in the Bangor Daily News that Brown was repeatedly informed of the need to be licensed and inspected by the state, and to meet basic safety and sanitation requirements in order to sell raw milk in Maine. "On multiple occasions he refused offers of support from our department to assist him with licensure and safety inspection steps, including water and TB testing," said Prince. The department bought and tested Brown's milk. "Samples taken from his used, dented and unlabeled plastic fruit juice containers revealed bacterial counts showing contamination levels 10 to 15 times greater than allowed by law," Prince wrote.

The Bangor Daily News reported that "Brown said the department never contacted him about the alleged high bacteria counts in his products. Instead, he learned about it from the lawsuit paperwork." ("Why Is a Farmer Who Sells Extra Milk From His One Cow to Neighbors Being Sued By the State of Maine?" by Rebekah Wilce, AlterNet, Dec. 7, 2011; www.alternet.org/story/153364/; "Agriculture department saw significant risk in raw milk," by Hal Prince, Bangor Daily News, Dec. 2, 2011; <http://bangordailynews.com/2011/12/02/opinion/contributors/agriculture-department-saw-significant-risk-in-raw-milk/>; "We Are All Farmer Brown," www.facebook.com/wearefarmerbrown/posts/241874185874500; "Gov. LePage: Stop Criminalizing Maine's Small Farmers!" <http://localfoodlocalrules.org/> <http://www.facebook.com/wearefarmerbrown/posts/241874185874500>; Letter from Walter Whitcomb to the town of Blue Hill, April 6, 2011; https://salsa.democracynaction.org/o/1221/images/Whitcomb_Letter_Local_Food_Ordinance.pdf; "State sues Blue Hill farmer for selling unpasteurized milk at farmers' markets," by Kevin Miller, Bangor Daily News, Nov. 16, 2011; <http://bangordailynews.com/2011/11/16/news/hancock/blue-hill-farmer-cited-for-violating-state-law>)

Food Safety

On Nov. 18, 2011, **Congresswoman Chellie Pingree** sent a letter to Margaret Hamburg, Commissioner of the **FDA**, questioning its farm raids related to raw milk; the wisdom of spending money on such raids in light of "numerous food safety scares involving large-scale producers"; and noting that many farmer and consumer groups have asked whether Michael Taylor, FDA's deputy commissioner of foods, can be neutral on food issues when he is a former lobbyist and executive for Monsanto. The letter is posted at http://localfoodlocalrules.files.wordpress.com/2011/11/pingree_letter_fda.pdf.

The U.S. Department of Health and Human Services says **the FDA is not properly auditing or following through on state inspections of food plants**, due to lack of resources. State officials did more than half the agency's inspections in 2009, 42 percent more than in 2005. Yet eight states failed to complete 10 percent of the inspections they were responsible for in 2009, and FDA paid for many inspections that were not done; and FDA failed to finish audits in 14 states. When states were audited, at least 32 percent of audited inspectors had at least one deficiency. ("FDA faulted over state inspections," by Dina ElBoghady, The Washington Post, Dec. 14, 2011; www.washingtonpost.com/business/economy/2011/12/14/gIQAqBrtuO_story.html)

Organic

The sharp increase in the cost of organic feed has created a **shortage of organic milk**, even as the volume of organic milk sold grew – by 17 percent from January through October 2011 for whole milk and by 15 percent for reduced-fat. Sales of conventional milk decreased by 2 percent for the same period. Prices of organic milk are expected to rise as a result. The price increase is partly due to increasing use of corn for ethanol. ("As Supply Dwindles, Organic Milk Gets Popular," by William Neuman, Dec. 29, 2011; www.nytimes.com/2011/12/30/business/rising-production-costs-cause-organic-milk-shortage.html?pagewanted=1&_r=1&smid=fb-share)

The National Organic Standards Board (NOSB) has recommended that the USDA National Organic Program (NOP) **prohibit hexane-extracted DHA/ARA** (essential fatty acids) from use in manufacturing **organic infant formula**. The NOP process for acting on the recommendation will take several months. Hexane, a byproduct of petroleum refining, is neurotoxic when inhaled – a concern for manufacturing personnel primarily. The Cornucopia Institute, an organic products watchdog, wants the NOP to prohibit all volatile synthetic solvents so that organic baby food manufacturers don't switch to acetone for extraction. Cornucopia has formally requested that the USDA Office of Inspector General investigate corporate influence on the National Organic Program resulting in the use of synthetics in organic food, such as Martek Biosciences Corporation's patented versions of DHA and ARA oils, included in some organic infant formula, milk and baby food products. ("National board recommends change in organic formula," Dec 23, 2011; <http://news.consumerreports.org/2011/12/national-board-recommends-change-in-organic-formula.html>; "Largest Corporate Dairy, Biotech Firm and USDA Accused of Conspiring to Corrupt Rulemaking and Pollute Organics," The Cornucopia Institute, Jan. 23, 2012; www.cornucopia.org/2012/01/largest-corporate-dairy-biotech-firm-and-usda-accused-of-conspiring-to-corrupt-rulemaking-and-pollute-organics/)

Shamrock Farms, an **industrial-scale organic dairy in Arizona, is poised to lose its USDA organic certification** after a Cornucopia Institute complaint triggered a USDA investigation. The approximately 16,000-cow dairy (in 2008), with 700 to 1,100 cows in its organic milk herd, was allegedly providing inadequate pasture for the cows. The USDA asked Shamrock's organic certifier, Quality Assurance International, to handle the suspension. (Press release, Dec. 15, 2011 www.cornucopia.org/2011/12/enforcement-hammer-falls-on-giant-arizona-organic-factory-farm-dairy/)

Italian police have made arrests and seized 2,500 tons of food after an inquiry about several years of **fake organic product** sales there and to other European countries.

Executives from three companies, Sunny Land, Sona and Bioecoitalia, and the local director of an Italian certifying body were arrested. ("Fake Italian organic food sold around Europe: police," AFP;

www.google.com/hostednews/afp/article/ALeqM5g3sU6BH3N5Pr8XCV892fbuws1vvA?docId=CNG.be7791a73a07505be0838bf63d65ca6b.251)

Harold Chase of Oregon may face prison and a fine after pleading guilty to wire fraud (allegedly faxing fraudulent paperwork) for selling more than 4.2 million pounds of **corn falsely labeled as organic**. The maximum penalty for wire fraud is 20 years in prison and \$250,000. Much of the corn was used as organic livestock feed. ("Organic or conventional? Man faces prison for corn caper," KVAL News, Dec. 6, 2011; www.kval.com/news/business/Organic-or-conventional-Springfield-man-faces-prison-for-corn-caper-135136558.html)

A Cornucopia Institute report, "Cereal Crimes: How 'Natural' Claims Deceive Consumers and Undermine the Organic Label – A Look Down the Cereal and Granola Aisle," says that the meaningless term "**natural**" is being used as a **marketing ploy** at the expense of certified organic. The Institute praised Maine's Grandy Oats for committing to organic ingredients and selling its granola for less than that of some non-organic competitors. "Natural" cereals have no legal definition and may come from genetically engineered crops grown with synthetic pesticides and processed with toxic materials. Many such products appear in health food sections of stores. ("Natural Foodie: For cereal, natural may not be as natural as you think," by Avery Yale Kamila, Portland Press Herald, Nov. 16, 2011; www.pressherald.com/life/foodanddining/for-cereal-natural-may-not-be-as-natural-as-you-think_2011-11-16.html)

Pesticides

BPC News

By Katy Green

Maine Board of Pesticides Approves New Genetically Engineered Corn Product

The Maine Board of Pesticides Control (BPC) focused much of its attention on genetically engineered (GE) corn in Maine recently. Lauchlin Titus of Ag Matters LLC asked the board to eliminate its mandated training requirement for farmers who plant GE corn containing the *Bacillus thuringiensis* (Bt) protein. This training ensures that farmers know the latest information on Bt corn. After receiving public comment on the issue, the board decided in December not to eliminate the requirement but to require training once every three years instead of every two. MOFGA testified in support of maintaining training.

Also in December, the board considered a product registration request from Pioneer for two Bt corn "refuge-in-a-bag" products, Optimum® AcreMax (EPA No. 29964-12) and Optimum® AcreMax Xtra Insect Protection (EPA No. 29964-11). Previously, the product label required that farmers who planted Bt corn also plant a refuge – a block of corn without the Bt trait planted adjacent to the Bt corn. Insects not exposed to Bt would mate with exposed insects and maintain

genes for susceptibility in the population. But because resistance has developed throughout the United States, particularly in the South and Midwest where the refuge requirement was often ignored, many companies that produce Bt corn have developed "refuge-in-a-bag" varieties, where a bag of seed contains Bt and non-Bt corn. The EPA accepted the manufacturer's recommendation that the new product contain 5 to 10 percent non-Bt corn, rather than the previously required 20 percent of total acres planted. The reduced refuge requirement is troubling because no scientific evidence suggests those numbers will prevent insect resistance. In fact, the Bt corn technical committee, which advises the BPC, seemed to agree that resistance will likely occur, but that what happens in Maine is unlikely to matter, since resistance will probably develop in heavy corn producing areas of the country.

Since the Bt corn technical committee recommended allowing the Pioneer product registration, and minimal discussion occurred at its December meeting, the BPC approved registration of the two new products. Chuck Ravis was the only Board member opposing the registration.

Organic growers may face two new issues related to refuge-in-a-bag Bt products. The first deals with insect resistance. Eric Sideman, MOFGA's organic crop specialist and a member of the BPC Bt corn technical committee, wrote in his position to the board that "Bt is perhaps the single most important tool to organic growers for insect management." If resistance develops, organic growers will have far fewer options to deal with specific insect pests. Sideman was the only committee member who advised against allowing the registration.

The potential for pollen drift from Bt corn to organic corn is another issue. When a block refuge was required, organic growers could, under BPC rules, request that it be planted in a way that gave maximum protection from Bt corn pollen drift. With "refuge-in-a-bag" products, the BPC's ability to enforce this rule is unclear. Also confusing is Pioneer's written statement suggesting that the company and its customers will voluntarily plant block refuges to protect organic growers. Since the BPC has no control over what companies or individuals agree to do voluntarily, this promise is not enforceable.

The board will likely initiate rulemaking on regulations regarding Bt corn to clear up confusion regarding these products and protections from pollen drift. MOFGA will continue to testify and support policies that protect organic growers. The current BPC rule states that "non-Bt-corn growers whose crops are or will be located within 500 feet of a prospective Bt-corn planting site can request that the Bt-corn grower protect the non-Bt-corn crop from pollen drift." For more information on requesting or reaching an agreement, contact the BPC at 207-287-2731.

Variance Requests

At its November 2011 meeting, the board approved a new policy allowing the staff to grant variance requests for pesticide applications within 25 feet of the water line when plants are present that pose a dermal toxicity. This includes poison ivy, poison oak, giant hogweed and others. The policy states, "The variance must include agreement to use low-pressure, handheld application equipment, and the spray must be directed away from the water with no drift or direct discharge to the water body or wetland." This policy was adapted in response to a variance request the board granted in 2011 to allow for a poison ivy treatment on Pushaw Lake.

Consent Agreements

At its November 2011 meeting, the board unanimously approved a consent agreement with Scott's Lawn Service of Gorham. A Scott's employee applied Halts 22-0-8 Plus .28%, Halts Pro and Ortho Weed B Gon Pro, products containing herbicides, to the wrong property – one managed organically and containing many edible plants. Also, through an administrative error, the Scott's employee wasn't a licensed applicator at the time. The company vacuumed the treated property within an hour of the misapplication. This was Scott's sixth violation in the past three years. A \$900 fine was levied.

Minutes and agenda of BPC meetings are posted at www.maine.gov/agriculture/pesticides/about/agenda_archive.htm.

[End of BPC news]

An EPA-appointed panel of independent scientists and public health experts has investigated **atrazine**, which is banned in Europe but is the most widely used herbicide in the United States and is commonly used in Canada. Atrazine is applied to about 75 percent of U.S. corn fields and is used on lawns and golf courses. The panel found "suggestive evidence of **carcinogenic potential**" for ovarian and thyroid cancer, non-Hodgkin's lymphoma and hairy-cell leukemia related to the herbicide. It found inadequate evidence to determine whether atrazine is related to prostate, breast, liver, esophageal or childhood cancers. Also, a new review study shows that exposure to atrazine increases the risk of reproductive problems in many animals. Dr. Tyrone Hayes of the University of California at Berkeley, lead author of the study, noted that independent research worldwide associates exposure to atrazine with feminization of male gonads in amphibians, reptiles, fish, mammals and other animals. And a study of women in Illinois and Vermont found that those drinking water contaminated with low levels of atrazine were more likely to have irregular menstrual cycles and low estrogen levels. An earlier study in Indiana correlated atrazine in drinking water with low birth weight of newborns. Atrazine is frequently detected in surface and ground water, especially in agricultural areas. In 2010, the Natural Resources Defense Council analyzed U.S. Geological Survey data and found that surface and drinking water in agricultural areas of the Midwest and South are pervasively contaminated with atrazine, which is sometimes present even in rain. When farmers apply the herbicide, people are often exposed to concentrations above EPA's limit of 3 parts per billion. The EPA reportedly does not plan to consider changing atrazine's regulatory status until 2013. ("Independent Panel: EPA Underestimates Atrazine's Cancer Risk," by Tom Philpott, Mother Jones, Nov. 7, 2011; <http://motherjones.com/tom-philpott/2011/11/atrazine-cancer-epa>; "Weed killer linked to gender-bending in animals," by Paul Taylor, Globe and Mail, Dec. 1, 2011; www.theglobeandmail.com/life/health/new-health/paul-taylor/weed-killer-linked-to-gender-bending-in-animals/article2256969/; "The herbicide atrazine is frequently detected in surface and groundwater, especially near cornfields in the Midwest," by Lindsey Konkell, Environmental Health News; Nov. 28, 2011; www.environmentalhealthnews.org/ehs)

Canadian Food Inspection Agency (CFIA) pesticide residue testing showed more than 560 residues on non-organic apples, while 52 were found on organic apples. Of 178 organic apples

tested in 2009 and 2010, 23.6 percent had residues, and those had a mean of 0.03 ppm of the fungicide thiabendazole, while conventional apples had 0.4 ppm. Most of the apples were imported. Trace amounts of pesticides from industrial agriculture are present in water, air and soil. Most contamination is believed to occur during packing and processing, according to Matthew Holmes, executive director of the Canada Organic Trade Association. Officials from the Canadian Food Inspection Agency said that pesticide residues appear to occur less frequently and at somewhat lower levels on organic than conventional produce. (“Startling differences in produce pesticide residue levels,” press release, Canada Organic Trade Association, Dec. 8, 2011; www.organicnewsroom.com/2011/12/startling_differences_in_produ.html; “Pesticides found in Canadian organic produce,” CBC News, Dec 8, 2011; www.cbc.ca/news/canada/manitoba/story/2011/12/07/cda-organic-produce-cfia-iteam.html)

Avoiding pesticide risk is the primary reason people select organic foods and beverages. Using USDA data on pesticide residues and EPA risk assessments, The Organic Center of Boulder, Colorado, calculated a "Dietary Risk Index" (DRI) tool to help determine **pesticide dietary risk levels and trends**. The Center says that only a few pesticide-food combinations account for 95 percent of dietary risk and that consuming organic foods nearly eliminates those risks. Among U.S. conventionally grown fruits, those with relatively high residues of relatively toxic compounds are, in decreasing order of risk, cranberries, strawberries, apples, peaches, pears, cantaloupe, tomatoes, nectarines and blueberries. The highest risk vegetables are green beans, sweet bell peppers, kale, sweet potatoes, collard greens, summer squash, potatoes, spinach and mushrooms. Imported produce, says the Center, has a mean risk more than three times higher than that of U.S.-grown conventional produce. The Center’s handy Shopper’s Guide also discusses dairy, meat, grains; genetically engineered crops; and lists foods with the highest nutrient values per serving for optimal health. The Organic Center’s 2009 report “Simplifying the Pesticide Risk Equation: The Organic Option” concluded that consuming organic rather than conventional fresh and processed produce would reduce pesticide dietary risk by 97 percent. “New data from USDA residue testing in 2009 points to even greater benefits,” says the Center. When USDA tested 318 domestic samples of organic lettuce, 55 residues were found – 51 of them from biochemical pesticides approved for use by organic farmers. The mean organic sample had only 0.17 residue (so about 8 in 10 had no residues), giving a dietary risk index of 0.001. Conventional lettuce, last tested in 2005, had a mean of 3.9 residues in each of 735 samples and a dietary risk index of 0.12 – about 120-times higher than in organic lettuce in 2009. The Center says that U.S. produce growers have “made steady progress in reducing pesticide dietary risks, while risks have not come down nearly as much in most imports, and have actually risen in some imported produce items.” (“Good News and a Growing Concern,” The Organic Center, Sept. 2011; www.organic-center.org/reportfiles/DRIfinal11-1%5B1%5D.pdf; “The Shopper’s Guide,” www.organic-center.org/reportfiles/TOC_PocketGuide_2011.pdf)

Arsenic

Dartmouth College researchers who studied more than 200 pregnant women in the New Hampshire area found that for each gram of **rice** the women consumed, total **arsenic** in their urine increased by 1 percent. Prenatal exposure to arsenic has been linked to low birth weight, infant mortality, decreased immune function and increased death rates from lung cancer later in life. Much U.S. rice is grown in the South, where decades of cotton crops were treated with

arsenical pesticides; and rice bred to tolerate these contaminated soils is adept at taking up arsenic. Andrew Meharg of the University of Aberdeen in Scotland has shown that U.S. rice has some of the highest mean levels in the world of inorganic arsenic, which can cause skin, lung and bladder cancer in humans. Meharg also found more than 10 ppb inorganic arsenic in most samples of U.K. rice milk.

Also, Consumers Union recently tested apple juice and grape juice purchased in New York, New Jersey and Connecticut and found that 10 percent of 88 samples had total arsenic levels above federal drinking-water standards of 10 parts per billion (ppb) and 25 percent had lead levels above FDA's 5 ppb limit for bottled water. Most was inorganic arsenic, a human carcinogen, says Consumers Union. Consumer Reports notes that among juice samples it tested, certified organic brands were lower in arsenic than conventional; and U.S. brands had less inorganic arsenic than those from China and Argentina.

Consumers Union has urged the U.S. government to ban organic arsenicals in animal feed, organic arsenical pesticides (i.e., pesticides with arsenic bound to carbon-containing molecules – not organically approved pesticides), and use of arsenic-laden fertilizers; to limit allowable total arsenic in juices to 3 ppb and lead to 5 ppb; and to reduce other dietary exposures to arsenic. It also suggests limiting the amount of juice children drink and buying brands with the lowest levels of arsenic (listed via its Jan. 2012 article, cited below). (“New study focuses on arsenic in rice,” by Andrea Rock, Consumer Reports, Dec 5, 2011

<http://news.consumerreports.org/safety/2011/12/new-study-focuses-on-arsenic-in-rice.html>;
“Consumer Reports tests juices for arsenic and lead,” by Andrea Rock, Consumer News, Nov. 30, 2011; <http://news.consumerreports.org/safety/2011/11/consumer-reports-tests-juices-for-arsenic-and-lead.html#.TtZ8J1heLic.facebook>; “Arsenic in your juice,” Consumer Reports, Jan. 2012; www.consumerreports.org/cro/consumer-reports-magazine-january-2012/arsenic-in-your-juice.html)

BPA

In a study of 75 people, Harvard University researchers found that those who consumed 12 ounces of **canned soup** for five days in a row had 1,221 percent **more bisphenol A** (BPA, a hormone disruptor) in their urine than those who ate 12 ounces of fresh soup. BPA has been linked – even at lower concentrations than this study detected – to cardiovascular disease, diabetes and obesity. BPA is in the epoxy lining of many cans, in cash register receipts, dental fillings, and in some plastics and polycarbonate bottles (number 7). Researchers do not know how long it stays in the body before it is eliminated in urine. (“BPA spikes 1,200 per cent after eating canned soup: Study,” Ottawa Citizen, Nov. 23, 2011; www.ottawacitizen.com/health/spikes+cent+after+eating+canned+soup+Study/5751216/story.html); “Canned Soup Consumption and Urinary Bisphenol A: A Randomized Crossover Trial,” by Jenny L. Carwile et al., Journal of the American Medical Association, Nov. 23, 2011; <http://jama.ama-assn.org/content/306/20.toc>

Antibiotics

The **FDA has restricted the use of cephalosporin antibiotics**, including Cefzil and Keflex, in cattle, pigs, chickens and turkeys over concerns about resistant bacterial infections developing in humans. Humans commonly use these antibiotics to treat pneumonia, strep throat, skin and urinary tract infections, and before surgery. Many doctors say that resistance to the drugs has cost thousands of lives, reports The New York Times. Most U.S. antibiotic use is to promote growth in livestock. Penicillin and tetracycline can still be used routinely in feed and water to promote animal growth or prevent illness due to unsanitary conditions. Rather than further regulate such antibiotic use in livestock feed, the FDA will encourage industry's "voluntary reform."

A report in Clinical Infectious Diseases (April 2011) said nearly half of 136 samples of beef, turkey, pork and chicken from U.S. grocery stores were contaminated with multi-drug resistant strains of Staphylococcus aureus, bacteria linked to rashes, sepsis, endocarditis and pneumonia. Such resistance seems to linger: Bacteria on Canadian pig farms that stopped using antibiotics continued to resist two antibiotics 2 1/2 years later. McGill University researchers who did this study suggest that spreading swine waste on fields may enable antibiotic resistant bacteria to share that resistance with other bacteria on crops and in aquatic ecosystems.

Another study compared pigs born in a sterile lab to mothers that had never been exposed to antibiotics. Six of the offspring received a low dose of three antibiotics commonly used to treat pig diseases and enhance growth and performance. Within two weeks, they had more E. coli (a nonpathogenic strain) in their guts, and those E. coli had more drug-resistant genes, than did six pigs that did not receive antibiotics. Mothers passed drug resistance to their offspring for generations, even after farmers stopped giving their livestock antibiotics. Nonmedicated pigs also had antibiotic-resistant genes in their gut bacteria, but treated pigs had more antibiotic drug resistance – even to antibiotics they did not consume. (“Citing Drug Resistance, U.S. Restricts More Antibiotics for Livestock,” by Gardiner Harris, The New York Times, Jan. 4, 2012; www.nytimes.com/2012/01/05/health/policy/fda-restricts-use-of-antibiotics-in-livestock.html?_r=1; “FDA Withdraws Longstanding Petition to Regulate Antibiotics in Livestock Feed,” by Ashley Portero, International Business Times, Jan. 3, 2012, International Business Times; www.ibtimes.com/articles/275785/20120103/fda-antibiotics-livestock-withdraws-longstanding-petition-regulate.htm; “Drug Resistance Loiters on Antibiotic-Free Farms,” by Beth Marie Mole, Dec. 2, 2011; <http://news.sciencemag.org/sciencenow/2011/12/drug-resistance-loiters-on-antib.html>; “Antibiotics Breed Drug-Resistant Bacteria in Pigs,” by Emily Sohn, Jan. 16, 2012; <http://news.discovery.com/animals/antibiotics-drug-resistant-bacteria-pigs-farming-120116.html>; “FDA Reneges on Promise to Consider Limits to Animal Antibiotics,” by Gergana Koleva, Forbes, Dec. 23, 2011; www.forbes.com/sites/gerganakoleva/2011/12/23/fda-reneges-on-promise-to-consider-limits-to-animal-antibiotics/)

Genetic Engineering

Dow Chemical is requesting USDA approval for a **genetically engineered (GE) corn that is resistant to 2,4-D**, an herbicidal component Agent Orange. Dow says the variety is needed because weeds have become resistant to glyphosate, the active ingredient in Roundup and other herbicides used widely with GE glyphosate-resistant crops. Agent Orange, used as a defoliant in Vietnam during the war, caused lasting ecological damage

and serious medical conditions in Vietnam veterans and the Vietnamese. Exposure to 2,4-D has been linked to cancer (especially non-Hodgkin's lymphoma), lower sperm counts, liver disease and Parkinson's disease. Lab studies show that it causes endocrine disruption, reproductive problems, neurotoxicity and immunosuppression. The weed killer is contaminated with dioxins, highly toxic compounds that bioaccumulate and have been linked to birth defects in children of exposed parents. The USDA has not assessed the impacts that GE 2,4-D corn would have on public health, the environment or neighboring farmers (2,4-D tends to drift) but has given preliminary approval to the crop. Public comments on this variety were set to close in February. Monsanto is also seeking approval for a new GE soy variety that is high in omega-3 fatty acids. (Center for Food Safety e-mail, Jan. 18, 2012; Press release, The Cornucopia Institute, Jan. 4, 2012)

In December 2011, despite tens of thousands of comments in opposition and only 23 in favor, the **USDA deregulated Monsanto's MON 87460 GE drought resistant corn**, enabling the company to sell the variety. Monsanto plans to trial the corn in Western states this year. Research has shown that organically grown crops are much more drought tolerant than those grown in conventional, continuous monocultures, because biologically active organic soil retains more moisture. The Union of Concerned Scientists (UCS) points out that Monsanto and USDA say the GE crop will fare only modestly better than current conventional varieties under low- and moderate-level drought conditions, so it will be useful only for about 15 percent of corn acreage – and several types of conventionally-bred drought-tolerant corn will likely to do as well or better. Doug Gurian-Sherman of UCS says, “Classical crop breeding can produce drought-resistant crops that are cheaper and more effective than what Monsanto has come up with. Ultimately, the only way to address the water challenges that American farmers face every day will require readdressing how we farm, which crops we breed and grow, and how we allocate the water we use to farm.” (“U.S. approves Monsanto drought-tolerant GM corn,” by Charles Abbott, Reuters, Dec. 22, 2011; www.reuters.com/article/2011/12/22/us-usa-biotech-idUSTRE7BL19A20111222; Press release, The Cornucopia Institute, Jan. 4, 2012; “Monsanto Corn Unlikely to Help Drought-Stricken Farmers,” Union of Concerned Scientists, Dec. 22, 2011; www.ucsusa.org)

On Jan. 31, a Manhattan District court judge heard oral arguments to decide whether to allow the **Family Farmers vs. Monsanto** case to move forward in the courts after Monsanto filed a motion to dismiss the lawsuit. “Between 1997 and April 2010,” says the Organic Seed Growers and Trade Association (OSGATA), “Monsanto filed 144 lawsuits against American farmers in at least 27 different states, for alleged infringement of its transgenic seed patents and/or breach of its license to those patents, while settling another 700 out of court for undisclosed amounts. As a result of these aggressive lawsuits, Monsanto has created an atmosphere of fear in rural America and driven dozens of farmers into bankruptcy.” The lawsuit was filed on behalf of 300,000 organic and non-GMO farmers and citizens to seek judicial relief in “protect[ing] themselves from ever being accused of infringing patents on transgenic (GMO) seed.” Jim Gerritsen told the Bangor Daily News, “Once we win the case, one can imagine Monsanto will want to appeal,” which could take three to five years and end up in the Supreme Court – where Justice Clarence Thomas, a former Monsanto attorney, has not recused himself from other cases relating to Monsanto. **The Federal District Court judge will decide by March 31 whether the case can move forward.** (OSGATA press release, Jan. 12, 2012; <http://www.osgata.org/osgata-press->

[releases](#); “Aroostook farmer the face of organic growers’ fight against Monsanto,” by Kathryn Olmstead, Bangor Daily News, Dec. 08, 2011; <http://bangordailynews.com/2011/12/08/news/aroostook/aroostook-farmer-the-face-of-organic-growers%E2%80%99-fight-against-monsanto/>)

A study conducted at China's Nanjing University and published in Cell Research shows that genetic material called **microRNA** from conventional rice **survived the human digestive system**, moved to other parts of the body and affected cholesterol function. Biotech companies hope to use microRNA, or RNA interference, in future GE foods to affect specific genes in pests. Writer Tom Laskawy asks if microRNA targeting an insect gene will also affect human genes after humans eat foods containing the new genetic material? Will the microRNA affect beneficial insects? (“The next generation of GMOs could be especially dangerous,” by Tom Laskawy, Jan. 10, 2012; www.grist.org/industrial-agriculture/2012-01-10-new-research-next-generation-of-gmos-could-be-dangerous)

U.S. District Judge Samuel Conti of San Francisco has upheld the government's decision to deregulate **Monsanto's GE Roundup Ready alfalfa**. Previously a group of alfalfa farmers who feared that pollen from the GE crop would spread by wind and bees to their crops, taking over their fields, challenged USDA's earlier approval of the crop. Alfalfa acreage makes up the fourth largest U.S. crop. Conti said federal law does not require USDA to "account for the effects of cross-pollination on other commercial crops" when assessing risks of a new crop; that contamination of conventional or organic alfalfa was "possible but unlikely"; and that Roundup Ready alfalfa was no more hazardous than other varieties. Conti also said consequences of increased herbicide use associated with the crop were outside the scope of USDA's required environmental review. An appeal of the ruling is expected, according to the Center for Food Safety. (“U.S. judge OKs alfalfa strain made by Monsanto Co.,” by Bob Egelko, San Francisco Chronicle, Jan. 7, 2012

<http://sfgate.com/cgi-bin/article.cgi?f=/c/a/2012/01/07/BUBT1MM1DH.DTL>)

Eleven food safety, environmental, consumer and fisheries organizations have asked the FDA to halt to its approval of AquaBounty Technologies' **GE salmon** after learning that the company's production site in Canada was contaminated in 2009 with Infectious Salmon Anaemia (ISA), a flu that is devastating fish stocks worldwide. (“Coalition calls for FDA to halt approval of genetically engineered salmon,” Dec. 20, 2011; <http://truefoodnow.org/2011/12/20/coalition-calls-for-fda-to-halt-approval-of-genetically-engineered-salmon/#more-1774>)

Congressman Dennis Kucinich (D-OH) has introduced H.R. 3554, The Genetically Engineered Safety Act, which would **prohibit open-air cultivation of Genetically Engineered (GE) pharmaceutical and industrial crops**. The USDA has allowed more than 300 outdoor trials of GE plants that produce experimental pharmaceuticals, industrial enzymes and novel proteins. H.R. 3554 would also prohibit use of common human food or animal feed as host plants for a GE pharmaceutical or industrial chemicals and would establish a tracking system to regulate the growing, handling, transportation and disposal of pharmaceutical and industrial crops to protect native ecosystems and traditional farms. The legislation is part of a package of bills introduced by Kucinich, which includes H.R. 3553, the GE Right to Know Act. (Press release, Dec. 9, 2011;

<http://kucinich.house.gov/News/DocumentSingle.aspx?DocumentID=271932>

Peru's President Humala has signed a **10-year moratorium on the introduction of GE crops and animals**, passed by the Parliament in November 2011. Excluded from the new rules are engineered organisms used for the research and production of pharmaceutical and veterinary products, since Peru is subject to existing international trade agreements; and importation of GE-products for direct human or animal consumption or for manufacturing food or fodder – but the new regulations require that products exempt from the moratorium undergo a risk assessment before they can be used. This law is expected to prevent widespread cultivation of GE crops, protecting Peru's biodiversity and increasing food exports. (“Peru Approves 10-Year Ban on GMO,” IFOAM Insider, Dec. 2011; moratorium posted in Spanish at www.minag.gob.pe/download/pdf/marcolegal/normaslegales/leyes/ley29811_ley_prod_organismos_vivos.pdf)

Western **corn rootworm larvae** in the Midwest are **becoming resistant Monsanto's GE Bt corn** and are eating its roots. This is the first report of field-evolved resistance to a Bt toxin by any species of Coleoptera (beetles). The EPA wants farmers there to stop planting this Bt corn and to use other methods to control the rootworm, including pesticides, switching to soy, or planting a different GE corn, Monsanto's SmartStax, which has two other Bt genes. Resistance to Bt toxins has also been reported in cotton bollworms in India, Australia and China, where GE Bt cotton has been grown. (“Insects Find Crack In Biotech Corn's Armor,” by Dan Charles, National Public Radio, Dec. 5, 2011; www.npr.org/blogs/thesalt/2011/12/05/143141300/insects-find-crack-in-biotech-corns-armor; www.npr.org/blogs/thesalt/2011/12/05/143141300/insects-find-crack-in-biotech-corns-armor; Field-Evolved Resistance to Bt Maize by Western Corn Rootworm, by Aaron J. Gassmann et al., PLoS ONE 6(7): e22629. doi:10.1371/journal.pone.0022629, July 29, 2011; “Bt Resistant Rootworm Spreads,” by Dr. Eva Sirinathsinghji, Institute for Science in Society, Oct. 31, 2011; www.isis.org.uk/Bt_resistant_rootworm_spreads.php)

Genetically engineered canola has **escaped** from farms and is thriving in the wild in North Dakota, especially along a truck route to Canadian processing plants, according to ecologist Cynthia Sagers of the University of Arkansas. Similarly, Canadian researchers have found GE canola escapees on the Canadian prairies, where it crosses with wild plants. Sagers and colleagues found GE canola at almost half of the 634 sites they sampled – sometimes finding thousands of GE plants in one place. Two of the GE plants they found were resistant to herbicides they had not been developed to resist, suggesting that new gene combinations are occurring in the wild. (“Canadian GM canola has escaped into wilds of North Dakota: study,” by Margaret Munro, Postmedia News, Oct. 5, 2011; www.canada.com/technology/Canadian+canola+escaped+into+wilds+North+Dakota+study/5508205/story.html#ixzz1fC8VBdHx)

The state of **Ohio** will no longer pursue regulations limiting **labeling of organic dairy** products as being produced without antibiotics, pesticides or synthetic hormones, as its 2008 emergency regulations attempted. After the Organic Trade Association sued the state, the Sixth Circuit Court of Appeals found the rule unconstitutional. (Organic Bytes, Organic Consumers Assoc., Nov. 3,

2011; www.organicconsumers.org)

In interviews by Dr. Joseph Mercola with **Dr. Don Huber**, an expert in soil-borne diseases, microbial ecology and host-parasite relationships, and emeritus professor at Purdue University, Huber noted **problems with glyphosate herbicides and GE crops** that may be decreasing the nutrition of crops, causing infertility, harming soil organisms and promoting crop diseases. Glyphosate, the active ingredient in Roundup and some other herbicides, chelates (strongly binds to) metals, immobilizing certain nutrients, including some that promote enzyme functions, and reducing concentrations of available plant cationic (positively charged) nutrients such as calcium, magnesium, potassium, copper, iron, manganese and zinc. Glyphosate also chelates nickel, a cofactor in nitrogen fixation – a potential problem with the recently deregulated GE alfalfa. Compounding these problems, glyphosate accumulates in plants, especially at growing points and reproductive organs, including seeds. Huber said that glyphosate residues in feed and food products change the gut ecology that previously helped control toxins; and glyphosate itself is an endocrine disruptor. In corn, Huber said that even low rates of glyphosate nullify the resistance that corn had to Goss's wilt, a bacterial disease – now a major epidemic in many corn growing areas. And glyphosate can stimulate the Fusarium fungus that causes Sudden Death Syndrome in soybeans. Additionally, Roundup Ready crops can contain far less manganese (Mn) than non-GE crops – and Mn deficiency is linked with malformed animals. Huber and others are also studying a “new entity” they have found primarily in GE crops treated with glyphosate, and in manure from animals feeding on those crops, which they believe is related to increased farm animal reproductive failure, infertility and miscarriages, to premature aging in farm animals, and to some crop diseases – problems that began a few years after GE soy was introduced and have increased since. The entity is about the size of a virus and self-replicates, said Huber. It occurs in nature but is new to science, so has not been named yet. (“A One on One Interview with Dr. Don Huber,” by Dr. Joseph Mercola, Dec. 10, 2011; http://articles.mercola.com/sites/articles/archive/2011/12/10/dr-don-huber-interview-part-1.aspx?e_cid=20111210_DNL_art_1; “Worse than DDT: When You Eat This, It Ends up Lingering in Your Gut,” Jan. 15, 2012; <http://articles.mercola.com/sites/articles/archive/2012/01/15/dr-don-huber-interview-part-2.aspx>)

Summer 2012

The Good News

Maine Congressman **Michael Michaud**, on Feb. 1, 2012, **recognized MOFGA's 40th anniversary in the Congressional Record**. He said, “Committed to the Maine tradition of local, family owned agricultural businesses which produce some of the healthiest agricultural goods available, Abby McMillen began organizing membership for what would become MOFGA in 1971... Today, the association has grown to include 6,000 members and nearly 350 certified farms. MOFGA is also one of the most active groups in the state.” Michaud praised MOFGA's educational, apprenticeship, certification and charitable programs, called The Maine Organic Farmer & Gardener “one of the nation's leading information sources on organic agriculture and sustainable living practices” and said that MOFGA's Common Ground County Fair is “one of the state's most anticipated events each year.” Michaud added, “I wish MOFGA continued success in working with farmers, gardeners and families all across Maine to promote healthier and more

nutritious eating options.” The complete text is at www.gpo.gov/fdsys/pkg/CREC-2012-02-01/pdf/CREC-2012-02-01-pt1-PgE105.pdf.

A Carrot Improvement for Organic Agriculture project, sponsored by USDA's Organic Research and Extension Initiative (OREI), is in the first of a four-year breeding project to develop **carrot varieties for organic agriculture**. This partnership between the Organic Seed Alliance, University of Wisconsin-Madison, Purdue University, University of California, Washington State University and the Agricultural Research Service is developing novel colored carrots with improved disease and nematode resistance, weed competitiveness, and nutritional value and flavor. This project will also compare the relative performance of breeding material in organic versus conventional environments and investigate whether some carrots support a more robust soil microflora. (“USDA-OREI Grant Supports Innovation in Organic Plant Breeding,” Organic Seed Alliance press release, March 13, 2012; <http://eorganic.info/carrotimprovement>)

A new **Coastal Farms Food Processing** facility should be running in **Belfast** by July. Co-owners Jan Anderson and Wayne Snyder, who raised \$1 million in private investment and secured an agreement from Farm Credit Maine for \$1 million in financing, foresee growers within 50 miles of Belfast using the tunnel freezers, kitchens and processing space. And the **Farmington Grange** now has a kitchen that residents will be able to rent to start processed food businesses. The Farmington Grange hall also hosts a winter farmers' market on Saturday mornings. (“Major food storage and processing company to open by July,” by Abigail Curtis, Bangor Daily News, Feb. 23, 2012; <http://bangordailynews.com/2012/02/23/business/major-food-storage-and-processing-company-to-open-by-july/>; “Grange project may be boon for area farmers,” by David Robinson, Morning Sentinel, Feb. 18, 2012; www.kjonline.com/news/farmingtongrange-projectmay-be-boon-for-area-farmersnew-commercial-kitchen-area-to-aid-local-food-movement_2012-02-17.html; For information about the Grange kitchen, call Richard Marble at 491-6166 or Bonnie Clark, kitchen manager, at 778-6637.)

The U.S. **organic industry grew by 9.5 percent** overall in 2011 to reach \$31.5 billion in sales. Of this, the organic food and beverage sector was valued at \$29.22 billion, while the organic non-food sector reached \$2.2 billion, says the Organic Trade Association's 2012 Organic Industry Survey. Comparable conventionally produced food and non-food items experienced 4.7 percent growth. The organic food sector grew by \$2.5 billion during 2011, with fruits and vegetables contributing close to 50 percent of those new dollars. The fastest-growing sector was the meat, fish and poultry category, posting 13 percent growth over 2010 sales, but still remaining the smallest of eight organic food categories. Organic food sales now represent 4.2 percent of all U.S. food sales, up from 4 percent in 2010. (“Consumer-driven U.S. organic market surpasses \$31 billion in 2011,” Organic Trade Assoc. press release, April 23, 2012; www.ota.com)

Producing U.S. foods organically creates thousands more jobs than if that food were produced using conventional agricultural methods, says “2010 Impacts of the U.S. Organic Foods Industry on the U.S. Economy.” The report, produced for the Organic Trade Association by Washington, D.C.-based M+R Strategic Services, showed that for every \$1 billion in retail sales of organic products, 28,000 more jobs were created throughout the economy; and the use of

organically produced ingredients created 21 percent more jobs than would have been generated if the food industry had relied solely on conventional farms for ingredients. The study attributed the differences largely to greater labor intensity on organic farms, smaller farm size, the need for an organic certification industry, and reliance on smaller retail outlets. (Organic Trade Assoc. press release, April 25, 2012; www.ota.com)

Washington State University, which started the nation's first four-year organic agriculture systems major in 2006, has received a **\$5 million investment** from Chuck and Louanna Eggert and their family **to expand the WSU Organic Farm** from 4 acres to nearly 30 acres. This will be the largest organic teaching farm on a U.S. university campus. The Eggerts met at WSU and later founded Pacific Natural Foods in 1987. ("Alumni support organic ag, teaching farm expansion," by Kathy Barnard, WSU News, April 19, 2012; <https://news.wsu.edu/pages/publications.asp?Action=Detail&PublicationID=31405&TypeID=1>)

A survey conducted by the Organic Seed Alliance has shown that **Southeast U.S. farmers** and other agricultural professionals **want to strengthen seed systems** there to address needs of the organic community. More than 2,200 individuals, including nearly 500 farmers, responded. Nearly half of respondents said they save seed for on-farm use; more than 75 percent of farmers turn to other farmers for seed-related questions; half view the lack of organic seed and the lack of variety information as urgent or very important; and 75 percent see contamination by GMOs as an urgent or very important challenge. Most respondents said more education about organic seed is urgent or very important, as is research on varietal performance on Southeast organic farms; and that teaching farmers to save seed is urgent or very important. And 90 percent said it is urgent or very important to safeguard organic seed systems in the Southeast from GMOs. Work in these areas is being planned. ("Southeast Farmers Say More Organic Seed Research and Education Needed," Organic Seed Alliance press release, April 17, 2012; www.seedalliance.org)

Gov. Paul LePage has signed **LD 1605**, a law providing **limited protection from liability for Maine's agritourism farmers** with operations such as cut-your-own Christmas trees, pick-your-own produce, and others that invite visitors to the farm. Landowners must post signs telling visitors they accept "inherent risks" of those activities. Landowners still need liability insurance; the law means that visitors who sue for injuries on the property must show that more than an inherent risk was present. Bill sponsor Rep. Aaron Libby, R-Waterboro, expects the law will eventually reduce premiums for farmers. ("LePage signs insurance relief bill for agritourism businesses," by Eric Russell, Bangor Daily News, April 9, 2012; <http://bangordailynews.com/2012/04/09/news/state/lepage-signs-insurance-relief-bill-for-agritourism-businesses/>)

Skowhegan social worker Jeffrey Johnson has offered to let residents of the **Skowhegan Miracle Homeless Shelter** use his land for **farming**. Residents will grow vegetables to feed those at the shelter and to generate funds to help support the shelter. They also plan to sell eggs, piglets and pork as well as goods made from wood. ("New shelter's residents to plant, weed, harvest, sell their own vegetable crop," by Erin Rhoda, Kennebec Journal, April 13, 2012; www.kjonline.com/news/new-shelters-residents-to-plant-weed-harvest-sell-their-own-vegetable-crop_2012-04-12.html)

Genetic Engineering (GE)

On February 24, 2012, Judge Naomi Buchwald ruled to dismiss the case of **Organic Seed Growers and Trade Assn. et al. v. Monsanto** after hearing oral argument on January 31, 2012, in Federal District Court in Manhattan. The 81 plaintiffs in the lawsuit (including MOFGA) sought judicial protection from Monsanto's lawsuits when non-GE crops are contaminated by Monsanto's genetic material, and challenged the validity of Monsanto's patents on seeds.

Daniel Ravicher, lead attorney for the plaintiffs, said of the judge, "Her belief that farmers are acting unreasonably when they stop growing certain crops to avoid being sued by Monsanto for patent infringement, should their crops become contaminated, maligns the intelligence and integrity of those farmers." Ravicher said the judge failed to address the purpose of the Declaratory Judgment Act and mischaracterized a Supreme Court precedent that supports the farmers' standing.

Since the mid-1990s, Monsanto has sued 144 farmers for alleged violations of its patented seed technology. The company has sued more than 700 more farmers, who settled out-of-court rather than face Monsanto's well-financed litigation. Many of these farmers claim not to have intended to grow or save seeds containing Monsanto's patented genes. When seeds and pollen drift from neighboring GE crops, Monsanto can sue the farmer where its seed technology is found for patent infringement.

"Family farmers need the protection of the court," says Maine organic seed farmer Jim Gerritsen, president of the Organic Seed Growers and Trade Association (OSGATA), lead plaintiff in the case. He characterized as naive the judge's assertion that Monsanto's vague public relations "commitment" not to sue farmers for trace amounts of contamination should be "a source of comfort" to plaintiffs. "The truth is that American farmers and the American people do not believe Monsanto. Family farmers deserve our day in court, and this flawed ruling will not deter us from continuing to seek justice."

UMaine School of Law professor Rita Heimes told the Portland Press Herald that Monsanto's patent-infringement lawsuits are unique in the intellectual property field: "I think Monsanto's litigation strategy has been very aggressive compared to other patent holders. Because Monsanto sues its customers, it does make all farmers nervous."

On March 28, 2012, the plaintiffs filed a Notice of Appeal with the U.S. Court of Appeals for the Federal Circuit in Washington, D.C., which could hear the case this fall or winter at the earliest.

Meanwhile, discussions on **compensation for farmers** of organic and identity-preserved crops **who suffer market losses due to crop contamination with GE material** is the focus of USDA's Advisory Committee on Biotechnology and 21st Century Agriculture (AC-21). The committee is expected to deliver a final recommendation to the Secretary of Agriculture after the November election. ("Judge Sides With Monsanto: Ridicules Farmers' Right to Grow Food Without Fear, Contamination and Economic Harm," OSGATA press release, Feb. 27, 2012; www.osgata.org/judge-sides-with-monsanto-ridicules-farmers-right-to-grow-food-without-fear-contamination-and-economic-harm; "Farmers Determined to Defend Right to Grow Food File

Appeal in Organic Farmers v. Monsanto,” Wood Prairie Farm press release, March 28, 2012; www.woodprairie.com/wpf_news; “Maine farmer leads organic growers’ continued fight against Monsanto,” by Jen Lynds, Bangor Daily News, March 29, 2012; <http://bangordailynews.com/2012/03/29/news/arostook/maine-farmer-leads-organic-growers-continued-fight-against-monsanto/>; “Organic farmers lament dismissal of Monsanto lawsuit,” by Avery Yale Kamila, Portland Press Herald, Feb. 29, 2012; www.pressherald.com/business/organic-farmers-lament-dismissal-of-lawsuit_2012-02-29.html?searchterm=avery; “Organic farmers appeal decision in Monsanto lawsuit,” by Avery Yale Kamila, Portland Press Herald, March 28, 2012; www.pressherald.com/news/Organic-farmers-appeal-decision-in-Monsanto-lawsuit.html; “What’s News in Organic, Organic Trade Assoc., March 2012; www.ota.com/pics/documents/WhatsNews-53c.pdf?utm_source=Real%20Magnet%20&utm_medium=email%20&utm_term=&utm_content=20120323_whats_news&utm_campaign=What's%20News%20in%20Organic%20March%2012)

In what could become a landmark case for organic farming, **Australian farmer Steve Marsh is suing a neighboring farmer** for loss and damages for allegedly **contaminating 325 of his 478 hectares**. Marsh says **GE canola** seed blew onto his farm in 2010, after which he lost organic certification on more than 70 percent of his farm, where he raised organic oats and wheat. (“Farmer sues for GM contamination,” by Belle Taylor, The West Australian, April 3, 2012; <http://au.news.yahoo.com/thewest/a/-/newshome/13336126/farmer-sues-for-gm-contamination/>; The Safe Food Foundation & Institute, <http://www.safefoodfoundation.org/projects.html>; accessed April 14, 2012)

One million Americans petitioned the FDA in March 2012 through the **Just Label It (JLI) campaign to label GE foods**. And a national survey showed that Americans overwhelmingly support such labeling. The survey, conducted by The Mellman Group for JLI, found that among Democrats, 93 percent favor labeling and 2 percent oppose it; Independents, 90 for and 5 against; and Republicans, 89 for and 5 against. “It’s time for the FDA to give Americans the same rights held by citizens in 40 nations, including all of our major trade partners, to know whether our foods have been genetically modified,” said Gary Hirshberg, chairman of Stonyfield, one of more than 500 JLI partners. (Press release, Organic Trade Association, March 27, 2012; survey results at www.justlabelit.org)

Efforts to require **labeling of GE foods** have occurred in 18 states recently. This winter, the Connecticut legislature’s Environment Committee voted 23-6 to approve a measure for labeling GE foods, despite opposition from the state’s agriculture commissioner and the Connecticut Farm Bureau. California activists collected 850,000 signatures to place a citizens’ initiative on the November 2012 ballot. If it passes, the California Right to Know Act will require labeling of GE foods and will ban use of the term “natural” on GE foods. On April 20, 2012, Vermont’s House Agriculture Committee passed a GE labeling bill by 9-1-1. The bill would not take effect until 365 days after California and two Northeastern states passed similar bills. Monsanto threatened to sue Vermont if a labeling bill passes there. (“GMO Labeling Law Wins Backing In Connecticut,” by Stephen Singer, AP, March 21, 2012; www.huffingtonpost.com/2012/03/22/gmo-labeling_n_1371260.html; “Monsanto Threatens to Sue Vermont if Legislators Pass a Bill Requiring GMO Food to Be Labeled,” by Will Allen and

Ronnie Cummins, AlterNet, April 4, 2012;
www.alternet.org/story/154855/monsanto_threatens_to_sue_vermont_if_legislators_pass_a_bill_requiring_gmo_food_to_be_labeled?page=entire; “Organic farmers hope for boost with rivals' labels,” by Stephen Singer, AP, April 15, 2012;
www.mercurynews.com/business/ci_20402611/organic-farmers-hope-boost-rivals-labels; “VT House Ag Committee Passes GMO Labeling Bill 9-1-1,”
www.woodprairiefarm.com/index.php/component/content/article/14-monsanto/94-organic-research)

The Agricultural Biotechnology Stewardship Technical Committee found that **some 41 percent of 3,053 farmers** inspected in 2011 **violated the refuge requirement for growing GE Bt corn**. The EPA requires refuge plantings of non-Bt corn to slow development of Bt resistance in pest insects. Already corn rootworms have become resistant to the Bt toxin Cry3Bb1 in Monsanto's engineered corn; and weeds resistant to Monsanto's Roundup herbicide, used on GE Roundup Ready crops, now exist on up to 20 million acres of corn and soy in the United States, says chemical company Syngenta AG. In March 2012, 22 plant scientists, experts on corn, said in a letter to the EPA that long-term corn production could be at risk as corn rootworms increasingly resist Cry3Bb1. They added that Bt corn is being planted where it is not needed because non-Bt seed is hard to find; and that Monsanto's solution of using insecticides plus Bt corn would be costly to farmers and could mask further development of pest resistance. (“Gene-Modified Corn Violations Triple Among U.S. Farmers,” by Jack Kaskey, Bloomberg Business Week, Feb. 9, 2012; www.businessweek.com/news/2012-02-09/gene-modified-corn-violations-triple-among-u-s-farmers.html; “Scientists warn EPA on Monsanto corn rootworm,” by Carey Gillam, Reuter, March 9, 2012; www.reuters.com/article/2012/03/09/us-monsanto-corn-idUSBRE82815Z20120309)

GE crops will be reviewed faster under new rule changes. Approvals that took some six months in the '90s now take three years due to public interest, legal challenges and national organic standards. To speed reviews, USDA will seek public comments as soon as companies petition to have a GE crop deregulated; and Congress will increase funds for reviews from \$13 million in 2011 to \$18 million this year. Bill Freese of the Center for Science in the Public Interest calls the rule changes “a rubber-stamp system.” (“Genetically Modified Crops to Get Faster Approval, USDA Says,” Feb. 22, 2012; <http://news.businessweek.com/article.asp?documentKey=1376-LZT1UN6K50Z301-2DE1LNEKTNU5ITEVKC37VTO18K>)

In a greenhouse study using agricultural soil, Portland State University researchers found that arbuscular **mycorrhizal fungi form fewer bonds with GE Bt corn** than with non-Bt corn. Mycorrhizal fungi grow symbiotically with roots of many plants, extending the area of soil from which crops can obtain water and nutrients, in exchange for carbon compounds from host plants. (“Monsanto Bt Crops: Genetically Modified Corn Linked To Soil Ecosystem Threat,” by Ryan Villarreal, International Business Times, April 17, 2012; www.ibtimes.com/articles/329549/20120417/monsanto-gmo-bt-corn-genetically-modified-toxic.htm?cid=2)

Edible plants, especially corn, engineered to resist glyphosate herbicides such as Roundup and to express Bt insecticidal toxins, contain residues of both, so researchers tested effects of the Bt

Cry1Ab and Cry1Ac toxins, alone or combined with Roundup, on human embryonic kidney cells. Within 24 hours, Cry1Ab at 100 ppm killed cells, while Cry1Ac showed no effects. Roundup alone was necrotic and apoptotic (relating to programmed cell death) from 50 ppm – below agricultural dilutions. Cry1Ab and Cry1Ac plus Roundup reduced caspases 3/7 activity (a biomarker of cell death), which could delay activation of apoptosis, say the researchers. They saw the same tendency for two other markers of cell death. The researchers suggest that **GE Bt toxins “are not inert on nontarget human cells**, and that they can present combined side-effects with other residues of pesticides specific to GM plants.” (Cytotoxicity on human cells of Cry1Ab and Cry1Ac Bt insecticidal toxins alone or with a glyphosate-based herbicide, by R. Mesnage et al., J. Applied Toxicology, Feb. 15, 2012; DOI: 10.1002/jat.2712; <http://onlinelibrary.wiley.com/doi/10.1002/jat.2712/abstract?userIsAuthenticated=false&deniedAccessCustomisedMessage=>)

Widespread use of **GE herbicide-resistant crops** has paralleled a large **decline in monarch butterfly populations**, say John Pleasants of Iowa State University and Karen Oberhauser of the University of Minnesota. Between 1999 and 2010, as GE crops came to occupy much Midwestern farmland, the number of monarch eggs declined by about 81 percent there, as did populations of milkweed, the host plant for monarch eggs and caterpillars. The researchers indirectly tied loss of milkweed habitat to the decline in monarchs noted by volunteers’ estimates of milkweed populations and counts of monarch eggs in the Corn Belt. Pleasants said monarchs lay about four times as many eggs on milkweed in farm fields as on milkweed in pastures and on roadsides. Others say drought, and habitat loss in monarchs’ overwintering site in Mexico, may also contribute. (“Study ties GMO corn, soybeans to butterfly losses,” by Josephine Marcotty, Star Tribune, March 16, 2012; www.startribune.com/printarticle/?id=143017765)

In a fenced area at the Rothamsted Research Station in the UK, scientists are field trialing **“whiffy” wheat** – a GE crop engineered with a gene from peppermint to emit an insect pheromone called farnesene that repels aphids. Aphids naturally produce the pheromone to warn other aphids, and some wildflowers produce it. Farnesene also attracts ladybugs and parasitic wasps that feed on aphids. (“GM 2.0: A new kind of wheat,” by Steve Connor, The Independent, March 29, 2012; www.independent.co.uk/news/science/gm-20-a-new-kind-of-wheat-7595087.html)

The University of Guelph in Canada developed the **GE “Enviropig”** but is halting active research on the animal as the hog industry group Ontario Pork is no longer funding that research. The pig used genetic material from a mouse to reduce phosphorus in its feces. Canada approved reproduction of the GE pigs in 2010, but no government has approved it for human consumption. (“Genetically Modified Pig Shelved,” press release, Canadian Biotechnology Action Network, April 2, 2012; <http://cban.ca/Press/Press-Releases/Genetically-Modified-Pig-Shelved>)

Organic

A meta-study by researchers at Holland’s Wageningen University of 362 published studies says that worldwide, **yields of crops grown organically ranged from 50 percent lower to 20 percent higher than conventional**. The researchers say that reliance on animal manure and rotated green manures in organic systems may explain part of the difference. Tuberos and root

vegetables, including potatoes, had a larger yield gap, while legumes had a smaller gap. The researchers commend organic farming for its environment benefits, attention to animal welfare, and attention to problems of synthetic fertilizers and pesticides. (“Yield from organically grown crops globally 20% lower than in conventional farming,” IFOAM press release, March 1, 2012; http://ifoam.org/IFOAM_Biofach2012_WOA_PressRelease_en.pdf; Tomek de Ponti, et al., The crop yield gap between organic and conventional agriculture, *Agricultural Systems* 108 (2012) 1-9; www.physorg.com/news/2012-03-yield-grown-crops-globally-conventional.html)

A study published in *Nature* in April 2012 looked at 66 published papers that compared **organic and conventional yields** for 34 crops. The organic farms used crop rotation, organic fertilizers and beneficial insects instead of synthetic chemical fertilizers and pesticides. Organic yields per unit area in developed countries were 20 percent lower than conventional; and in developing countries, 25 percent lower. Organic growers using the best practices had yields 13 percent lower than conventional. Organic strawberries and apples yielded 3 percent less than conventional, and oilseed crops, 11 percent less – and neither difference was statistically significant. Cereal yields were 26 percent lower; and vegetables, 33 percent. Conventional yields were believed to be higher due largely to applications of synthetic nitrogen fertilizers. Also, organic yields improved on plots that had been farmed organically for more than two seasons. “To establish organic agriculture as an important tool in sustainable food production, the factors limiting organic yields need to be more fully understood, alongside assessments of the many social, environmental and economic benefits of organic farming systems,” say the researchers. They plan next to compare environmental effects of organic and conventional farming. (“Organic farming, carefully done, can be efficient,” by Amina Khan, *Los Angeles Times*, April 26, 2012; www.latimes.com/news/science/la-sci-organic-farming-20120426.0,896912.story; “Organic farming is rarely enough,” by Natasha Gilbert, *Nature*, April 25, 2012; <http://www.nature.com/news/organic-farming-is-rarely-enough-1.10519>; Seufert, V., Ramankutty, N. & Foley, J. A. *Nature* <http://dx.doi.org/10.1038/nature11069> (2012))

Organic farms produce strawberries with fewer malformations and a higher proportion of fully pollinated berries relative to conventional farms. The study found that pollination success was greater with organic farming, possibly due to an increase in insect pollinator abundance and/or diversity. The effect was apparent within two to four years of conversion to organic. The results “suggest that organic farming could enhance the pollination service in agricultural landscapes, which is important for developing a sustainable agriculture,” says the lead author. (Andersson G.K.S. et al., 2012, “Organic Farming Improves Pollination Success in Strawberries.” *PLoS ONE* 7(2): e31599. doi:10.1371/journal.pone.0031599; “Organic farming improves pollination success in strawberries,” *Public Library of Science* press release, Feb. 15, 2012; www.eurekalert.org/pub_releases/2012-02/plos-ofi021312.php)

The **percentage of consumers stating they purchased organic** products rose from 39.8 percent in January 2011 to 41.8 percent in January 2012, according to a TABS Group survey of 1,000 respondents ages 18 to 75. Total organic product sales rose approximately 15 to 20 percent. The survey also found an 11 percent increase in the number of product types purchased by a typical organic shopper. Findings included increased sales of organic beef (+48 percent), ice cream (+44 percent), hair care products (+28 percent), vegetables (+26 percent), milk (+25 percent), eggs (+21 percent) and chicken (+17 percent). Younger consumers expressed greater preference for

organic products, with 48 percent of respondents under 40 years reporting usage in the last six months compared with only 34 percent of consumers above 60. Those under 30 bought on average 4.6 different organic products compared with 2.9 by people 60 and older. "Younger consumers, with typically the least disposable income, show the greatest loyalty to organics. This likely will increase organics' sales and market share over time as their buying power grows and their preference is passed on to their children," says TABS Group. In the survey, people earning less than \$30,000 a year and those with children purchased more organic products than higher earners and those without children. Sixty-two percent buy organic products at mainstream retail stores; 38 percent at natural food or specialty stores. ("TABS Group Survey: Organic Food Sales Hit Record in 2011; Sales Jump 15-20 Percent," press release, Feb. 15, 2012; www.marketwatch.com/story/tabs-group-survey-organic-food-sales-hit-record-in-2011-sales-jump-15-20-percent-2012-02-15)

On Feb.15, 2012, **European and American officials announced an organic equivalence arrangement** between the world's two largest markets for organic food. Under the arrangement, the EU and United States will work together to promote strong organic programs, protect organic standards, enhance cooperation and facilitate trade in organic products. The agreement will reduce duplicative requirements and certification costs.

As of June 1, 2012, certified organic products can move freely between U.S. and EU borders if they meet the terms of the new arrangement. The EU will allow products produced and certified as meeting USDA National Organic Program standards to be marketed as organic in the EU, and vice-versa – provided antibiotics were not given to animals for products entering the United States, and antibiotics were not used to control fire blight in apples and pears for products entering the European Union. However, organic wines from Europe can contain sulfites as a preservative, while U.S. standards prohibit sulfites in wine. And while the U.S. National Organic Standards Board Livestock Committee recommends at least 2 square feet of open outdoor space per bird on organic poultry farms, The EU requires at least 43 square feet per laying hen or broiler.

The arrangement is limited to organic products of U.S. or EU origin produced, processed or packaged within these jurisdictions. Both programs will exchange information on animal welfare issues and on methods to avoid contamination of organic products by genetically engineered organisms. ("Will organic free trade really do a world of good?" by Claire Thompson, Grist, Feb. 24, 2012; <http://grist.org/organic-food/will-organic-free-trade-really-do-a-world-of-good/>; "Historic Signing Finalizes Organic Equivalence Arrangement Between EU and U.S.," press release, Feb. 15, 2012; www.ota.com/GlobalMarkets/US-EU-Organic-Equivalence-Arrangement.html; www.usda.gov/wps/portal/usda/usdahome?navid=LATEST_RELEASES).

The **number of certified organic** U.S. farms and processing facilities was 17,673 at the end of 2011, about 3 percent more than at the end of 2010 and 240 percent more since the National Organic Program began compiling statistics in 2002. Worldwide, the USDA counted 28,779 certified organic operators in 133 countries – a slight decrease because of the U.S.-Canadian Organic Equivalency Arrangement. A database of USDA certified organic operations is posted at http://apps.ams.usda.gov/nop/?utm_source=2011+List+of+Certified+USDA+Organic+Operation

[s&utm_campaign=Organic+milk+audit+report&utm_medium=email](http://www.thepacker.com/fruit-vegetable-news/Organic-operations-surge-3-in-US-143694946.html) (“Organic operations surge 3% in U.S.,” by Tom Karst, The Packer, March 21, 2012; www.thepacker.com/fruit-vegetable-news/Organic-operations-surge-3-in-US-143694946.html)

Peter Townsley, former president of California Liquid Fertilizer, pleaded guilty in February 2012 to **mail fraud** for mailing forms to the Organic Materials Review Institute about the contents of Biolizer XN, but omitting to list aluminum chloride and aluminum sulfate as ingredients. Townsley faces possible prison time and more than \$500,000 in fines for selling non-organic fertilizer to organic growers for several years. (“‘Organic’ fertilizer manufacturer could face prison,” The Packer, www.thepacker.com/fruit-vegetable-news/Organic-fertilizer-manufacturer-could-face-prison-140963863.html)

In Oregon, U.S. District Judge Ann Aiken sentenced Harold Chase to **27 months in prison** for wire fraud. Chase bought 4.2 million pounds of **conventional corn** and **sold it as organic** for almost twice the profit by faxing false documents to a buyer. (“Man gets two years in organic food scam,” by Karen McCowan, The Register-Guard, April 5, 2012; www.registerguard.com/web/newslocalnews/27859135-41/chase-organic-corn-grain-conventional.html.csp)

Climate

The New England Farmers Union Education Foundation (NEFUEF) wants to make greenhouse gas offsets derived from regional farmers available to purchasers in New England and beyond through its **Buy Local Carbon Credit Project**. The program aims to determine market demand for locally derived greenhouse gas credits among New England utilities, companies, colleges and consumers; assess crediting methods and protocols for farm-related energy projects, including fertilizer reduction, methane capture, soil carbon sequestration, and switching fuels for greenhouse operations. It will communicate findings to farm service providers and farm organizations, coordinate outreach to eligible farmers, and outline a plan to aggregate, evaluate and verify the crediting system. NEFUEF is seeking partnerships with regional departments of agriculture, conservation commissions, agricultural commissions, farm organizations, other carbon market projects and citizens. The project is supported by the USDA Conservation Innovation Grant Program, Farm Aid, New Hampshire Charitable Foundation, High Meadows Fund, and National Farmers Union. (“The “Buy Local” Carbon Credit Project,” P.O. Box 226, Shelburne Falls, MA 01370; www.newenglandfarmersunion.org/pdfs_docs/2012-CarbonCrediting1-pager-JAN30.pdf)

The Commission on Sustainable Agriculture and Climate Change has proposed several actions to **achieve food security in the face of climate change**. They include integrating food security and sustainable agriculture into global and national climate change policies; increasing global investment in sustainable agriculture and food systems in the next decade; sustainably intensifying agricultural production while reducing greenhouse gas emissions and other negative environmental impacts of agriculture, such as depleting water supplies and destroying native ecosystems; developing programs and policies to help populations and sectors that are most vulnerable to climate changes and food insecurity; reshaping food access and consumption patterns to ensure basic nutritional needs are met and to foster healthy and sustainable eating

patterns; reducing loss and waste in food systems; and creating information systems regarding land use, food production, climate, the environment, human health and well-being worldwide. (“Achieving food security in the face of climate change – Summary for policy makers from the Commission on Sustainable Agriculture and Climate Change,” by J. Beddington et al., CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Copenhagen, Denmark; www.ccafs.cgiar.org/commission)

Soil Erosion

Most farmers support the long-standing conservation compact that has helped protect the rich soil and clean water that sustain food, farming and public health, says “Conservation Compliance: A Retrospective...and Look Ahead” by conservationist Max Schnepf. Polls show that the farming community has consistently supported the historic deal between taxpayers and farmers in the 1985 farm bill, under which growers agreed to keep soil from eroding and chemicals out of waterways in return for generous taxpayer support.

“In the 10 years following the 1985 farm bill,” says Schnepf, “farmers did more to curb soil erosion than at any time since the infamous Dust Bowl years of the 1930s.”

High prices, intense competition for farmland leases, and ethanol mandates have put unprecedented pressure on land and water, so gains in soil conservation that the compact achieved are being lost. Funding for agricultural conservation programs has been cut every year since 2002 and is currently \$4 billion below the amount authorized in previous farm bills. Meanwhile, the taxpayers’ tab for guaranteeing farm business income through so-called risk management programs has increased from \$1.5 billion in 2002 to \$7.4 billion in 2011. No conservation strings are attached because Congress ended them in 1996.

The Environmental Working Group recommends that Congress bring risk management programs back under the conservation compact umbrella; update decades-old conservation plans to reflect modern technology and current weather patterns; require landowners to control highly damaging gully erosion on all annually tilled cropland; and dedicate funding for conservation planning and enforcement. (“America’s Conservation Compact is Eroding Despite Farmers’ Support,” Environmental Working Group press release, Feb. 27, 2012; <http://ewg.org/release/america-s-conservation-compact-eroding-despite-farmers-support>)

Arsenic

Dartmouth College researchers found elevated concentrations of arsenic in two organic powdered baby formulas with brown rice syrup as a top ingredient and in some brown rice-sweetened cereal bars, energy bars and energy drinks. The study failed to address the **arsenic issue as a serious concern for all food production**, says the Organic Trade Association (OTA). Arsenic can occur naturally in soils and groundwater, and can occur as residue from decades of routine use of arsenic-based pesticides. Whether organic or conventional, rice growing in contaminated soils will take up the element if it is present, and some will be in grain harvested from those plants.

“In fact, organic production practices are part of the solution to reducing the application of arsenic-laden herbicides, as well as toxic and persistent pesticides known to create health problems,” says OTA’s Christine Bushway, since such applications are prohibited in organic agriculture.

The food industry can essentially eliminate future arsenic exposures, says Charles Benbrook of The Organic Center, by mapping arsenic contaminated soils and groundwater resources, as well as areas largely free of arsenic. Crops such as rice that are known to extract arsenic from the soil or irrigation water should be grown in arsenic-free areas.

The OTA says the FDA and EPA should set and enforce regulatory limits on arsenic in our food supply. The FDA has a "level of concern" of 23 parts per billion of arsenic in fruit juices, and the EPA level for arsenic in drinking water is 10 ppb. An OTA task force is seeking solutions to this issue within the organic industry.

Nature’s One, an organic baby food formula maker, says its baby formula falls more than 20 percent below all world standards for rice-based foods fed to infants and children, based on third-party testing. (“Arsenic’s presence reflects a wider problem for all food production,” Barbara Haumann, Organic Trade Assoc., Feb. 16, 2012; http://www.organicnewsroom.com/2012/02/arsenics_presence_reflects_a_w.html); “Organic Brown Rice Syrup: Hidden Arsenic Source,” by Jane E. Allen, ABC News, Feb. 16, 2012; <http://abcnews.go.com/Health/Diet/arsenic-organics-rice/story?id=15642428#.Tz5XpopWojU>; “Arsenic Testing Proves Organic Baby Formula Safe,” March 5, 2012; www.marketwatch.com/story/arsenic-testing-proves-organic-baby-formula-safe-2012-03-05)

The Maryland state Senate and House of Delegates passed a bill that would **ban the use of roxarsone, an arsenic additive in chicken feed**. Pfizer Inc., which manufactures roxarsone, had suspended sale of the chemical in July 2011 after the FDA found higher concentrations of inorganic arsenic, a carcinogen, in chickens treated with roxarsone than in untreated birds. (“State Sen. approves bill banning arsenic in chicken feed to avoid food, water pollution,” by Sarah Breitenbach, AP, April 5, 2012; www.therepublic.com/view/story/dcb5b9b6baa1418cad8b59d3830bf8a5/MD-XGR--Arsenic-Chicken-1st-Ld/); “Maryland set to become first state to ban arsenic in chicken feed,” by Darryl Fears, The Washington Post, April 9, 2012; www.washingtonpost.com/national/health-science/maryland-set-to-become-first-state-to-ban-arsenic-in-chicken-feed/2012/04/09/gIQAyyU16S_story.html

Antibiotics

U.S. Magistrate Judge Theodore Katz has ordered the FDA to begin proceedings to **withdraw approval of common antibiotics** used non-therapeutically **in animal feed** unless manufacturers show that their use will not create antibiotic-resistant pathogens. The decision was made in response to a lawsuit filed against the FDA by environmental and consumer groups. In April 2012, the FDA banned the use of cephalosporin to promote growth in cattle, swine and poultry in order to maintain the effectiveness of cephalosporin in humans. And on April 11, 2012, the FDA

ruled that farmers and ranchers will need a prescription from a veterinarian in order to use antibiotics on farm animals – but the agency is asking for now only that drug makers change their labels voluntarily to require a prescription; if that doesn't work, it will consider a stronger ban. (“FDA must act to remove antibiotics from animal feed: judge,” by Jessica Dye, Reuters, March 23, 2012; <http://af.reuters.com/article/commoditiesNews/idAFL1E8EN08G20120323?sp=true>; “FDA takes step toward reducing antibiotics for food-producing animals,” by Jennifer Kalish, Great Lakes Echo, April 4, 2012; <http://greatlakesecho.org/2012/04/04/fda-takes-step-toward-reducing-antibiotics-for-food-producing-animals/>; “U.S. Tightens Rules on Antibiotics Use for Livestock,” by Gardiner Harris, The New York Times, April 11, 2012; www.nytimes.com/2012/04/12/us/antibiotics-for-livestock-will-require-prescription-fda-says.html?_r=1)

A strain of antibiotic-susceptible **Staphylococcus aureus** was likely able to pass from humans to pigs, become **resistant to tetracycline and methicillin in the pigs**, and then move back to humans and eventually cause disease. A study published in mBio tracked the pathogen from the pigs to the Dutch farm family, off the farm, from Holland to other countries, and into retail meat. Paul Sundberg of the National Pork Board told writer Tom Laskawy that the threat of MRSA (methicillin-resistant Staphylococcus aureus) infection from hospitals and communities is greater than from pigs. (“Finally, a smoking gun connecting livestock antibiotics and superbugs,” by Tom Laskawy, Feb. 24, 2012, Grist; <http://grist.org/factory-farms/finally-a-smoking-gun-connecting-livestock-antibiotics-and-superbugs/>; “Staphylococcus aureus CC398: Host Adaptation and Emergence of Methicillin Resistance in Livestock,” by Lance B. Pricea et al., mBio, American Society for Microbiology, Feb. 21, 2012; <http://mbio.asm.org/content/3/1/e00305-11.full>)

Among 395 packages of pork products from 36 stores in Iowa, Minnesota and New Jersey, 64.8 percent contained Staphylococcus bacteria and 6.6 percent contained the antibiotic-resistant **MRSA. Rates were similar on products from conventionally raised pigs and those labeled as antibiotic-free.** The meat was not labeled as certified organic. Results were surprising, as some researchers did not find MRSA on pigs that were not treated with antibiotics, while they did find it on conventional pig farms. Likewise, Purdue University researchers found similar rates of antibiotic-resistant E. coli in beef products from conventionally- and grass-fed animals; and antibiotic-resistant E. coli and Enterococcus occurred on poultry products labeled "no antibiotics added" but at lower rates than on products from conventionally raised poultry. Possible sources of the contamination include movement from conventional farms to others; via farm workers; or at processing plants. (“Antibiotic-Free Meat Not Free of Drug-Resistant Bacteria,” by Jill U. Adams, Science Now, Jan. 30, 2012; <http://news.sciencemag.org/sciencenow/2012/01/organic-meat-not-free-of-drug-re.html?ref=hp>; “MSRA in Conventional and Alternative Retail Pork Products,” Ashley O’Brien et al., PLoS ONE 7(1), Jan. 19, 2012; <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0030092>)

The Soil Association says evidence is overwhelming that **excess use of antibiotics on UK livestock farms** is contributing to the **rise of drug resistance in human E. coli infections.** The Association’s report “E. coli superbugs on farms and food” estimates that 750,000 to 1,500,000

people in the UK contracted an E. coli infection in 2011, resulting in nearly 40,000 cases of blood poisoning and nearly 8,000 deaths. Cases of E. coli blood poisoning have increased nearly fourfold in the last 20 years.

Resistance of E. coli to key antibiotics has risen sharply in the past decade, and the UK Health Protection Agency says the prospect of new antibiotics to treat E. coli is poor. Scientists increasingly view farm antibiotic use as contributing significantly to the problem.

A new type of extended-spectrum beta-lactamase (ESBL) E. coli is of particular concern. Government scientists say it's extremely resistant to many classes of antibiotics and more virulent than other forms of E. coli. Patients with ESBL E. coli blood poisoning are nearly three times as likely to die as other affected patients.

The prevalence of ESBL E. coli on British farms has increased dramatically since it was first identified in 2004 – almost certainly due to high levels of antibiotic use on farms.

Richard Young, Soil Association policy advisor and co-author of the report, said: “Just about every non-organic chicken in the UK is still routinely put on antibiotics from the day it is hatched.”

The Soil Association recommends phasing out preventive use of antibiotics in healthy animals and halving overall use of antibiotics on farms within five years; moving toward higher welfare and less intensive production systems that can significantly reduce the use of antibiotics in farming; greatly reducing the use of modern cephalosporins and fluoroquinolones and prohibiting off-label use; prohibiting advertising antibiotics to UK farmers; and ads to veterinary surgeons should be purely factual and not emotive. (“E. coli superbugs warning,” The Soil Association, March 29, 2012; www.soilassociation.org/news/newsstory/articleid/3221/e-coli-superbugs-warning)

Pesticides

BPC News

By Katy Green

Maine Board of Pesticides Control Chooses Not to Work on Rulemaking

Over the last few months, the Maine Board of Pesticides Control (BPC) has chosen not to act on two items of interest. The first is the pesticide notification registry, which has been a roller coaster ride at the board and legislative level for a few years. After the comprehensive pesticide notification registry was repealed in the last session of the legislature, Representatives James Dill and Jeffrey Timberlake remained true to their word and approached the BPC to work out details of a new registry. At its February meeting, the BPC decided it had exhausted the registry issue and would not be able to reach a good solution near-term for everyone involved. The BPC decided to write letters to Dill and Timberlake to thank them for their interest and tell them it would not be working on pesticide notification in the coming months. This leaves open the

possibility that the BPC will again have to implement pesticide notification rules resulting from legislation rather than developing its own rules and solutions to this ongoing debate.

Also in February, the BPC voted to put forward a policy regarding genetically engineered Bt corn products in Maine. It chose to work from a policy rather than initiate rulemaking to clarify issues related to refuge-in-the-bag corn approved at its prior meeting. (See the March-May MOF&G.) The policy allows neighbors of those growing Bt corn to request a 300-foot refuge of non-Bt corn planted so that it protects abutters from potential pollen drift. This policy interprets the board rule but is not in the rule.

Henry Jennings, BPC director, says, “Growers should not be shy about contacting the board for advise or mediation to deal with neighbors when issues arise concerning refuges and pollen drift.” It is not clear how the board will proceed concerning Bt corn. An April 9 meeting sponsored by the Biotechnology Industry Organization laid out plans for thousands of new acres of Bt corn to be grown in Maine as chicken feed for Land O’Lakes’ facility in central Maine – which could mean that more organic farms have neighbors growing Bt corn. Growers are encouraged to contact the BPC to discuss options for protection from pollen drift.

Product Registrations

In February the board approved a Special Local Need request by Syngenta for use of Callisto Herbicide on lowbush blueberries to control broadleaf weeds during a crop year. Callisto was already registered for such use during nonbearing years. According to BPC toxicologist LeBelle Hicks, “[Callisto’s] mechanism of toxicity in mammals is the inhibition of metabolism of the amino acid tyrosine, resulting in high tyrosine levels in the blood. In plants the mode of action is also inhibition of tyrosine catabolism resulting in depleted chlorophyll levels.” The board approved this request with a five-year expiration date so that the product can be reviewed again then.

At a special meeting in March, the board requested that the EPA allow use of Revus Fungicide on seed potato pieces in Maine, as late blight (*Phytophthora infestans*) has been detected in seed potato pieces this year, and growers of non-organic potatoes want to use the fungicide. The EPA is expected to respond by June.

Consent Agreements

Francis Pulsifer of Pulsifer Orchard in Cornish was fined \$300 for pesticide drift onto a neighboring property on two occasions. On the first, a mix of Polyram 60 DF and Permethrin applied via airblast sprayer drifted onto an abutting property. About three weeks later, the same employee was applying a mix of Captec 4L, Imidan 70-W and Drexyl Carbaryl 4L with an airblast sprayer when, again, drift was confirmed on the abutting property, an orchard the landowner is trying to manage organically.

In February the board unanimously approved a consent agreement with Sullivan Properties in Lewiston. A citizen had alerted the BPC that an unlicensed employee of Sullivan Properties applied insecticides inside an apartment building in Lewiston. An investigation found that an

employee had applied Hot Shot Bedbug & Flea Home Insect Killer in at least two apartments, the halls and cellar. Nobody at the company had the required license for such an application. Sullivan Properties was fined \$500.

The BPC reached a consent agreement with Bruce Korhonen of Korhonen Land Care of Woodstock for a July 2011 incident at the Woodstock town ball field. Korhonen Land Care had won the bid to keep the infields there weed-free, but nobody at the company had the required commercial applicator's license to treat the ball field. A citizen observed a Korhonen company employee applying a pesticide and alerted the board. An investigation revealed that glyphosate, the active ingredient in Roundup, was present at 2,139 ppm, far above a dose that will kill vegetation. A \$600 fine was levied.

In February the board fined Lucas Tree Experts Company of Portland \$500 for failing to notify a registrant on the current non-agricultural Pesticide Notification Registry. A Lucas Tree employee applied Astro Insecticide to a willow tree in a South Portland neighborhood to control aphids. A property within 250 feet of the application is listed on the notification registry, but the homeowner did not receive the required notification.

In an unusual case Christian Bulleman III of Dresden reached a consent agreement with the board that required him to perform public service work equivalent to his \$350 proposed fine for a violation. Without the required commercial pesticide applicator's license, Bulleman had applied Shockwave, a disinfectant and cleaner, for mold remediation at the Phippsburg Town Office. He claimed that he was unaware of the licensing requirement and promptly sought the license after this incident.

In March the board voted unanimously to send an unresolved case involving Hemingway Orchard in Hebron, owned by Dennis and Jan Barker, to the attorney general's office. This case involves at least four alleged drift incidents since 2010. Two, according to BPC investigations, confirmed drift of Drexel Damoil, Imidan 70-W/BASF, Sovran Fungicide, Lorsban 75WG, Polyram 80DF and Captec 4L, with applications made by airblast sprayer. The Barkers refused to sign consent agreements for either violation.

[End of BPC news]

Neonicotinoid insecticides, used since the early 1990s, are systemic – they are absorbed into plant tissues. They target the central nervous system of insects feeding on those plants, paralyzing and killing the insects. They seem to be **targeting beneficial bees** as well.

Two papers in Science suggest that neonicotinoids may be related to Colony Collapse Disorder in bees. British researchers exposed bumblebees for two weeks to high or low concentrations of imidacloprid, a neonicotinoid, in contaminated pollen and nectar; a control group received no imidacloprid. Then the bees were placed outside in an enclosed area for six weeks to forage. With both concentrations of imidacloprid, colonies gained a mean of 8 to 12 percent less weight than controls. Also, control colonies produced a mean of 13.7 new queens, but those exposed to the high concentration of imidacloprid produced only 1.4 new queens, and those exposed to the low concentration produced only two.

In another study, French researchers fitted worker bees' thoraxes with radio transmitters to detect when bees returned to the hive from foraging. Twice as many bees from hives treated with thiamethoxam, a neonicotinoid, failed to return than bees from untreated hives.

In Indiana, Purdue University researchers Christian Krupke and Greg Hunt heard that bee deaths in 2010 and 2011 were occurring at planting time in hives near agricultural fields. Neonicotinoids, commonly used to coat corn and soybean seeds before planting, were highly concentrated in waste talc exhausted from farm machinery during planting. The neonicotinoid insecticides clothianidin and thiamethoxam also consistently occurred at low levels in soil for up to two years after treated seed was planted; on nearby dandelion flowers; and in corn pollen gathered by bees. Toxicological screenings found neonicotinoids from corn and soybean seeds in each sample of affected bees. Krupke said other bees at those hives exhibited tremors, uncoordinated movement and convulsions – signs of insecticide poisoning.

Krupke said corn pollen that bees brought to hives later in the year contained neonicotinoids at levels roughly below 100 parts per billion – enough to kill bees if sufficient amounts were consumed. The exhausted talc, however, had up to about 700,000 times the lethal contact dose for a bee. "This material is so concentrated that even small amounts landing on flowering plants around a field can kill foragers or be transported to the hive in contaminated pollen," said Krupke. "These pesticides can persist for months or years, so plants growing in these soils can take up these compounds in leaf tissue or pollen."

A study published in *Naturwissenschaften - The Science of Nature* by bee expert Dr. Jeff Pettis of the USDA Bee Research Laboratory found that bees exposed to even very low concentrations of imidacloprid were three times as likely as unexposed bees to become infected when exposed to a parasite called nosema.

And Chensheng Lu and colleagues of the Harvard School of Public Health gave bee colonies corn syrup with 20 to 400 parts per billion of imidacloprid. Control colonies got untreated corn syrup. Colonies exposed to more insecticide survived for shorter times in winter. Commercial beekeepers often give bees corn syrup in winter; and since imidacloprid is a systemic insecticide, its movement into corn kernels could result in its presence in corn syrup. Imidacloprid or related neonicotinoids are used on most conventional and almost all GE corn seed. From there they may end up in corn syrup and on moisture exuded from corn plants in the morning, which bees consume; and in corn and sunflower pollen. Neonicotinoids are also used on some fruit and vegetable crops. Louisa Hooven of Oregon State University has found abnormal egg laying by queen bees exposed to various pesticides, and delayed maturation of nurse bees.

Commercial beekeepers and environmental organizations petitioned the EPA this spring to suspend use of clothianidin. France, Germany and Italy have limited or banned neonicotinoids. ("Researchers: Honeybee deaths linked to seed insecticide exposure," Purdue University news report, by Brian Wallheimer, January 11, 2012; www.purdue.edu/newsroom/research/2012/120111KrupkeBees.html; "Beekeepers ask EPA to ban pesticide, protect bees," by Gosia Wozniacka, Associated Press

http://www.google.com/hostednews/ap/article/ALeqM5jvAsTLib_ptbWhrgqaRlOKogutbQ; “More Damning Evidence Points to Pesticide as Cause of Mass Bee Deaths,” Common Dreams, Jan. 30, 2012; www.commondreams.org/headline/2012/01/30-9; “Subtle poison -- Evidence is growing that commonly used pesticides, even when employed carefully, are bad for bees,” The Economist, March 31, 2012; www.economist.com/node/21551451; “Field Research on Bees Raises Concern About Low-Dose Pesticides,” Erik Stokstad, Science, March 30, 2012: 1555; www.sciencemag.org/content/early/2012/03/28/science.1215039.abstract; “A Common Pesticide Decreases Foraging Success and Survival in Honey Bees,” Mickaël Henry et al., Science, March 29, 2012; www.sciencemag.org/content/336/6079/348.abstract; Neonicotinoid Pesticide Reduces Bumble Bee Colony Growth and Queen Production, Penelope R. Whitehorn et al., Science, March 29, 2012; DOI: 10.1126/science.1215025; “Yet another study links insecticide to bee losses,” by Janet Raloff, Science News, April 5, 2012; www.sciencenews.org/view/generic/id/339726/title/Yet_another_study_links_insecticide_to_bee_losses; “Pesticide exposure in honeybees results in increased levels of the gut pathogen Nosema,” by Jeffery S. Pettis et al., Naturwissenschaften, Jan. 13, 2012, 99:153-158; <http://resources.metapress.com/pdf-preview.axd?code=p1027164r403288u&size=largest>)

Dow AgroSciences, Monsanto and other chemical/seed companies want to release new **GE crops that tolerate the herbicides 2,4-D and dicamba** in order to fight glyphosate-resistant weeds populating millions of U.S. farm acres – weeds that became resistant because of overuse of GE glyphosate-resistant crops. (Glyphosate is the active ingredient in Monsanto’s Roundup.) The propensity for 2,4-D and dicamba to drift due to wind, heat and humidity and to damage nontarget gardens, crops and landscapes has farmers and food companies worried, says the Save Our Crops Coalition, which includes growers and processors who support biotech. The coalition petitioned USDA to conduct an environmental impact study on Dow’s combined 2,4-D- and glyphosate-tolerant corn and on Monsanto’s dicamba- and glyphosate-tolerant corn. It also petitioned EPA to form a Scientific Advisory Panel to look at potential drift from the sprays. The Center for Food Safety filed its own petition, out of concern for the health of people and the environment, and because it believes USDA has not properly assessed 2,4-D-based crops. Dow says the 2,4-D formulation being used is not so subject to drift and volatility as other formulations. The coalition says many farmers will use cheaper, generic, volatile 2,4-D. Meanwhile, the EPA denied a petition from the Natural Resources Defense Council (NRDC) seeking revocation of approval for 2,4-D, widely used by farmers and in weed-and-feed products on lawns. The use of 2,4-D will increase if GE corn resistant to 2,4-D is approved. The NRDC said studies have shown that 2,4-D can cause cancer, disrupt hormones, mutate genes and act as a neurotoxin. It says the EPA underestimates people’s exposure to the chemical. The EPA says studies on the health effects of 2,4-D are inconsistent and inconclusive. (“Farm Group Seeks U.S. Halt On ‘Dangerous’ Crop Chemicals,” by Carey Gillam, Reuters, April 18, 2012; <http://news.yahoo.com/farm-group-seeks-u-halt-dangerous-crop-chemicals-123359159.html>; “E.P.A. Denies an Environmental Group’s Request to Ban a Widely Used Weed Killer,” by Andrew Pollack, The New York Times, April 9, 2012; www.nytimes.com/2012/04/10/business/energy-environment/epa-denies-request-to-ban-24-d-a-popular-weed-killer.html?_r=1)

A fetus exposed to organophosphate (OP) insecticides while its mother is pregnant **may be born a few days early and weigh at least one-third pound less** than a fetus with minimal exposure. Exposures to OPs occurred primarily through diet and possibly through pesticide use in and around the yard in the women in the current study, say the researchers, who measured OP metabolites in urine of 306 Cincinnati-area pregnant women. The 15 percent of the women with the highest concentrations of metabolites had 10 times the level of pesticide metabolites than the 15 percent with the lowest concentrations; and the high concentration group had smaller babies of shorter gestational ages. Lower birth weight and earlier birth can lead to numerous health problems, especially among preterm babies. (Associations of Prenatal Exposure to Organophosphate Pesticide Metabolites with Gestational Age and Birthweight, S.A. Rauch et al., Environmental Health Perspectives, April 5, 2012; <http://dx.doi.org/10.1289/ehp.1104615>; [http://ehp03.niehs.nih.gov/article/fetchArticle.action?articleURI=info%3Adoi%2F10.1289%2Fehp.1104615#Ahead of Print \(AOP\)](http://ehp03.niehs.nih.gov/article/fetchArticle.action?articleURI=info%3Adoi%2F10.1289%2Fehp.1104615#Ahead%20of%20Print)); “Dangers Posed By Pesticides During Pregnancy,” by Lynne Peeples, Huffington Post, April 5, 2012; www.huffingtonpost.com/2012/04/05/pesticides-pregnancy-babies-health_n_1406468.html)

Rick Relyea of the University of Pittsburgh created simple wetland communities and exposed three species of **tadpoles** to three concentrations of **Monsanto’s Roundup Original MAX herbicide** and to a control wetland with no Roundup. The Roundup treatments were combined with one of three predator-cue treatments (no predators, adult newts or larval dragonflies). With the dragonfly-Roundup combination, Roundup was less lethal to tadpoles than it had been alone in past lab studies – possibly because the dragonflies prompted tadpoles to move lower in the water, below where the herbicide had stratified. More striking, says Relyea, were morphological changes in tadpoles exposed to Roundup. Wood frog and leopard frog tadpoles exposed to Roundup had relatively deeper tails – much as tadpoles develop in response to dragonfly presence. “To my knowledge,” says Relyea, “this is the first study to show that a pesticide can induce morphological changes in a vertebrate. Moreover, the data suggest that the herbicide might be activating the tadpoles’ developmental pathways used for antipredator responses.” Relyea told UPI that the presence of predators can affect tadpoles’ stress hormones to make them change their shape, e.g., to grow bigger tails to better escape. Similar changes after exposure to Roundup suggest that the herbicide, too, may affect tadpoles’ hormones. The researcher said that in the presence of predators and Roundup, tadpole tails became twice as large as without those treatments. “Herbicides are not designed to affect animals, but we are learning that they can have a wide range of surprising effects by altering how hormones work in the bodies of animals,” added Relyea. (“New effects of Roundup on amphibians: Predators reduce herbicide mortality; herbicides induce antipredator morphology,” Rick A. Relyea, Ecological Applications, 22(2), 2012, pp. 634–647; www.biology.pitt.edu/sites/default/files/facilities-images/Relyea_pubs/2012%20Relyea.pdf; “Weed killer causes animal shape changes,” by Bill Greenblatt, UPI, Science News, April 2, 2012; www.upi.com/Science_News/2012/04/02/Weed-killer-causes-animal-shape-changes/UPI-74951333402187/)

Researchers at the Medical University of Vienna, Austria, found that Monsanto’s **Roundup Ultra Max herbicide caused cellular and DNA damage** to epithelial cells derived from the inside of the mouth and throat. This raises concern over the safety of inhaling glyphosate, one of the most common ways people are exposed to the herbicide. (“Glyphosate Toxic to Mouth Cells

& Damages DNA, Roundup Much Worse,” by Dr. Eva Sirinathsinghji, Science in Society Report, March 29, 2012; www.isis.org.uk/Glyphosate_Toxic_to_Mouth_Cells.php)

In April 2012, **Sofia Gatica** of Argentina received the **Goldman Environmental Prize**, the world’s largest prize for grassroots environmentalists. Thirteen years ago, Gatica’s newborn died after being exposed to pesticides in the womb, according to Pesticide Action Network North America. After that, Gatica learned about similar losses in her small community of Ituzaingó Annex, where aerial spraying with Monsanto’s Roundup herbicide had climbed dramatically along with the number of acres planted to Roundup Ready soy. So she and other concerned mothers surveyed the community and found cancer rates 41 times the national average, and high rates of neurological problems, respiratory diseases and infant mortality. The mothers launched a “Stop the Spraying!” campaign, and in 2008 Argentina’s president ordered an investigation of the health impacts of pesticides in Ituzaingó Annex. The resulting study corroborated the mothers’ door-to-door research and brought about a municipal ordinance prohibiting aerial spraying within 2,500 meters of residences. Despite few resources and real threats – including being held at gunpoint in her own home – Gatica and the Mothers of Ituzaingó are now working to expand protections to families across the country. (Pesticide Action Network North America Action Alert, April 16, 2012. www.panna.org/courageous-mother-honored-Goldman-Prize?utm_source=action&utm_medium=alert&utm_content=health&utm_campaign=SofiaGatica)

Arysta LifeScience has **pulled methyl iodide** off the U.S. market – for financial reasons, says the company. The EPA first registered methyl iodide as a pesticide in October 2007, despite scientists’ concerns about its potential to cause cancer, brain damage and miscarriage in those who handle it and to contaminate groundwater. It was used to fumigate soils where conventional strawberries and other crops were grown. It is still licensed for use in eight other countries, including Mexico. (“Arysta pulls methyl iodide nationwide,” by Kathryn Gilje, Pesticide Action Network North America, March 22, 2012; www.panna.org/blog/huge-win-arysta-pulls-methyl-iodide-nationwide; “Methyl iodide distribution to halt in U.S.,” by Steve Chawkins and Diana Marcum, Los Angeles Times, March 21, 2012; www.latimes.com/business/la-fi-strawberry-methyl-iodide-20120322,0,6581311.story)

In April 2004, French farmer Paul Francois was exposed to fumes of Monsanto’s herbicide Lasso while opening a sprayer tank. Subsequent nausea, headaches, muscle aches and stuttering forced him to stop working. Traces of Lasso remained in his system a year later. In February 2012, a French court said that **Monsanto was guilty of poisoning** the farmer because its product did not display proper health hazard warnings. The court awarded compensation to Francois, now disabled. After Lasso was banned in Canada, the United Kingdom and Belgium, the herbicide was removed from the French market in 2007. Monsanto says the company plans to appeal the verdict. (“Monsanto found guilty of poisoning French farmer,” by Blake Deppe, People’s World, Feb. 22, 2012; <http://peoplesworld.org/monsanto-found-guilty-of-poisoning-french-farmer>; “Monsanto found liable for weedkiller poisoning in France,” by Elizabeth Flock, The Washington Post, Feb. 13, 2012; www.washingtonpost.com/blogs/blogpost/post/monsanto-found-liable-for-weedkiller-poisoning-in-france/2012/02/13/gIQAp2WcBR_blog.html)

A study of more than 300 men in Massachusetts found that increased levels of the organochlorine chemicals **PCBs** (once widely used in electrical transformers and motors) **and p,p'-DDE** (a DDT

breakdown product) in their blood **were associated with an extra sex chromosome in sperm** that can contribute to reproductive problems. An abnormal number of chromosomes in an embryo or fetus is the largest known cause of failed pregnancies in people and can cause birth defects. Normally, a mother donates an X chromosome and a father donates an X or a Y chromosome to a fertilized egg. With an abnormal number, extra sex chromosomes almost always come from the father, who may donate an extra X or Y chromosome. Other studies have associated benzene and some pesticides with sperm having more than one sex chromosome. Both PCBs and DDT are now banned in the United States and some other countries but persist either as the original substance or as a breakdown product. (“High levels of PCBs tied to defective sperm in infertile men,” by Tamara Tal, Environmental Health News, Feb. 28, 2012; www.environmentalhealthnews.org/ehs/newscience/2012/01/2012-0208-pcbs-dde-sperm-aneuploidy; M.E. McAuliffe et al., 2011. Environmental Exposure to polychlorinated biphenyls and p,p'-DDE and sperm sex chromosome disomy. Environmental Health Perspectives <http://dx.doi.org/10.1289/ehp.1104017>)

A NOAA Fisheries Service evaluation shows that three common **weed killers** – oryzalin, pendimethalin and trifluralin – are likely to harm half of the West Coast protected **salmon** populations. These herbicides are used on lawns, roadsides, in orchards, vineyards, on agronomic crops, Christmas trees and golf courses. (“Fed evaluation: 3 more pesticides may harm salmon,” by Jeff Barnard, AP, April 9, 2012; www.fresnobee.com/2012/04/09/2793897/feds-say-3-pesticides-harmful.html#storylink=cpy)

Fertilizers

Feather meal processed from chicken feathers and used as fertilizer and animal feed **contains antibiotics, fungicides**, caffeine, antihistamines, acetaminophen, fluoxetine (Prozac), norgestimate (a hormone used in oral contraceptives and to treat problems associated with menopause) and other compounds, according to research published in Environmental Science & Technology (DOI: 10.1021/es203970e). Some of the compounds may have come from manure and sludge applications to fields. (“Chicken Feathers Carry Drugs,” by Naomi Lubick, Chemical & Engineering News, March 29, 2012; <http://cen.acs.org/articles/90/web/2012/03/Chicken-Feathers-Carry-Drugs.html>)

Nanotechnology

The FDA wants more studies from food and cosmetic companies on the safety of products that use **nanotechnology**. Nanotechnology uses materials smaller than 100 nanometers. (A nanometer is one-billionth of a meter.) Nanoparticles are used in some stain-resistant clothing, cosmetics, food packaging and food additives and may be able to penetrate skin. (“FDA says nanotech may need extra safety tests,” by Anna Yukhananov and Phil Wahba, Reuters, April 20, 2012; www.reuters.com/article/2012/04/20/us-fda-nanotech-idUSBRE83J1B120120420)

Researchers at the National Institute of Standards and Technology (NIST – an agency of the U.S. Dept. of Commerce) and the University of Massachusetts Amherst found that **engineered nanoparticles can accumulate within plants and damage their DNA**. The team exposed radish and perennial and annual ryegrass plants growing in Petri dishes to cupric oxide bulk

particles and nanoparticles. Cupric oxide is used as a pigment for coloring glass and ceramics, as a polish for optics, as a catalyst in manufacturing rayon, and to conduct electric current. Radishes had twice as many lesions on DNA bases when exposed to nanoparticles versus larger particles, and their cells took up significantly more copper from nanoparticles than from larger particles. Ryegrasses had about half as many lesions as radishes. Nanoparticles significantly stunted development of roots and shoots in all three species. Nanoparticle concentrations used in this study were higher than those likely to be encountered by plants in typical soils. (“NIST/UMass Study Finds Evidence Nanoparticles May Increase Plant DNA Damage,” by Michael E. Newman, NIST Tech Beat, April 17, 2012; www.nist.gov/mml/biochemical/nanoparticles-041712.cfm; D.H. Atha et al., Copper oxide nanoparticle mediated DNA damage in terrestrial plant models. *Environmental Science and Technology*, Vol. 46 (3): pages 1819-1827 (2012), DOI: [10.1021/es202660k](https://doi.org/10.1021/es202660k).)

Nutrition

The USDA is urging Americans to eat more fruits and vegetables, but its crop insurance and credit programs handicap produce growers and instead promote commodity crops that are disproportionately used in heavily processed junk food, says a report by the Union of Concerned Scientists.^[1] “Ensuring the Harvest: Crop Insurance and Credit for a Healthy Farm and Food Future” recommends common-sense policies that would help American farmers grow more healthy food for our communities. For example, USDA offers crop insurance and credit to large farms growing corn, soy and other commodity crops, and to some large fruit and vegetable farms, but not to small- to medium-size farms growing produce or raising livestock sustainably. If fruit and vegetable consumption increased to meet USDA MyPlate dietary guidelines, driving demand for healthy, sustainable produce, local food sales could increase from the current \$5 billion annually to as much as \$14.5 billion and generate as many as 189,000 new jobs, says the report. (“Report Finds U.S. Crop Insurance, Credit Programs Harm Fruit and Vegetable Growers; Encourage Commodities for Unhealthy Food,” Union of Concerned Scientists, April 24, 2012; www.ucsusa.org/food_and_agriculture/solutions/big_picture_solutions/ensuring-the-harvest.html)

Food Safety

The USDA Animal and Plant Health Inspection Service has confirmed the fourth U.S. case of bovine spongiform encephalopathy (BSE), in a dairy cow from central California. The cow was never presented for slaughter for human consumption, and milk does not transmit BSE, says USDA. Due to feed bans as a primary control measure for the disease, only 29 cases of BSE occurred worldwide in 2011, a 99 percent reduction since the 1992 peak of 37,311 cases. The affected cow in California tested positive for atypical BSE, a rare form of the disease not generally associated with an animal consuming infected feed, says USDA. Dr. Michael Hansen of Consumer’s Union says the case raises three important questions about the safety of U.S. beef. First, USDA monitoring for mad cow disease is too small, involving about 40,000 cows a year of the millions slaughtered. Second, USDA prohibits private companies from testing their own beef, and USDA tests only cattle sent to the renderer, not at slaughterhouses. Third, the ruminant to ruminant feed ban in the US to prevent spread of mad cow disease is inadequate. Cows can be fed to pigs and chickens, and pig and chicken remains can be fed back to cows, possibly enabling

the spread of the disease. (“Statement by USDA Chief Veterinary Officer John Clifford Regarding a Detection of Bovine Spongiform Encephalopathy (BSE) in the United States,” USDA press release, April 24, 2012; www.usda.gov/wps/portal/usda/usdamediafb?contentid=2012/04/0132.xml&printable=true&contentidonly=true; “Consumer’s Union on Announcement Today of a Confirmed Mad Cow in California,” April 25, 2012; www.organicconsumers.org/articles/article_25317.cfm)

Fall 2012

The Good News

Americans strongly support efforts to produce a healthier, more affordable, green and fair food system – including support for a nationwide program to double the value of SNAP benefits (formerly called food stamps) at farmers’ markets, according to a poll of 800 adults commissioned by the W.K. Kellogg Foundation. The survey found that

- 93 percent of respondents believe that it is very important or somewhat important for all Americans to have equal access to fresh produce.
- 80 percent strongly or partly agree that the federal government needs to do more to increase access to locally grown, fresh food.
- More than 85 percent strongly or partly agree that state and local officials should help ensure such access.
- Almost 90 percent would pay \$1.50 more monthly for produce to ensure fair wages for those harvesting produce.
- More than 80 percent strongly or partly agree that the federal government should shift its support toward smaller, local produce growers and away from large farm businesses.
- Almost 90 percent strongly or partly agree they would pay more for produce if their money stayed in the community. (“Poll: Americans overwhelmingly support doubling food stamp value at farmers markets,” W. K. Kellogg Foundation press release, May 22, 2012; www.wkkf.org/news/Articles/2012/05/Poll-Americans-support-doubling-food-stamp-value-at-farmers-markets.aspx; full report at www.foodandcommunity.org/conference)

Investors who want to support environmental and social goals and earn money are increasingly **putting their money in sustainable agriculture** enterprises. A report by the Springcreek Foundation, “Promoting Sustainable Food Systems Through Impact Investing,” describes 40 such investment funds. Profiled from the Northeast are The Carrot Project, Cape Cod Fisheries Trust, PV Grows, Cooperative Fund of New England and Green Mountain Organic Creamery. (“Sustainable agriculture heats up,” by Christina Williams, Sustainable Business Oregon, May 4, 2012;

www.sustainablebusinessoregon.com/articles/2012/05/sustainable-agriculture-heats-up.html; report at <http://thespringcreekfoundation.org/index.html>)

Johnny’s Selected Seeds of Albion, Maine, a MOFGA business member, is now owned by its employees. Rob Johnston started the company almost 40 years ago. In 2006, an Employee Stock Ownership Plan (ESOP) was put in place, with the goal of the ESOP Trust owning all shares of the company by 2016. Johnny’s has 130 full-time employees.

The **FDA has rejected a petition** by the Corn Refiners Association to change the name **high fructose corn syrup** to "corn sugar" on nutritional labels. Urvashi Rangan, Ph.D., of Consumers Union said, "The FDA did the right thing. High fructose corn syrup is not 'corn sugar.' The term 'corn sugar' simply doesn't reflect the chemical changes that take place in production. Consumers know the term high fructose corn syrup, and they should be able to easily differentiate among products that use it." ("FDA Rejects 'Corn Sugar' Petition," Consumers Union news release, May 31, 2012; www.consumersunion.org/pub/core_food_safety/018420.html)

Some 16,000 women began answering food consumption questionnaires when they were middle aged. Those responses plus cognitive assessments at age 70 or older suggest that higher intake of **strawberries and blueberries** was linked to **slower cognitive decline**. Women who ate at least one serving of blueberries or at least two servings of strawberries per week had a delay in cognitive aging of up to 2.5 years. ("High Intake of Some Berries Linked to Slower Cognitive Decline," JournalWatch, April 26, 2012; <http://firstwatch.jwatch.org/cgi/content/full/2012/426/2>; Elizabeth E. Devore et al., Annals of Neurology, April 25, 2012; <http://onlinelibrary.wiley.com/doi/10.1002/ana.23594/full>)

Ladybugs and other predatory insects eat crop pests, saving farmers about \$4.6 billion a year on insecticides, says Michigan State University. Non-crop plants provide predatory insects with food and shelter, helping them survive where they are needed, so researchers have often planted strips of flowers along the edges of crop fields. But MSU doctoral student Megan Woltz says, "Creating predator-attracting habitats next to crops is only a partial solution. Ladybugs and many other pest-eating insects travel long distances throughout the growing season, sometimes flying or crawling over many miles as they search for food and shelter. So we also have to consider what resources are available to these predators at larger scales."

Ladybugs feed on soybean aphids, the most destructive northern U.S. soybean pest. When Woltz and coworkers planted buckwheat strips next to soybean fields, they always found more ladybugs in the buckwheat than are usually in field edges, says Woltz. But "the ladybugs in the buckwheat did little to change their populations in the soybean fields." However, the amount of natural grasslands and forests within 1.5 miles of soybean fields did determine how many ladybugs were in the soybeans, suggesting that rural neighbors might work together to leave such habitat. In other studies, landscapes with at least 20 percent non-crop habitat showed good pest control. ("Increasing predator-friendly land can help farmers reduce costs," Michigan State University News, May 11, 2012; <http://news.msu.edu/story/increasing-predator-friendly-land-can-help-farmers-reduce-costs/>)

Ladybugs fed aphids that had fed on plants grown with organic amendments, such as chicken manure and green manure crops, were 10 percent more likely to survive to adulthood than ladybugs fed on aphids that had fed on plants fertilized with synthetic ammonium nitrate. Researchers say of their preliminary findings, "The efficacy of predators as biological control agents may thus differ between conventional and sustainable farming systems." ("Predator mortality depends on whether its prey feeds on organic or conventionally fertilised plants," by J. A. Banfield-Zanin et al. Biological Control, 2012; www.sciencedirect.com/science/article/pii/S1049964412001120)

Research commissioned by the UK National Trust and conducted on 10 of its farms found that **feeding cattle on grass** throughout their lifecycle is **the most environmentally sustainable way to rear beef**. Livestock such as cattle and sheep produce methane when they consume grass, leading to the suggestion that cattle be fed largely on cereals. The Trust's report shows that while carbon footprints of cows from grass-fed and conventional farms were comparable, the carbon sequestration contributed by well-managed grass pasture on the less intensive systems reduced net emissions by up to 94 percent, even resulting in a carbon net gain in upland areas. Farms that recently converted to organic showed even greater gains.

Rob Macklin, national agriculture and food adviser at the National Trust, said, "Many less intensive livestock systems would be classed 'inefficient' on the carbon emission scale, yet are much less reliant on artificial inputs and tend to have less impacts on water quality, loss of soil organic matter and reduced biodiversity. We believe that optimised beef production – deliberately accommodating less than maximum output in order to secure stronger and broader ecosystem protection – is the best sustainable use for the grasslands in our care.

"The debate about climate change and food often calls for a reduction of meat consumption and a more plant based diet, but this often overlooks the fact that many grasslands are unsuitable for continuous arable cropping. Grasslands support a range of ecosystem services including water resources, biodiversity and carbon capture and storage."

Other research has shown greater health benefits to humans of eating grass-fed beef and lamb, because the meat contains higher concentrations of beneficial omega-3 fatty acids than grain-fed beef and one-third the levels of saturated fat. ("Grass-fed beef is best," National Trust, May 16, 2012; www.nationaltrust.org.uk/what-we-do/news/view-page/item842690/)

Scientists at the USDA Agricultural Research Service National Animal Disease Center in Ames, Iowa, have found that **vitamin D** may offer an **alternative treatment to antibiotics for mastitis in dairy cattle**. Mastitis decreases milk production and quality and causes an estimated \$2 billion a year in economic losses. Molecular biologist John Lippolis studied a natural form of vitamin D – prehormone 25-hydroxyvitamin D – in altering the response of the cow's immune system to a mastitis pathogen, *Streptococcus uberis*. Research indicates that precise levels of vitamin D need to be in the bloodstream to prevent conditions such as rickets, or softening of the bones. Higher levels are required for proper immune function. Prehormone 25-hydroxyvitamin D is found in the blood, but very little is found in milk.

In the study, cows with vitamin D infused directly into the infected quarter of the mammary gland had significantly lower bacterial counts and fewer clinical signs of severe infection than untreated cows. In the early stage of the infection, as vitamin D reduced bacterial counts, milk production was also greater in the treated animals.

These results suggest that vitamin D might help reduce antibiotic use in treating mastitis, says Lippolis. Vitamin D may also decrease other bacterial and viral diseases, such as respiratory tract infections. ("Treating Mastitis in Dairy Cattle with Vitamin D," by Sandra Avant, Agricultural Research, June 18, 2012; <http://ars.usda.gov/is/pr/2012/120618.htm>)

A study conducted at the University of Barcelona in Spain shows that **organic ‘Daniela’ tomatoes contain significantly higher levels of phenolic compounds than conventional tomatoes**. The UB’s Natural Antioxidant Group had previously shown that organic tomato juice and ketchup had higher polyphenol content than juice and ketchup made from conventionally grown tomatoes. The current study verifies that those differences originated in the tomatoes and not in the production technology. Consumption of polyphenols – natural antioxidants of plant origin – is associated with prevention of cardiovascular and degenerative diseases and of some forms of cancer. (“Organic tomatoes contain higher levels of antioxidants than conventional tomatoes,” press release, Universidad de Barcelona, July 3, 2012; www.alphagalileo.org/ViewItem.aspx?ItemId=122117&CultureCode=en; Anna Vallverdú-Queralt et al., “Evaluation of a Method To Characterize the Phenolic Profile of Organic and Conventional Tomatoes,” J. Agricultural and Food Chemistry, 2012; 60 (13): 3373; <http://pubs.acs.org/doi/abs/10.1021/jf204702f>)

Representatives from the Cape Neddick River Association, York Rivers Association, York Land Trust, York Water District and the Conservation Commission have started a **“Lawns to Lobsters”** initiative to counter pesticide runoff from residential lawns that ends up in local waters and can harm organisms, including lobsters. The group suggests not fertilizing during rainy periods, not applying more fertilizer or water than necessary, keeping lawns at least 3 inches long, cleaning up after pets and not spreading herbicides. (“Linking lawns to lobsters,” by Ron McAllister, June 20, 2012; www.seacoastonline.com/articles/20120620-OPINION-206200343?cid=sitesearch)

John Chapman of Athens, Maine, is Johnny Appleseed’s great-great-great-great grandnephew and a graduate of Unity College. In April he planted at the college a ‘Rimbaud’ sapling – an apple his ancestor planted while traveling west. (“Johnny Appleseed tree planted at Unity College,” by Abigail Curtis, Bangor Daily News, April 26, 2012; <http://bangordailynews.com/2012/04/26/news/midcoast/johnny-appleseed-tree-planted-at-unity-college/>)

The **Walker School in Liberty, Maine**, an elementary school, **will host FoodCorps associate Katie Morabito** of Michigan for the 2012-13 school year. The school’s greenhouse is a hands-on lab for student learning and provides food for school snacks and lunches. Morabito will focus on designing, planning, building, planting and harvesting raised beds next to the greenhouse. Students will be able to tend the gardens, even in summer, and decide how to best use the produce. Walker School’s commitment to being part of the program requires that it contribute \$5,000 to help support FoodCorps. The school is raising funds for that purpose. (E-mail, principal Glen Widmer, gwidmer@rsu3.org)

A partnership of Northeastern marine institutions, including **the Gulf of Maine Research Institute (GMRI)**, has secured more than \$2 million in funding from the National Oceanic and Atmospheric Administration (NOAA) to help provide information to those who use the water. GMRI will synthesize data from buoys, weather stations, forecasts and satellites and make it accessible and useful to mariners, fishermen, scientists and others in the region, including

emergency managers issuing storm warnings and fishermen determining if conditions are safe. For more information, visit www.gmri.org.

Genetic Engineering

Seventy-five family farmers, seed businesses (including Fedco Seeds) and agricultural organizations (including MOFGA) representing more than 300,000 individuals and 4,500 farms filed a brief in July 2012 with the U.S. Court of Appeals for the Federal Circuit in Washington D.C. The brief asks the appellate court to reverse a lower court's February decision dismissing their **protective legal action against Monsanto's patents on GE seed**. The plaintiffs seek to defend themselves from Monsanto lawsuits for patent infringement if the company's GE seed contaminates their property despite their efforts to prevent contamination.

"The law says we deserve protection under the Declaratory Judgment Act," says Maine organic farmer Jim Gerritsen. "We will continue to pursue our right to farm, and the right of our customers to have access to good clean food and seed."

In February 2012, Judge Naomi Buchwald of the Southern District Court of New York dismissed the case, saying "it is clear that these circumstances do not amount to a substantial controversy and that there has been no injury traceable to defendants." The brief filed in July notes errors in the district court decision.

Monsanto investigates more than 500 farmers annually for patent infringement, say plaintiffs. To date, 144 farmers have had lawsuits brought against them by Monsanto without a binding contract with the corporation; another 700 have been forced to settle out of court for undisclosed sums.

Some plaintiffs have stopped growing certain crops due to the threat of contamination. Bryce Stephens, a certified organic farmer from Kansas, stopped growing organic corn and soy once his neighbors started using Monsanto's GE seed because it could easily contaminate his organic crops, which would put him at risk of being sued for patent infringement by Monsanto.

In July, 11 prominent law professors and 14 nonprofit organizations filed two separate amicus briefs with the Court of Appeals arguing that farmers have the right to protect themselves from being accused of patent infringement by agricultural giant Monsanto. The nonprofits' brief says, "Plaintiffs' uncontroverted allegations show that, for the first time in history, they can be sued for something as natural as pollen drift, while simultaneously being forced to take expensive and burdensome steps in order to continue their normal businesses." It adds, "The district court noted that 'unlicensed – and unintended – use of transgenic seeds is inevitable...' but then failed to address the fact that such unlicensed use is actionable and places Plaintiffs at risk of enforcement actions by Defendants." ("Organic Farmers File Appeal Against Monsanto!" Wood Prairie Farm Seed Piece Newsletter, July 6, 2012; www.woodprairie.com; brief posted at <http://woodprairiefarm.commercev3.com/downloads/OrganicSeedCAFCBrief.pdf>; Wood Prairie Farm press release, July 17, 2012)

The **National Organic Standards Board** unanimously endorsed a letter to Agriculture Secretary Tom Vilsack **asking that organic crops be better protected from GE crops.** "Unsolicited public comments at many NOSB meetings... have illustrated the extreme concern about the impact that continued deregulation of new genetically engineered crops has had on our community of organic farmers, handlers and consumers," the NOSB letter said, adding, "We feel the developers of the GMO technology should share the burden that organic farmers now assume in mitigating the gene flow between farms and should compensate organic farmers for genetic drift." The board also formed an ad hoc committee to look at threats from GE crops to organic crops. ("NOSB wants more action on GMOs," by Steve Brown, Capital Press, May 24, 2012; <http://capitalpress.com/content/SB-NOSB-GMOs-052312>)

The Right to Know initiative to label GE foods will be on California's November ballot after almost a million people signed a petition for the initiative in 10 weeks. If passed, it will be the first U.S. law requiring that GE foods be labeled. All raw agricultural commodities produced with GE crops, such as corn and soybeans, and retail processed foods with more than 0.5 percent GE ingredients would have to be labeled. Such foods could not be labeled "natural." Certified organic foods, alcohol and foods sold in restaurants would not have to be labeled, nor would foods made from animals fed or injected with GE material but not engineered themselves. Polls show that about 90 percent of U.S. voters support such labeling. The United States is one of the few developed nations that does not use simple labels to let consumers know whether their food has been engineered. In March, more than one million people petitioned the FDA for mandatory labeling of GE foods – a record number of petitioners for the FDA. Tom Hiltachk heads the Coalition Against the Costly Food Labeling Proposition, which is fighting the bill on behalf of the Grocery Manufacturers Association, Monsanto, BASF, Bayer, Dow, Syngenta and several big food processors and supermarket chains. Hiltachk, with help from Philip Morris and RJ Reynolds, helped organize Californians for Smokers' Rights to fight anti-smoking initiatives in the '80s and '90s. California Citizens Against Lawsuit Abuse, funded by the tobacco industry and other corporations, is also fighting the GE labeling bill. ("California voters to decide on GMO labeling," June 12, 2012; www.carighttoknow.org/content/california-voters-decide-gmo-labeling; "GMO food label measure heads to California ballot," by Rod Smith, Feedstuffs, May 24, 2012; www.feedstuffs.com/ME2/dirmod.asp?sid=F4D1A9DFCD974EAD8CD5205E15C1CB42&nm=Breaking%20News&type=news&mod=News&mid=A3D60400B4204079A76C4B1B129CB433&tier=3&nid=2898191C450D4AFD8E7593D2BAE1553E; "Fight over genetically engineered crops on Calif. ballot," by Elizabeth Weise, USA TODAY, June 12, 2012; www.usatoday.com/news/health/story/2012-06-12/genetically-engineered-food-california/55558352/1; "How California's GM food referendum may change what America eats," by Richard Schiffman, The Guardian, June 13, 2012; www.guardian.co.uk/commentisfree/2012/jun/13/california-gm-referendum-change-america-food)

Connecticut's GE Foods bill turned into a bill that would not require labeling of GE foods, due to fear that the state might be sued by Monsanto. ("Connecticut's GE Foods Bill Eviscerated by Lawyers," by Analiese Paik, Fairfield Green Food Guide, May 5, 2012; <http://fairfieldgreenfoodguide.com/2012/05/05/connecticuts-ge-foods-bill/>)

The **American Medical Association** in June called for **mandatory pre-market safety testing of GE foods** rather than the voluntary safety consultation that biotech companies are encouraged to do with the FDA now. (“GMOs should be safety tested before they hit the market says AMA,” by Monica Eng, Chicago Tribune, June 19, 2012;

www.chicagotribune.com/features/food/stew/chi-gmos-should-be-safety-tested-before-they-hit-the-market-says-ama-20120619,0,4405082.story)

“**GMO Myths and Truths**,” a report by Michael Antoniou, Ph.D., Claire Robinson, M. Phil., and John Fagan, Ph.D., says that GE crops “are promoted on the basis of a range of far-reaching claims from the GM crop industry and its supporters” while “a large and growing body of scientific and other authoritative evidence shows that these claims are not true.” Among the myths the report addresses are “Genetic engineering is just an extension of natural breeding”; “Genetic engineering is precise and the results are predictable”; “Cisgenics/intragenics [using genes from the species to be engineered, or a related species] is a safe form of GM because no foreign genes are involved”; and “GM foods are safe to eat.” (“Why genetically engineered food is dangerous: New report by genetic engineers,” Earth Open Source press release, June 17, 2012; <http://earthopensource.org/index.php/news/60-why-genetically-engineered-food-is-dangerous-new-report-by-genetic-engineers>)

By injecting genes from archaea (bacteria-like organisms) into cow embryos, researchers at Inner Mongolia University created a **GE calf** that breaks down lactose in milk to other sugars that are easier to digest, with the idea that lactose-intolerant people could drink the low- or no-lactose milk. Other scientists at IMU introduced a gene from a roundworm into a cow embryo to create a GE cow with an improved omega-3 to omega-6 fatty acid ratio in its milk. (“Cows genetically modified to produce healthier milk,” by Richard Gray, The Telegraph, June 17, 2012; www.telegraph.co.uk/science/science-news/9335762/Cows-genetically-modified-to-produce-healthier-milk.html)

In July 2012, Iowa agronomist **Dr. Michael McNeill spoke in three Maine sites on the effects of glyphosate** (the active ingredient in Roundup herbicide) on crops and animals. His talks were co-sponsored by the Maine Alternative Agriculture Assoc., Dr. Timothy Howe and Omega Wellness of Brunswick, MOFGA, Wood Prairie Farm Education Fund and Slow Food Aroostook.

Roundup is one of the most widely used herbicides in the United States, said McNeill. In 2007 the EPA estimated that slightly over 200 million pounds of Roundup or generic versions of it were applied. Glyphosate has long been hailed as a "safe" herbicide as it breaks down in the soil quickly and does not seem to cause many applicator safety issues.

McNeill cited numerous studies showing that glyphosate’s chelating effect has created micronutrient imbalances and deficiencies in soils where it is repeatedly applied. These imbalances have led to such crop diseases as fusarium head blight in wheat and sudden death syndrome in soybeans.

McNeill is a part of a group of scientists, including Dr. Don Huber, looking at a new microscopic "thing" that they believe is linked to glyphosate and the sickened crops produced from it. This

yet-to-be-identified "thing" has been implicated in causing health issues in livestock ingesting feed from affected crops. McNeill said that finding scientists to research these issues is difficult. He and his co-investigators have had to find private funding to do so. (Report by John Chartier, MOFGA's agricultural specialist for Aroostook County)

Danish farmer Ib Borup Pedersen believed that **GE soy was harming his pigs** and his farm economics. Some of his pigs suffered from diarrhea, some died of bloat, ulcers or lack of appetite. When he replaced GE feed with non-GE soy and fish meal, he says he immediately saw their health improve, reports GMWatch. "We are still not certain about cause and effect," Pedersen told GMWatch, "but medicine usage already appears to have fallen to near half of what it was... Just the savings I have accomplished in medicine expenses have paid for the extra cost of the GMO-free soy." The farmer thinks that glyphosate residues in GE crops may be responsible for dead and deformed piglets. Danish officials say they'll study the potential connection between GE soy and health problems in pigs – but GMWatch says that study, which will begin feeding GE soy to pigs when they weigh about 66 pounds rather than at weaning, may mask potential harm from GE soy. ("GM soy linked to health damage in pigs - a Danish Dossier," GMWatch, April 27, 2012; <http://gmwatch.org/latest-listing/1-news-items/13882>)

A 2008-2009 study showed that **the Bt toxins Cry1Ab and Cry3Bb were toxic to the two-spotted ladybird beetle**, an important biological control organism. This and more than 30 other studies led to the ban of GE Mon810 corn cultivation in Germany. The 2008-2009 study was later critiqued in Transgenic Research, and a study published there by Alvarez-Alfageme et al. allegedly disproved harm from the Bt toxins to ladybeetles. Subsequently, Swiss researchers Angelika Hilbeck et al. showed that the design of the follow-up study differed from the original enough to confound results. The original study exposed and fed ladybeetle larvae to Bt continuously for nine to 10 days, while the follow-up used 24-hour exposure periods followed by recovery periods on non-Bt material until the larvae reached the next instar, when the 24-hour exposure was repeated, apparently at all four instar stages. When Hilbeck et al. used the same exposure/recovery periods on the highly sensitive European corn borer, lethality was either significantly reduced or nonexistent, showing that Alvarez-Alfageme's study design was faulty. Hilbeck et al. found that longer exposure to the Bt toxin Cry1Ab did in fact have a lethal effect on ladybeetle larvae. (A controversy re-visited: Is the coccinellid *Adalia bipunctata* adversely affected by Bt toxins? Angelika Hilbeck et al., Environmental Sciences Europe 2012, 24:10; www.enveurope.com/content/24/1/10)

Last year, the western **corn rootworm survived GE Bt corn** in six Midwestern states, even though Monsanto engineered the corn to produce the Cry3Bb1 protein to resist the insects. This year some growers saw rootworm damage a month earlier than normal, even on GE corn. ("Pests damaging biotech corn, getting an early start," by Georgina Gustin, June 15, 2012; www.stltoday.com/business/local/pests-damaging-biotech-corn-getting-an-early-start/article_300d8916-b66b-11e1-b824-0019bb30f31a.html#ixzz1y4Cr6uyO)

A study published in Nature says that in China, fields growing **GE Bt cotton** or non-GE but unsprayed cotton enabled ladybugs, lacewings and spiders to survive and help control aphid pests better than fields growing non-GE cotton and treated with insecticides. However, other studies have shown that with Bt cotton, other, minor pests flourish, triggering more pesticide use.

These secondary pests have also infested crops other than cotton. ([“Modified crops benefit predators, but resistance looms – study,”](#) by Paul Voosen, Greenwire, June 13, 2012; www.eenews.net/public/Greenwire/2012/06/13/4; [“Widespread adoption of Bt cotton and insecticide decrease promotes biocontrol services,”](#) by Yanhui Lu et al., Nature, June 13, 2012; www.nature.com; [“Bt cotton and pests in Chinese fields,”](#) GMWatch, June 14, 2012; www.gmwatch.eu/latest-listing/1-news-items/13992-bt-cotton-and-pests-in-chinese-fields)

Okanagan Specialty Fruits of British Columbia has **developed GE ‘Golden Delicious’ and ‘Granny Smith’ apples** that will not turn brown for 15 to 18 days after being cut. The company is seeking Canadian and U.S. government approval of the apple, despite BC apple growers’ former rejection of the crop. Okanagan plans to engineer the nonbrowning trait into ‘Gala’ and ‘Fuji’ apples and into cherries and pears as well. ([“Taking the bite out of GM apples,”](#) by Lucy Sharratt, Common Ground, July 2012; <http://commonground.ca/2012/07/bite-out-of-gm-apples/>)

The FDA has approved a drug called Elelyso (the enzyme taliglucerase alfa) that is produced in GE carrot cells. The drug soothes symptoms of the rare Gaucher disease in most patients. A similar drug is produced in mammalian cells, but with greater expense and chance of contamination by pathogens. ([“First plant-made drug on the market,”](#) by Amy Maxmen, Nature News Blog, May 2, 2012; <http://blogs.nature.com/news/2012/05/first-plant-made-drug-on-the-market.html>)

Organic Issues

The USDA **National Organic Program (NOP)** has renewed several listings that were scheduled to expire in 2012 for substances allowed or prohibited in organic agriculture. Most of the substances renewed have been on the National List since its inception in 2000. The NOP has also changed the following substances on the National List, effective June 27, 2012, unless otherwise noted:

- Only non-amidated forms of non-organic pectin, typically added to thicken jams and jellies, will be allowed when organic pectin is not commercially available.
- The listing for iodine, used to fortify organic foods, has been clarified.
- The allowed use of chlorine materials and lignin sulfonate in organic crop production has been clarified.
- The allowed use of non-organic colors in organic processed products has been clarified. Organic colors must be used if they are commercially available.
- The allowance for streptomycin to control infections in organic apple and pear orchards has been extended until October 21, 2014.
- Effective October 21, 2012, yeast used in baked goods and other processed organic products must be organic, if commercially available and intended for human consumption.

- Effective October 21, 2012, sulfur dioxide (smoke bombs) will no longer be allowed for rodent control in organic crop production.
- Effective January 1, 2013, hops, typically used in organic beer production, must be organic.

Sodium nitrate, currently allowed under restricted conditions in organic crop production, will undergo a separate rulemaking that considers the National Organic Standard Board's recommendation to prohibit its use altogether in organic crop production. Additionally, the NOP will clarify the listing for vitamins and minerals after the assessment of public comments is complete.

Meanwhile, the Cornucopia Institute has criticized the USDA's National Organic Standards Board (NOSB), an advisory board to the NOP, for approving in June 2012 a number of synthetic ingredients for use in organics. Those ingredients include carrageenan, a stabilizer and thickener synthesized from seaweed. Carrageenan, says Cornucopia, "has been shown to trigger gastrointestinal inflammation, which is known to cause serious intestinal disease, including cancer." The NOSB also approved synthetic inositol and choline, two nutraceuticals, for use in infant formula. And last fall, the NOSB approved use of synthetic DHA (docosahexaenoic acid, an omega-3 fatty acid) and ARA (arachidonic acid, an omega-6 fatty acid) for use in formula and other organic foods.

Cornucopia says materials for use in organic products were being evaluated by food scientists working directly for corporate agribusiness and then approved by the NOSB, which, says the watchdog group, is illegally stacked with agribusiness representatives. The institute has filed a formal complaint with the USDA Office of Inspector General, asking for an investigation.

Cornucopia has published at www.cornucopia.org studies and scorecards rating organic brands, to address shortcuts some corporations apply to organic production. ("USDA Renews Listing for Specific Substances in Organic Agriculture," June 1, 2012; www.ams.usda.gov/AMSv1.0/ams.printData.do?template=printPage&navID=&page=printPage&dDocId=STELPRDC5098619&dID=170061&wf=false&docTitle=USDA+Renews+Listing+for+Specific+Substances+in+Organic+Agriculture; "Wildfires Rage at New Mexican Organic Meetings," Cornucopia Institute press release, June 1, 2012; www.cornucopia.org/2012/05/wildfires-rage-at-new-mexican-organic-meetings/)

Congresswoman Lois Capps (Calif.) and Congressman Richard Hanna (N.Y.) introduced the **Organic Standards Protection Act** in June 2012 to ensure that products bearing the USDA organic seal comply with the Organic Foods Production Act of 1990. The USDA Office of Inspector General recently reported that the absence of investigative authorities has hampered the USDA National Organic Program's (NOP's) ability to protect the integrity of the organic label. Currently, the NOP does not have the authority to stop the representation, labeling or sale of organic products that have been treated with prohibited substances or when conventional products are being sold as organic. The bill would grant USDA the authority to stop the sale of products fraudulently labeled and sold as certified organic while protecting the rights of producers and handlers during the appeals process; streamline recordkeeping requirements by

requiring all organic producers and certifiers to maintain and provide records to the USDA to improve its investigative process and enforcement efforts; and impose a civil penalty of \$10,000 on those who violate the USDA's revocation of their certification. ("Capps, Hanna Introduce Bipartisan Legislation to Protect and Promote Organic Farming," press release, Congresswoman Lois Capps, June 21, 2012; <http://capps.house.gov/press-release/capps-hanna-introduce-bipartisan-legislation-protect-and-promote-organic-farming>)

California Certified Organic Farmers and Oregon Tilth are merging if members ratify the merger before Oct. 31. The new CCOF Tilth will be the largest U.S. organic certifying agency, with nearly 4,000 certified farmers, ranchers and processors. ("Two organic certifying agencies plan merger to become nation's largest," by Anne Gonzales, The Modesto Bee, May 29, 2012; www.modbee.com/2012/05/29/2219381/two-organic-certifying-agencies.html)

Agriculture is the biggest factor in **global warming** but is also necessary to feed a growing world, reported Samuel Fromartz from the Sustainable Foods Institute, hosted in May by the Monterey Bay Aquarium. Jonathan Foley, professor of ecology at the University of Minnesota, said at the Institute that focusing on yield is misleading, since crops such as corn and soybeans that are fed to livestock or cars are such an inefficient use of land. Producing a pound of filet mignon from a cow not raised on pasture takes 32 pounds of corn, said Foley. Also, burning forests to grow crops, as in Brazil and Indonesia, is the greatest contributor to greenhouse gas emissions from agriculture – and agriculture accounts for 30 to 40 percent of greenhouse gases. "Transport of food doesn't even come close," wrote Fromartz. Dairy, eggs and poultry are more efficient uses of resources than feeding grain to cows and cars. And potatoes, said Charles Mann in an Institute talk, produce more food calories per acre than wheat and corn. Fromartz recommended Mann's books 1491 and its sequel, 1493: Uncovering the New World Columbus Created. ("Is American agriculture really efficient?" by Samuel Fromartz, May 22, 2012; www.chewswise.com/chews/)

The **Canadian Organic Aquaculture Standard**, approved in May, prohibits use of antibiotics, herbicides and GE organisms in aquaculture, severely restricts the use of parasiticides, and requires humane harvesting methods. It also defines stocking rates, cleaning procedures and materials, and feed materials in order to minimize waste impact. Opponents believe that net-pen aquaculture should be incompatible with organic practices. Also, the standard prohibits wild salmon from being certified organic as their food source cannot be confirmed, yet salmon raised in net pens, fed processed fish meal and possibly treated with parasiticides (only under veterinary supervision as a last course of treatment) can be labeled organic. ("Organic certifications for Canadian fish farms unveiled," by Sarah Schmidt, Postmedia News, May 9, 2012; www.canada.com/news/Organic+certifications+Canadian+fish+farms+unveiled/6594613/story.html); "New organic seafood standard muddies the water," by Mark Hume, Globe and Mail, May 15, 2012; www.theglobeandmail.com/life/food-and-wine/trends/trends-features/new-organic-seafood-standard-muddies-the-water/article2433759/)

The Organic Farming Research Foundation (OFRF) released its **first Organic Land Grant Assessment Report** in May, measuring research, education and outreach in the federally funded Land Grant system, which includes universities, research stations and Cooperative Extension.

The assessment scores each institution on eight points, including maintaining organic research land, cultivating a student organic farm, offering an organic minor, major or certificate, and employing a dedicated organic faculty or staff member.

Campuses scoring a perfect 8 are Colorado State University, University of Florida, Michigan State University, University of Minnesota, University of Tennessee and Washington State University. Eight Land Grant Universities offer a major in organic agriculture.

Maureen Wilmot, executive director of OFRF, said that “public universities must do a great deal more in order to meet the growing needs of organic demand.” (“Organic Growth Puts America's Universities to the Test,” Organic Farming Research Foundation press release, May 1, 2012; www.marketwatch.com/story/organic-growth-puts-americas-universities-to-the-test-2012-05-01; full report at <http://ofrf.org/publications/2012-LGU-Assess.pdf>)

A **survey** of 2,212 adults by Harris Interactive for CouponCabin.com, an online source of coupons, found that

- 72 percent of respondents would be more likely to **buy organic foods** if they were less expensive than regular grocery items.
- 52 percent seek organic food items when food shopping at least sometimes.
- 45 percent never or rarely seek organic foods.
- 31 percent aren't sure if organic food is better for you than non-organic.

Among those who never or rarely seek organic items when food shopping

- 65 percent said they're too expensive.
- 38 percent said the issue doesn't matter to them or they don't see the purpose.
- 9 percent prefer non-organic food items.
- 8 percent don't understand what organic food items are.
- 7 percent say organic food items are not available where they shop.
- 6 percent had other reasons.

To save on organic foods, CouponCabin suggested shopping at local farmers' markets, joining a co-op, buying in bulk and freezing excess, or using coupons. (“Nearly Three-in-Four U.S. Adults Would Be More Likely to Buy Organic Food if it Were Less Expensive, Reveals New CouponCabin.com Grocery Survey,” CouponCabin press release, June 13, 2012; www.couponcabin.com/blog/press-releases/)

The USDA National Organic Program (NOP) wants to **increase U.S. certified organic operations by 20 percent** by the end of 2015 – but without extra funding for that goal. The NOP listed 17,281 organic operations – about 10,400 growing crops – in January 2012, 717 more than in 2009 when USDA announced the goal. The NOP plans to meet its goal by increasing consumer confidence by protecting the integrity of the organic industry with inspections and enforcement of standards; by training and certifying more organic certifiers, producers and processors; and by publicizing market opportunities through USDA's Organic Literacy Project. (“USDA has uphill road to organic goal,” The Packer, June 14, 2012; www.thepacker.com/fruit-vegetable-news/USDA-has-uphill-road-to-organic-goal-159112035.html)

Pesticides

BPC News

By Katy Green

Board of Pesticides Control To Address Rulemaking

Discusses allegedly egregious lawn care company practices

The Maine Board of Pesticides Control (BPC) has been developing a message concerning pesticide notification since it opted not to develop a comprehensive registry for notification earlier this year. The current systems for pesticide notification in Maine have changed substantially over the past few years, creating confusion, so the BPC has struggled to develop a clear and concise message about notification.

The BPC developed a poster for statewide distribution telling how residents can receive notification of pesticide spraying near their homes. The non-urban, free pesticide notification registry no longer exists. To know about applications, residents and businesses must now must ask neighboring landowners about their activities.

At its June meeting the BPC received preliminary comments about rulemaking it will begin in the fall. Expected rule changes deal with board definitions, pesticide applications on school grounds, and removing provisions regarding pesticide container storage and disposal. The last change is in response to moves by the state legislature in its last session that repealed requirements for deposits on pesticide containers. The original legislation was intended to discourage dumping of pesticide containers, which the legislature believed was no longer necessary.

MOFGA had hoped the BPC would strengthen the policy concerning genetically engineered Bt corn products in Maine. The board currently has only a policy in place with no enforceability; if issues arise, growers have no protections or clarity regarding how new GE corn products are used. (See The MOF&G, summer 2012.)

See www.thinkfirstspraylast.org for information on commenting on proposed rulemaking changes.

Product Registrations

In June the BPC approved a Special Local Need (SLN) registration of Nufarm Ethephon 2 Plant Growth Regulator [(2-chloroethyl) Phosphonic Acid] for use on tomatoes grown at Backyard Farms in Madison. The product label says Nufarm is used to “chemically accelerate fruit maturation or facilitate uniform fruit ripening.”

Consent Agreements

The board reached a consent agreement with Prospect Hill Golf Course in Auburn in May. Prospect Hill is open to the public so must have a licensed commercial applicator apply any

pesticides used. In this case, the licensed employee left the company in 2009 and proper documentation and licenses were not maintained again until 2011, when a BPC inspector visited the site. A fine of \$350 was assessed.

Also in May the board fined Atlantic Turf Care, of Falmouth, \$800 for applying pesticides to the wrong property. The applicator failed to verify he was at the correct address, so Dimension 0.21% Plus Fertilizer and Riverdale Cool Power Selective Herbicide were applied to the wrong property. When the intended customer learned that a neighboring lawn received the application, she contacted the neighbor, who contacted the board. The neighbor also told the BPC that winds exceeded 15 mph during the application, which a BPC inspector verified. The fine was based on the failure of the applicator to positively identify the correct property and on applying pesticides when winds exceeded the legal limit.

Tripp Middle School in Turner was fined \$250 for a violation that sent five school employees to a medical facility for review. After school hours, a school employee applied Misty Wasp and Hornet Killer Iib to the school kitchen to control a fly problem. The following morning employees who intended to clean the application area reported seeing pools of pesticides, smelling chemical fumes and feeling ill. They were examined at a nearby medical facility. A BPC inspector identified eight separate violations. The school district now has policies intended to prevent such a situation.

A misunderstanding between a customer and Atlantic Pest Solutions of Brunswick resulted in a \$400 fine for the company in June. After Atlantic Pest Solutions acquired H&G Pest Control, it began notifying H&G customers of Atlantic's intent to perform two pesticide applications in coming months. An H&G customer who operated on a call-as-needed basis did not receive notification of the intended applications and was dismayed when his property was sprayed with Demand CS Insecticide. Atlantic Pest Solutions could not prove it had an agreement with the customer.

In May the board discussed what some members called one of the most egregious situations the BPC has encountered. Purely Organic, a lawn care company based in York Harbor, was accused of fraudulent and misleading business practices. The company advertised its services as organic while allegedly using toxic synthetic chemicals, including 2,4-D and Dicamba. Evidence in this case suggests the company misled customers and failed to protect the public or its employees from risks associated with the chemicals used. Customers include the City of South Portland and Colby College. The proposed fine is \$37,000 with \$19,000 suspended. The board had a long discussion about how to proceed, particularly whether to accept the consent agreement or send the case to the Attorney General's office for possible criminal charges. It tabled the discussion until its Sept. 7 meeting.

Note that no national standards for organic land care exist, as they do for organic agriculture. The Northeast Organic Farming Association (NOFA) has developed regionally appropriate standards and an accreditation program for organic land care. Land managers who wish to be accredited must pass an exam, receive continuing education on practices and pledge to provide customers with organic practices. Asking landscapers if they are NOFA-accredited can help consumers

learn about a company's practices. Accredited land care professionals are listed at www.organiclandcare.net.

[End of BPC news]

Washington, D.C., has passed the nation's most comprehensive **municipal law to restrict pesticides**. Representative Mary Cheh's Pesticide Education and Control Amendment Act of 2012 awaited the signature of Mayor Vincent C. Gray as we went to press. The law restricts non-essential pesticides from government-owned D.C. property and calls for further education of businesses and private homeowners, who can apply synthetic chemical products on their properties that are not within 25 feet of a waterway or a privately owned school or daycare facility where children congregate. The bill does not address pesticides used on public health problems, such as mosquitoes, ticks and bedbugs. ("Pesticide Foes Win the Day in DC: Cheh's Bill Goes to Mayor," by Paul Tukey, July 10, 2012; <http://www.safelawns.org/blog/index.php/2012/07/pesticide-foes-win-the-day-in-dc-chehs-bill-goes-to-mayor/>)

Citizens for a Green Gorham (<http://citizensforagreengorham.org/>) began as Friends of Rail to Trails in 2010 – a group of neighbors concerned about Maine Department of Transportation spraying of toxic chemicals on the abandoned rail next to the Mountain Division Trail in Gorham. The group continues to work to reduce or eliminate the use of harmful chemical sprays in Gorham. Similar groups include Citizens for a Green Camden and Citizens for a Green Scarborough.

France plans to ban the use of Syngenta's Cruiser OSR, a **neonicotinoid** pesticide, to coat canola seeds, after a study suggested its active ingredient, thiamethoxam, made **bees** more likely to lose their way and die. Syngenta disputed the finding. ("France to ban a Syngenta pesticide to protect bees," by Gus Trompiz, Reuters, June 1, 2012; www.reuters.com/article/2012/06/01/us-france-cruiser-idUSBRE8500LO20120601)

A federal judge has given preliminary approval to a \$105 million settlement between Syngenta and community water systems in six Midwestern states over the presence of **Syngenta's atrazine herbicide in drinking water**. Almost 2,000 community water systems in at least six states have had to filter atrazine from drinking water or pay to test for it. On Oct. 22, the judge will make his final determination on the settlement. Syngenta says it wanted to end the matter and avoid further legal costs. It will still be able to sell atrazine to U.S. corn growers and denies any liability linked to the chemical. Pesticide Action Network North America says atrazine is linked to infertility, birth defects and certain cancers in humans, as well as feminization of male gonads across different vertebrate classes. ("Judge gives preliminary OK to herbicide settlement," by Jim Suhr, Businessweek, May 31, 2012; www.businessweek.com/ap/2012-05/D9V3PI9O3.htm; "Syngenta settles, but atrazine Kool-Aid still strong," by Kathryn Gilje, Ground Truth, Pesticide Action Network North America, May 31, 2012; www.panna.org/blog/syngenta-settles-atrazine-kool-aid-still-strong)

An aquatic ecosystem exposed to the organochlorine fungicide **chlorothalonil**, sold as Bravo, Echo and Daconil, was fundamentally changed, say Jason Rohr and Taegan McMahon of the

University of South Florida. The fungicide is used on lawns, golf courses and farms. The researchers tested it in 300-gallon tanks that mimic pond ecosystems, with concentrations that would be expected to run off farm fields during rains. After treatment, **most amphibians, snails, crayfish, water plants and other organisms died**, and then algae proliferated. Some species rebuilt their populations, but enough were killed to alter the function and services the ecosystem. Syngenta, which makes chlorothalonil, says the fungicide is safe. (“USF researchers question safety of widespread lawn spray,” by Lindsay Peterson, The Tampa Tribune, May 22, 2012; www2.tbo.com/news/education-news/2012/may/22/namaino1-study-uncovers-a-chemical-killer-ar-406427/)

The Environmental Working Group’s (EWG’s) latest **Shopper’s Guide to Pesticides in Produce** lists the number of pesticides detected on 45 conventionally grown fruits and vegetables. The EWG highlights the worst with its Dirty Dozen Plus™ list and the cleanest Clean Fifteen™, using 2010 data on washed or peeled produce from the USDA and FDA Pesticide Data Project (PDP).

The Dirty Dozen Plus™ include apples (with the largest number of pesticides detected), followed by, in decreasing order, celery, sweet bell peppers, peaches, strawberries, imported nectarines, grapes, spinach, lettuce, cucumbers, domestic blueberries and potatoes. About 98 percent of conventional apple samples had detectable levels of pesticides; domestic blueberries tested positive for 42 different pesticide residues, lettuce for 78; every nectarine had measurable pesticide residues.

Green beans, kale and collard greens did not meet traditional Dirty Dozen™ criteria but were commonly contaminated with organophosphate insecticides, which are toxic to the nervous system, have been largely removed from agriculture but are not banned. Hence, the EWG added them to the Dirty Dozen Plus™ list as foods to avoid or to buy organic.

"Organophosphate pesticides are of special concern since they are associated with neurodevelopmental effects in children," said EWG toxicologist Johanna Congleton.

The Clean Fifteen™ include onions, sweet corn, pineapples, avocado, cabbage, frozen sweet peas, asparagus, mangoes, eggplant, kiwi, domestic cantaloupe, sweet potatoes, grapefruit, watermelon and mushrooms. Crops with the fewest pesticide residues are listed first.

More than 90 percent of cabbage, asparagus, sweet peas, eggplant and sweet potato samples had one or fewer pesticides detected. Of the Clean Fifteen™, no single produce sample had more than five different chemicals detected.

“Many of the crops on the Clean 15 list,” writes Twilight Greenaway in *Grist*, “still require a hefty dose of toxic chemicals, which still have an impact on the soil, groundwater, and wildlife around them – not to mention the people who work on farms and live in the surrounding communities. Those chemicals just don’t make it to your plate as readily, for a variety of reasons.”

Dr. Charles Benbrook of The Organic Center noted that “nicotinyl insecticide residues are extremely common because they are widely used and are systemic – they work by moving into the plant, including the harvested portion.” (Nicotinyls, also known as neonicotinoids, are implicated in honeybee Colony Collapse Disorder.) Benbrook said about 1 in 10 samples tested for the PDP had residues of imidacloprid (Admire), and many fresh produce samples contained residues of two nicotinyls.

The USDA data on 190 samples of prepared baby food (green beans, pears and sweet potatoes) showed five pesticides in green beans, including the organophosphates methamidophos in 9.4 percent of samples and acephate in 7.8 percent. Of pear samples, 92 percent tested positive for at least one residue, 26 percent had five or more pesticides, and overall 15 different pesticides occurred. The pesticide iprodione, which EPA calls a probable human carcinogen and which is not registered for use on pears, was detected on three baby food pear samples. Sweet potatoes sold as baby food, a Clean Fifteen™ crop, had virtually no detectable pesticide residues.

Organically grown food tested by PDP in 2010 had substantially fewer residues than conventionally grown; when they were detected, they were usually 10- to 100-fold lower in concentration than in conventional samples, said Benbrook.

The 284 samples of drinking water had a total of 65 pesticides or their metabolites. The herbicide atrazine or its metabolites were found in every sample. The herbicides 2,4-D and metolachlor were detected in more than 70 percent of samples. Six other pesticides were found in at least half the samples.

Benbrook said that “most people living in heavily farmed regions are ingesting three, four or more herbicides daily via finished drinking water.” He said 2,4-D is “known to be a significant risk factor for a host of reproductive problems, birth defects, and cancers.” The USDA and EPA are reviewing a new 2,4-D-tolerant GE corn variety. Its approval would likely lead to increased use of 2,4-D. (“EWG Releases 2012 Shopper’s Guide to Pesticides in Produce,” Environmental Working Group press release, June 19, 2012; www.ewg.org/foodnews/press/; “Shopper’s delight: Here’s what to buy organic,” by Twilight Greenaway, Grist, June 19, 2012; <http://grist.org/food/shoppers-delight-heres-what-to-buy-organic/>; “The USDA’s Pesticide Data Program (PDP) 2010 Data is Out!,” by Charles Benbrook, Ph.D., accessed July 2, 2012; www.generationsoforganic.org/news/latest-news/2010pdpdatablog/)

In analyzing pesticide use on GE and non-GE equivalent crops from 1996 to 2011, Dr. Charles Benbrook found that **herbicide-tolerant crops have increased herbicide use in U.S. crops by 527 million pounds** and increased overall pesticide use by 403 million pounds. While insecticide spray applications have decreased by 124 million pounds in Bt corn and cotton, those crops contain the Bt toxin in all their cells. So, for example, fields planted to GE SmartStax corn express 3.73 pounds per acre of Bt proteins, 12-fold more than the 0.31 pounds of active ingredient of spray insecticide displaced. Benbrook notes that the growing problem of resistance of weeds to glyphosate (the active ingredient in Monsanto’s Roundup herbicide) due to its overuse has the industry seeking to market crops tolerant of other herbicides, such as 2,4-D, dicamba, and paraquat; 2,4-D exposure, says Benbrook, has been linked to reproduction problems, spontaneous abortions, birth defects and non-Hodgkin’s lymphoma. (“New Benbrook

data blow away claims of pesticide reduction due to GM crops,” GMWatch, July 4, 2012; www.gmwatch.org/latest-listing/1-news-items/14041-new-benbrook-data-blow-away-claims-of-pesticide-reduction-due-to-gm-crops)

After reviewing 142 studies of pesticide effects on health, the Ontario College of Family Physicians says that **pesticides contribute to neurological, respiratory and reproductive problems**, and children are especially susceptible to their effects. Exposure to pesticides in utero was correlated with lower birth weight, abnormal reflexes, problems with attention, and increased irritability. Older children with greater exposure to pesticides were more likely to exhibit ADHD and lower IQ. Adults were more likely to have asthma and chronic obstructive pulmonary disease. The researchers say home lawn and garden pesticides and hair lice treatments are the most common sources of pesticides exposure; golf courses are another important source, as are occupational exposures and food. The report suggests that Ontario doctors tell patients to limit their exposure to pesticides. (“Review links pesticides to range of illnesses,” by Elliot Ferguson, Kingston Whig-Standard, June 20, 2012; www.thewhig.com/2012/06/20/review-links-pesticides-to-range-of-illnesses; “2012 Systematic Review of Pesticide Health Effects,” Ontario College of Family Physicians, www.ocfp.on.ca/committees/env-health/pesticides)

Researchers at the University of California, Irvine, measured concentrations of the chlorinated organophosphate insecticide **chlorpyrifos** (the active ingredient in Lorsban) in umbilical cord blood. Five to 10 years after exposure, MRIs of brains of 20 children of mothers with the highest concentrations and of 20 with the lowest concentrations showed **abnormal structural changes to the brains** of the high-exposure children. Toxicologist Janette Sherman found similar effects, along with severe mental and physical problems in some children. Chlorpyrifos is used on corn, many fruits, leafy greens and cotton, on golf courses, road medians and Christmas tree farms, said lead California researcher Virginia Rauh. It was banned for residential uses in 2000. (Brain anomalies in children exposed prenatally to a common organophosphate pesticide, Virginia A. Rauh et al., Proceedings National Academy of Science, April 30, 2012; www.pnas.org/content/early/2012/04/25/1203396109.short; “Shocking Health Effects of Commonly Used Pesticide: Brain Problems, Sexual Deformities and Paralysis,” by Martha Rosenberg, AlterNet, July 5, 2012; www.alternet.org/environment/156174/shocking_health_effects_of_commonly_used_pesticide%3A_brain_problems%2C_sexual_deformities_and_paralysis/)

U.S. District Judge John Keena has ruled that Union Carbide India Ltd. and not its parent company, **Union Carbide Corporation** (UCC), or UCC’s former chairman and CEO, Warren Anderson, was responsible for the **1984 explosion of the Bhopal, India**, pesticide plant that killed thousands there. Keena dismissed the lawsuit accusing UCC of causing pollution around the plant and ruled that UCC and Anderson were not liable for remediation or pollution-related claims. The liability rests, instead, with the state government of Madhya Pradesh. (“US court absolves Union Carbide of liability in Bhopal tragedy,” Press Trust of India, June 28, 2012; www.ndtv.com/article/world/us-court-absolves-union-carbide-of-liability-in-bhopal-tragedy-237294)

University of Washington researchers exposed pregnant rats to a fungicide (vinclozolin), an insecticide mixture (permethrin and DEET), a plastic mixture (bisphenol A, or BPA, and two

phthalates, DEHP and DBP); a dioxin; and a hydrocarbon mixture called jet fuel, used to control dust on roads. Exposure occurred when fetuses' eggs were developing.

Later, the daughters of those rats mated with males whose mothers had been exposed to the same chemicals; and their pups later mated. While only the first generation of pregnant rats was exposed to the chemicals, the adult daughters and great granddaughters from all treatments had fewer ovarian egg follicles than controls, indicating fewer available eggs; and more ovarian cysts. Also, 523 genes were expressed differently in ovarian cells of great granddaughters of rats exposed to the fungicide – 30 of those genes related to ovarian disease. The research suggests **that exposure to a common fungicide may affect genes three generations later.**

Concentrations of chemicals were higher than normal exposures in people. (“How your great grandmother’s chemical exposures may affect you,” by Glenys Webster, Environmental Health News, July 16, 2012; www.environmentalhealthnews.org/ehs/newscience/2012/05/2012-0713-chemicals-ovary-epigenetic-mice/; Nilsson, E. et al., 2012. Environmentally induced epigenetic transgenerational inheritance of ovarian disease. PLoS ONE, <http://dx.doi.org/10.1371/journal.pone.0036129>.)

A Colorado judge has ruled that a farmer spraying to control mosquitoes must not let the insecticide drift to a neighbor’s organic farm. The lawyer representing the organic farmers believes this is the first ruling in Colorado to **treat pesticides as a form of trespass.** (“Boulder lawyer wins case for farmer with leukemia,” AP, Daily Camera, July 6, 2012; www.dailycamera.com/boulder-county-news/ci_21024907/boulder-lawyer-wins-case-farmer-leukemia?source=most_viewed)

Chemicals of Concern

Maine law requires that the Maine DEP publish a list of no more than **70 chemicals of high concern (CHC)** – chemicals with credible scientific evidence showing they are reproductive or developmental toxicants, endocrine disruptors or human carcinogens, and that meet one or more of these criteria: The chemical has been found through biomonitoring in human bodily tissues or fluids; it has been found in household dust, indoor air or drinking water or elsewhere in the home environment; or it has been added to or is present in a consumer product used or present in the home. Maine’s list, now with 49 CHCs, is posted at www.maine.gov/dep/safechem/highconcern/chemicals.htm. It includes phthalates, found in soft vinyl plastic; parabens, in shampoos and lotions; flame retardants; some sunscreen chemicals; perfluorinated chemicals found in treated fabrics; and siloxanes in personal care products. Mike Belliveau of the Environmental Health Strategy Center says that science supports a longer list. (“Stronger action urged after Maine DEP releases list of 49 chemicals dangerous to children,” by Alex Barber, Bangor Daily News, July 5, 2012; <http://bangordailynews.com/2012/07/05/news/state/stronger-action-urged-after-maine-dep-releases-list-of-49-chemicals-dangerous-to-children/>)

Fertilizers

The amount of **nitrous oxide** in the atmosphere has risen by 20 percent since the Industrial Revolution, compared with 40 percent for CO₂. But N₂O is about 300 times more potent as a **greenhouse gas** than CO₂ and is a major ozone-depleting chemical. Scientists at the University of California, Berkeley, found that the increase in atmospheric N₂O in the last few decades is **due to synthetic nitrogen fertilizer use**. Their new measurement technique should enable farmers to use synthetic N fertilizers more efficiently and should enable measurement of the climate impact of biofuels. (“New science reveals agriculture’s true climate impact,” by Tom Laskawy, Grist, April 10, 2012; [grist.org/climate-change/new-science-reveals-agricultures-true-climate-impact/ 1/3](http://grist.org/climate-change/new-science-reveals-agricultures-true-climate-impact/))

Food Safety

The USDA’s proposal to largely **outsource poultry inspections** and drastically speed visual inspections violates federal law, says the American Federation of Government Employees (AFGE), which represents thousands of federal meat and poultry inspectors. The proposal would allow poultry companies to inspect their own chickens and turkeys, leaving a single federal inspector responsible for examining more than 80,000 chickens per workday. Matthew Milledge, assistant general counsel for AFGE, says the proposal violates the 1957 federal law that established the current poultry inspections process, which requires federal inspectors to perform a “careful examination” of the carcass of every bird processed to determine its fitness for purchase. The proposal also eliminates the current requirement that federal inspectors examine the internal organs of each bird. AFGE and concerned consumer groups have organized petition drives collecting several thousand signatures urging the Obama administration to withdraw the proposed rule. (“USDA Poultry Plan Violates Federal Law, Union Contends,” May 30, 2012; <http://letthemeatchicken.com/>)

Pollinators

A Cornell University study found that 58 **crops pollinated by insects contributed \$29 billion to 2010 farm income**. The crops depended on insects directly to produce fruit (\$16.35 billion) or indirectly to produce seed (\$12.65 billion). Honeybees pollinated \$19.2 billion worth of crops; others, including alfalfa leaf cutter bees, bumblebees, horn-faced bees and orchard bees, pollinated \$9.9 billion worth of crops. (“Insect pollinators contribute \$29 billion to U.S. farm income,” by Krishna Ramanujan, Chronicle Online, May 22, 2012; www.news.cornell.edu/stories/May12/Pollinators.html)

Researchers studying honeybees in Hawaii found that **varroa mites** incubate and then **inject a lethal form of deformed wing virus into bees’ blood**, where the virus reproduces and invades bees’ cells, taking over their metabolism and killing the bees. Beekeepers must keep varroa levels low, say the researchers, to minimize the virus, thought to be a major factor in honeybee decline worldwide. (“Honeybee virus: Varroa mite spreads lethal disease,” by Victoria Gill, BBC Nature, June 7, 2012; www.bbc.co.uk/nature/18339797; “Honeybee decline linked to killer virus,” by Damian Carrington, The Guardian, June 7, 2012; www.guardian.co.uk/environment/2012/jun/07/honey-bees-virus-varroa-destroyer-mites)

Honey

The FDA and most world food safety agencies require that a product sold as honey must contain pollen, because pollen enables regulators to verify the source of the honey. But the FDA doesn't check for pollen, says Food Safety News, so **ultra-filtered honey** – honey that is heated, possibly watered down and then forced through small filters – **is common in stores**. When Food Safety News had more than 60 containers of honey from 10 state and D.C. stores tested, results showed no pollen in 76 percent of samples from grocery stores, 100 percent from chain drug stores and fast food restaurants and 77 percent from big box stores. Every sample from farmers' markets, co-ops and natural food stores had the expected amount of pollen. Of seven samples labeled as organic and sold in grocery stores, five had good amounts of pollen. Mark Jensen, president of the American Honey Producers Association, told Food Safety News, "In my judgment, it is pretty safe to assume that any ultra-filtered honey on store shelves is Chinese honey and it's even safer to assume that it entered the country uninspected and in violation of federal law." Food Safety News says ultra-pasteurization is a spin-off of a technique refined by the Chinese, who have illegally dumped tons of honey – some containing illegal antibiotics – on the U.S. market for years. ("Tests Show Most Store Honey Isn't Honey," by Andrew Schneider, Food Safety News, Nov. 7, 2011; www.foodsafetynews.com/2011/11/tests-show-most-store-honey-isnt-honey/)

Agritourism

This spring the Maine legislature passed LD 16055 **to limit the liability for farmers engaging in agritourism**, such as pick-your-own activities and other attractions related to farming, provided participants are informed about inherent risks of these activities on a farm. For purposes of this law, a notice of the inherent risks of agritourism activities may be satisfied either by a statement signed by the participant or a sign or signs prominently displayed at the place or places where the agritourism activities take place. The statement or sign must contain the following information:

WARNING

Under Maine law, there is no liability for injury to a participant in an agri-tourism activity conducted at this agri-tourism location if such injury results from the inherent risks of the agri-tourism activity. Inherent risks of agri-tourism activities include, among others, risks of injury inherent to land, equipment and animals, as well as the potential for injury if you act in a negligent manner. You are assuming the risk of participating in this agri-tourism activity.

The message on the sign must be in black letters at least 1 inch high, and the sign or signs must be placed in a clearly visible location on or near places where the agritourism professional conducts agritourism activities. (Farm Scoop, University of Maine Cooperative Extension, Androscoggin & Sagadahoc Counties, June 2012)

Agroforestry

Silvopasturing – managed grazing of livestock in forests – may help woodland management, say Cornell University educators. Forests offer increased feed options and shade for animals – and possibly tax benefits if silvopasturing is included in agricultural assessment programs.

Livestock feeding on underbrush can also create more productive timber stands. One New York farmer is experimenting with pasturing ducks in a sugar maple woodlot and in a shiitake mushroom farm; ducks control pests and produce eggs and meat. Livestock in agroforestry settings must be rotated to avoid damaging trees, and the forest canopy must be thinned so that grasses grow. (“Experts suggest grazing cows, sheep, ducks in forests,” by Aaron Munzer, Chronicle Online, April 9, 2012; www.news.cornell.edu/stories/April12/Silvopasture.html)

Maine Department of Agriculture

A new law created the Maine Department of Agriculture, Conservation and Forestry as of Aug. 30, 2012 – a **merger of the former departments of agriculture and conservation**. The new department will have 732 full-time and seasonal employees in seven divisions, a budget of \$96.5 million and will be led by Walter Whitcomb, who was commissioner of agriculture, and two deputy commissioners. Gov. Paul LePage proposed the merger last fall with the goal of serving the farming and forestry industries better and driving more economic development. Specific proposals to achieve these goals were not included in the merger. The new department will develop plans for its operation and propose them to the Maine Legislature in August 2013. If the proposal doesn’t pass by December 2014, the legislation will be reversed. (“Maine’s Agriculture and Conservation departments to merge Aug. 30, but little will change,” by Matthew Stone, Bangor Daily News, June 27, 2012; <http://bangordailynews.com/2012/06/27/politics/agriculture-conservation-departments-merge-aug-30-many-details-yet-to-be-worked-out/>; Press release, June 6, 2012; www.maine.gov/tools/whatsnew/index.php?topic=Portal+News&id=389945&v=article-2011)

Local Food Ordinances

The Maine towns of Appleton and Livermore have passed **the Local Food and Community Self-Governance Ordinance**, joining Sedgwick, Penobscot, Blue Hill, Trenton, Hope and Plymouth. All ordinances were passed by voters at town meetings. The town of Fayette voted down the ordinance at its 2012 town meeting. The ordinance is intended to exempt farmers who sell directly to local individuals from state and federal licensing and inspection requirements, but Walter Whitcomb, commissioner of the Maine Department of Agriculture, says state and federal laws take precedence over local ordinances. States that endorse local ordinances can lose their inspection authority to the USDA. (Food for Maine's Future press release, June 14, 2012. The ordinance is posted at <http://savingseeds.files.wordpress.com/2011/03/localfoodlocalrules-ordinance-template.pdf>; “Support for food ordinance on the upswing in Maine,” by Avery Yale Kamila, Portland Press Herald, June 20, 2012; www.pressherald.com/life/foodanddining/support-for-food-ordinance-on-the-upswing_2012-06-20.html)

Country of Origin Labeling

The World Trade Organization (WTO) ruled in June that the U.S. law allowing labeling of foods regarding their **country of origin** violates the WTO Technical Barrier to Trade agreement. A 2010 Consumers Union poll showed that 93 percent of Americans want to know where their food comes from. Several countries, including Canada and Mexico, said labeling was a disguised trade barrier. Similarly, in May 2012 the WTO ruled against U.S. dolphin-safe tuna labels, and in

April 2012 against a U.S. ban on clove, candy and cola-flavored cigarettes. (“WTO Not So COOL: Rules Against Popular U.S. Meat Labeling Law,” by Rebekah Wilce, PR Watch, The Center for Media and Democracy, June 29, 2012; www.prwatch.org/news/2012/06/11625/wto-not-so-cool-rules-against-popular-us-meat-labeling-law)

Farm Bill

On June 21, the Senate passed its version of a nearly \$500 billion **Farm Bill** to replace the law that expires on September 30.

The Senate version

- shifts many crops from government commodity programs to crop insurance and enables diversified farmers to get crop insurance
- includes an organic farming cost share program that would help fund growers transitioning from conventional to organic farming
- has a pilot program to enable schools to use some federal money to buy locally raised food, and another to let farmers’ markets use smart phones to scan EBT cards
- has price supports that would help New England’s small-scale dairy farmers
- has an amendment that restores \$150 million in funding for rural economic development and new farmer programs, including the Beginning Farmer and Rancher Development Program, the Value-Added Producer Grants program, and the Rural Microentrepreneur Assistance Program
- does not include proposed amendments to encourage more USDA-funded research on plant and animal breeding to improve health, nutrition, farm income and food security; to allow direct sale of raw milk and raw milk products across state lines; to legalize production of industrial hemp; or to codify an agreement between egg producers and the Humane Society of the United States to increase the size of hen cages and to end the practice of depriving hens of food and water to increase egg production
- cuts \$3.7 billion from conservation programs on working farms and ranches

The House Agriculture Committee addressed the bill in July. Its draft bill

- improves crop insurance for organic farmers
- maintains mandatory funding of \$16 million per year for USDA's Organic Agriculture Research and Extension Initiative
- adds \$5 million for technology upgrades to enable the National Organic Program to improve service to organic farmers

- maintains current funding for the Organic Production and Market Data Initiatives program
- gives the secretary of agriculture greater authority to enforce organic standards and protect the organic brand
- maintains outreach and technical assistance for organic producers and coordination on organic certification through the Environmental Quality Incentives Program
- authorizes microloans for beginning, young and small farmers and restores important aspects of the Beginning Farmer and Rancher Development Program
- supports enhanced farm-to-school food procurement, farmers' market and local food promotion programs, and allows food stamps to be used for Community Supported Agriculture shares

However, the House draft also

- shortens the time allowed and the range of review topics covered when USDA considers approving GE crops, and allows a level of contamination of conventional crops by GE crops without recourse
- cuts \$16.1 billion in food assistance and \$6 billion from programs to protect natural resources, invest in beginning and disadvantaged farmers, revitalize local food economies, and promote health and food security
- includes tens of billions for the largest commodity crop growers, insurance companies, and agribusinesses
- repeals the National Organic Certification Cost Share Program and reduces by 10 percent the Agricultural Marketing Assistance cost share program in 16 states
- gives the NOP just \$11 million per year instead of the \$15 million in the Senate draft bill
- does not address the unfair payment limit that applies only to organic farmers using EQIP
- reduces the Conservation Stewardship Program by 30 percent
- cuts annual funding for the Beginning Farmer and Rancher Development Program nearly in half
- cuts conservation programs by \$6 billion and funds the Conservation Reserve Program Transition Incentives Program only at current levels, which will shorten the lifespan of the program

- cuts nutrition assistance by \$16 billion
- gives big subsidized growers higher price guarantees for their crops
- expands crop insurance by \$9.5 billion rather than placing reasonable limits on crop insurance
- lacks protections for prairies
- guts rules that protect water quality and wildlife from agricultural pesticides
- has few incentives for healthy diets
- exempts GE crops from environmental reviews and sets deadlines on regulators that will further weaken oversight over GE crops
- prevents states from setting their own standards for farm and food production

The House Agriculture Committee has also proposed that the 2013 Agriculture Appropriations bill known as Section 733 would allow GE crops to be planted even while legal challenges concerning safety of the crops are pending. Activists call this the "Monsanto Rider."

The bill should now go to the House floor for a full vote. If passed, it will go to House-Senate conference where the two drafts will be reconciled before being sent to the president for his signature. ("Senate Passes Farm Bill," by Patty Lovera, Food & Water Watch, June 21, 2012; www.foodandwaterwatch.org/blogs/senate-passes-farm-bill/; "Farm Bill Provisions Could Help Maine's Small Family Farms," by Jay Field, June 22, 2012; www.mpbn.net/; Organic Bytes, Organic Consumers Assoc., June 21 and July 19, 2012; www.organicconsumers.org/; "A Farm Bill Postmortem: The End of Food Politics as Usual," by Marion Nestle, The Atlantic, June 25, 2012; www.theatlantic.com/health/archive/2012/06/a-farm-bill-postmortem-the-end-of-food-politics-as-usual/258907/; "How Monsanto Is Sabotaging Efforts to Label Genetically Modified Food," by Charlotte Silver, AlterNet, June 26, 2012; www.alternet.org/food/156032/how_monsanto_is_sabotaging_efforts_to_label_genetically_modified_food/; "Stand-off looms over U.S. plans to cut GMO crop oversight," by Charles Abbott and Carey Gillam, Reuters, July 18, 2012; <http://in.reuters.com/article/2012/07/17/us-usa-agriculture-biotech-idINBRE86G0XF20120717>; "GOP leaders may squash farm bill," by Jake Sherman, July 12, 2012; www.politico.com/news/stories/0712/78460.html; Organic Farming Research Foundation email, July 15, 2012; "Top Ten Reasons to Reject the House Farm Bill," Environmental Working Group, July 12, 2012; www.ewg.org/agmag/2012/07/top-ten-reason-to-reject-the-house-farm-bill/)

"A Northeast Farm Bill Agenda: Priorities for the 2012 Farm Bill" (at www.nefood.org) is a collaboration of the Northeast Sustainable Agriculture Working Group, New England Farmers Union Educational Foundation, Wholesome Wave and others. The resource notes specific needs of New England, Delaware, Maryland, New Jersey, New York, Pennsylvania and W. Virginia. It

includes policy and funding priorities and summarizes the current regional farm and food system.

Policy and funding priorities include

- investing in local and regional food systems and market development
- increasing farming opportunities for beginning, minority, women, immigrant

and socially disadvantaged farmers

- providing adequate safety net and risk management tools for Northeast farmers
- supporting key Northeast agriculture industries, including dairy, organic,

specialty crops, livestock and fisheries

- restoring competition and contract reform
- promoting access to fresh, locally and culturally appropriate foods
- supporting programs that reflect national health goals and nutrition guidelines
- strengthening nutrition incentive programs
- promoting farm to school (and other institutions) initiatives
- expanding community food security programs
- continuing mandatory funding for farm conservation programs, especially those aimed at working lands
- continuing funding for on-farm energy efficiency and renewable energy production
- ensuring farm conservation program flexibility to address regional, state and

local resource concerns and priorities

- ensuring adequate conservation technical assistance
- supporting research, extension and education programs that strengthen local, regional, sustainable and organic agriculture

The report summarized Northeast agriculture with the following statistics:

- more than 175,000 farms
- 26 million acres of working land
- sales of more than \$14 billion in agricultural products in 2007
- diverse in size, scale and environment
- flourishing in the organic sector
- producing a variety of products, from dairy to value-added foods to fruits,

vegetables and livestock

- having nearly 18,000 dairies producing more than 28 billion pounds of milk in

2011

- having direct-to-consumer sales of more than twice the national average
- having specialty crops constituting nearly one-third of the region's total farm

sales

• receiving, on most farms, \$25 per acre or less in commodity payments, while some other states receive as much as \$100 per acre

• leading the nation in community supported agriculture, farmers' markets and organic sales

• having the highest agricultural land values and percentage of farmland land lost to development

Animal ID

A coalition of U.S. agriculture and consumer organizations is challenging USDA's push toward an **Animal ID program**. The organizations wrote to the Congressional Office of Management and Budget in June arguing that the rule should be sent back to USDA because of its impacts, including costs, on family farmers, ranchers, related businesses and other citizens who own animals. ("Farmers, Ranchers and Consumers Fight USDA Animal ID Scheme," Cornucopia Institute, June 7, 2012; www.cornucopia.org/2012/06/farmers-ranchers-and-consumers-fight-usda-animal-id-scheme/)

Toxic Garden Tools

Seventy percent of 179 garden products tested (**gloves, knee pads, hand tools and hoses**) **contained lead, cadmium, phthalates, flame retardants, polyvinyl chloride or bisphenol A** at concentrations of "high concern," say researchers at the Ecology Center in Ann Arbor, Michigan. The chemicals are linked to birth defects, hormone imbalance, impaired learning and other health problems. Thirty percent of the products contained more than 100 ppm lead – the Consumer Product Safety Commission Standard for lead in children's products – in one or more components. All garden hoses sampled for phthalates contained those plasticizers, which are banned in children's products. Lead and phthalates can leach into water sitting in the hose, especially when hoses sit in the sun. Water coming from one hose contained 0.28 ppm lead – 18 times higher than the federal drinking water standard. Gardeners are advised to use products free of the above contaminants, such as polyurethane or natural rubber water hoses (listed at www.HealthyStuff.org); not to drink water from hoses with those contaminants; to store hoses in the shade; and to flush hoses before watering edible plants. Avoid hoses with a California Prop 65 warning that says "this product contains a chemical known to the State of California to cause cancer and birth defects and other reproductive harm." Buy hoses labeled "drinking water safe" and "lead-free." ("Study: Many gardening products have high levels of toxic chemicals," by Connie Thompson, May 3, 2012; www.komonews.com/news/consumer/Study-Many-gardening-products-have-high-levels-of-toxic-chemicals-150110525.html; "New Study Finds Lead, Cadmium, BPA, Phthalates & Hazardous Flame Retardants in Gardening Products," May 3, 2012; www.healthystuff.org/release.050312.garden.php)

Water Quality

Scientists from the U.S. Geological Survey **found potentially harmful concentrations of contaminants in many New England wells**. Arsenic exceeded federal safety standards for public drinking water in 13 percent of tested wells; manganese in more than 7 percent; and radon exceeded EPA's proposed standards in 33 percent of wells. Joseph Ayotte of the Geological Survey in New Hampshire said everyone should have wells tested. Problems that may be related to long-term consumption of contaminated water include cancer, reproductive and developmental problems, kidney and blood diseases, diabetes and a weakened immune system. Andrew Smith, toxicologist at the Centers for Disease Control in Maine, said 1 in 10 Maine wells have arsenic concentrations above federal standards and 1 in 20 have unsafe uranium concentrations. The contaminants found in this study can be reduced or eliminated by filtration. ("Study finds tainted private wells around New England," by David Abel, Boston Globe, June 29, 2012;

<http://bostonglobe.com/lifestyle/health-wellness/2012/06/27/federal-study-finds-arsenic-and-other-contaminants-pervade-new-england-groundwater/ejjA0j6v5R6opWkkEegIGI/story.html>)

Human Biomass

The **global adult human biomass** in 2005 was about 287 million tons. Overweight people accounted for 15 million tons; obese people for 3.5 million tons. North America has 6 percent of the world population but 34 percent of biomass due to obesity; Asia has 61 percent of the population and 13 percent of biomass due to obesity. One ton of human biomass equals about 12 adults in North America and 17 in Asia. The authors of this study say that the increasing weight of the world population could put the same demands on world food energy as an extra half billion people. (“The weight of nations: an estimation of adult human biomass,” by Sarah C. Walpole et al., BMC Public Health 2012, 12:439 doi:[10.1186/1471-2458-12-439](https://doi.org/10.1186/1471-2458-12-439), June 18, 2012; www.biomedcentral.com/1471-2458/12/439/abstract)

Winter 2012

The Good News

Organic certification agencies now have to show USDA that **those using the USDA organic seal are conserving natural resources** – part of the National Organic Program regulations since 2001. USDA’s National Organic Program (NOP) updated two sections of its Handbook’s Audit Checklists to include the natural resources standard requiring farmers, ranchers, wild harvesters and processors to “maintain or improve the natural resources of the operation, including soil, water, wetlands, woodlands and wildlife.” The Natural Resources Conservation Service (NRCS) can help identify practices that support wildlife on organic farms and ranches. (“Organic Agriculture Just Got Better at Being Nature-Friendly,” http://wildfarmalliance.org/resources/organic_BD.htm)

Farmers can get help from USDA’s Natural Resources Conservation Service (NRCS) to protect natural resources on land they own or manage. NRCS provides free conservation planning assistance and administers several programs that provide financial assistance for conservation measures identified in a conservation plan.

A conservation plan is a roadmap for sustaining or improving production while managing the natural resource base that supports an operation. Conservation planning identifies objectives, resource limitations and opportunities, and ways to reduce soil erosion, protect soil, air and water quality, conserve water, protect wildlife, and produce crops and livestock sustainably.

Developing a conservation plan is the first step in working with NRCS and applying for most USDA conservation programs. This begins with a phone call to a local NRCS office to make an appointment with a conservation planner. You may have to visit the NRCS office, and an NRCS representative may visit with you to walk your land and discuss your concerns. You may also need to register your farm with the USDA Farm Service Agency for your area to initiate the conservation plan.

At times, a backlog of farms awaits conservation planning assistance, so start the process well before deadlines for conservation programs. If a conservation program can help address the resource needs identified in your conservation plan, an NRCS representative will explain the application process.

The conservation planning and program application process involves these steps:

1. Establish a customer record with the USDA Farm Service Agency (FSA). This may require an appointment with the local FSA office, typically located in your local USDA Service Center. Bringing a copy of your latest tax return can aid with registration. Register the farm with FSA under the same name and tax ID used on your tax return.
2. Work with FSA and NRCS to map your farm and other fields you manage to help the planner locate fields during the site visit and to ensure that the field manager is up to date in FSA records.
3. NRCS determines if your land is eligible for conservation planning and/or programs. FSA determines additional eligibility (such as income limits) for conservation program participation.
4. An NRCS planner will conduct an initial site visit when you and the planner will identify areas you would like to include in your conservation plan and determine what conservation practices may be eligible. Include leased fields that you plan to continue farming.
5. After the site visit, the NRCS planner will develop initial recommendations and a conservation plan.
6. Review your plan and, if desired, work with an NRCS planner to identify which practices will be included in a conservation program application.
7. Work with your NRCS representative to determine the program and funding pool for which you wish to apply and fill out a Conservation Program Application.
8. Complete eligibility forms annually to keep your USDA conservation program eligibility up to date.

For more information, contact your local NRCS office via <http://offices.sc.egov.usda.gov/locator/> or www.me.nrcs.usda.gov.

(Adapted from UMass Extension Vegetable Notes, Sept. 13, 2012;

<http://extension.umass.edu/vegetable/publications/vegetable-notes-newsletter/archives>)

Agricultural and forest producers can **apply by Dec. 21, 2012, for funding through five conservation initiatives** funded through the Environmental Quality Incentives Program (EQIP): the On-Farm Energy; Organic; Seasonal High Tunnel; Irrigation; and New England/New York Forestry initiatives for Fiscal Year 2013.

On-Farm Energy Initiatives are Agricultural Energy Management Plans or farm energy audits that assess energy consumption on an operation. NRCS uses audit data to develop energy

conservation recommendations. Each plan has a landscape component that assesses equipment and farming processes or a farm headquarters component that assesses power use and efficiencies in livestock buildings, grain handling operations and similar farm facilities.

Organic Initiatives help certified organic growers and producers working toward certification to install conservation practices for organic production. Funding is available to help producers plan and implement conservation practices that address natural resource concerns in ways consistent with organic production, such as planting cover crops, establishing integrated pest management plans, constructing seasonal high tunnels, or implementing nutrient management systems.

The Seasonal High Tunnel Initiative helps producers plan and implement high tunnels – steel-framed, polyethylene-covered structures that extend growing seasons in an environmentally safe manner. High tunnel benefits include better plant and soil quality, fewer nutrients and pesticides in the environment, and better air quality due to fewer vehicles being needed to transport crops.

Irrigation Assistance is for lands that have been irrigated for at least two of the last five years. Technical and financial assistance is available for irrigation-related practices such as irrigation water management plans, irrigation sprinkler or micro-irrigation systems, and alternative irrigation water sources. This initiative focuses on projects resulting in a more efficient irrigation system and/or adherence to the Maine Department of Environmental Protection’s low flow rule.

The New England/New York Forestry Initiative helps Maine forest landowners with forest land planning and management of their private forests to improve wildlife habitat, forest health and productivity, and water quality. Eligible conservation practices through this initiative include, but are not limited to, forest stand improvement, early successional habitat development and management, tree/shrub site preparation and establishment, upland wildlife habitat management, brush management, stream crossings, riparian forest buffers, fish passage, forest trails and landings, conservation cover, access roads, wetland restoration and wetland wildlife habitat management.

Get more information at www.me.nrcs.usda.gov or from a USDA Service Center, listed at <http://offices.usda.gov> or in the phone book under United States Government, Agriculture Department. (“Applications Being Accepted for Conservation Initiatives,” NRCS press release, Aug. 24, 2012;

www.me.nrcs.usda.gov/news/News_EQIPInitiatives2013.html)

The **American Academy of Pediatrics** (AAP) reviewed scientific evidence about **organic** produce, dairy products and meat and concluded that while organic foods have the same vitamins, minerals, antioxidants, proteins, lipids and other nutrients as conventional, they also have lower pesticide levels, which may be significant for children. Organically raised animals are also less likely to be contaminated with drug-resistant bacteria because organic farming rules prohibit non-therapeutic use of antibiotics. The AAP found no direct evidence that consuming an organic diet leads to improved health or lower risk of disease but noted that no large studies in humans have been performed to specifically address this issue.

The AAP report “Organic Foods: Health and Environmental Advantages and Disadvantages” outlines research that has been conducted on organic foods, including convincing evidence of lower exposure to pesticides and less contamination of livestock with drug-resistant bacteria.

“At this point, we simply do not have the scientific evidence to know whether the difference in pesticide levels will impact a person’s health over a lifetime, though we do know that children – especially young children whose brains are developing – are uniquely vulnerable to chemical exposures,” said Joel Forman, M.D., FAAP, a member of the AAP Council on Environmental Health and one of the lead authors of the AAP clinical report.

The AAP report also notes that the motivation to choose organic produce, meat and dairy products may be reasonably based on larger environmental issues, as well as human health impacts such as pollution and global climate change. (“American Academy of Pediatrics Weighs In For the First Time on Organic Foods for Children,” American Academy of Pediatrics, Oct. 22, 2012 <http://www.aap.org/en-us/about-the-aap/aap-press-room/pages/American-Academy-of-Pediatrics-Weighs-In-For-the-First-Time-on-Organic-Foods-for-Children.aspx?nfstatus=401&nftoken=00000000-0000-0000-0000-000000000000&nfstatusdescription=ERROR%3a+No+local+token>; “Organic Foods: Health and Environmental Advantages and Disadvantages,” Joel Forman, Janet Silverstein, Oct. 22, 2012; Pediatrics, <http://pediatrics.aappublications.org/content/early/2012/10/15/peds.2012-2579>)

Researchers (including Adam Davis, who researched crop and livestock integration while a graduate student at UMaine, and Matt Liebman, formerly of UMaine) have shown that **diverse cropping systems with greatly reduced synthetic chemical input can produce as much as or more than simpler, more chemically-intensive systems** while harming the environment less. From 2003–2011, the researchers compared three cropping systems at Iowa State’s Marsden Farm: a conventionally managed two-year corn-soy rotation treated with fertilizers and herbicides as typically used on nearby farms; a three-year corn-soy-small grain plus red clover rotation; and a four-year corn-soy-small grain plus alfalfa-alfalfa rotation using 88 percent less synthetic nitrogen fertilizer than the first treatment. Six- to ten-fold less herbicide was used on the alternative than on conventional plots; and cattle manure was applied periodically to these plots. “Grain yields, mass of harvested products, and profit in the more diverse systems were similar to, or greater than, those in the conventional system, despite reductions of agrichemical inputs,” write the authors. All systems suppressed weeds effectively. Compared with the conventional treatment, the more diverse systems reduced by 200-fold the estimated potential for toxic compounds from herbicides to contaminate fresh water. “Results of our study indicate that more diverse cropping systems can use small amounts of synthetic agrichemical inputs as powerful tools with which to tune, rather than drive, agroecosystem performance, while meeting or exceeding the performance of less diverse systems,” say the authors. (Increasing Cropping System Diversity Balances Productivity, Profitability and Environmental Health, Adam S. Davis et al., PLoS ONE, Oct. 12, 2012; www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0047149)

Fertilizer use, irrigation and climate are major factors in yield. **Production increases from 45 to 70 percent** are possible for most crops, along with reduced environmental impacts from nutrient

overuse, by changing nutrient and water management. (Closing yield gaps through nutrient and water management, Nathaniel D. Mueller et al., Nature, Aug. 29, 2012; www.nature.com/nature/journal/vaop/ncurrent/full/nature11420.html)

More than 40 **plant-based compounds can turn on genes that slow the spread of multiple cancers**, according to Washington State University research published in Cancer and Metastasis Reviews (<http://bit.ly/SyziXW>). Gary Meadows, WSU professor, says most research focuses on preventing cancer or treating the original tumor, but cancer's spread to nearby organs is usually what kills people. So rather than attack the tumor, says Meadows, control its spread, or metastasis. Meadows documented from medical literature dozens of substances affecting metastasis suppressor genes of numerous cancers. He found that amino acids, vitamin D, ethanol, ginseng extract, the tomato carotenoid lycopene, the turmeric component curcumin, pomegranate juice and fish oil act epigenetically, i.e., turn metastasis suppressor genes on or off in breast, colorectal, prostate, skin, lung and other cancers.

"So these epigenetic mechanisms are influenced by what you eat," Meadows says. "That may also be related to how the metastasis suppressor genes are being regulated. That's a very new area of research that has largely not been very well explored in terms of diet and nutrition."

The number of studies that serendipitously connected nutrients and metastasis suppressor genes suggests a need for more deliberate research into the genes.

Meadows also sees these studies playing an important role in the shift from preventing cancer to living with it and keeping it from spreading. "We've focused on the cancer for a long time," he said. "More recently we've started to focus on the cancer in its environment. And the environment, your whole body as an environment, is really important in whether or not that cancer will spread." ("WSU Researcher Documents Links between Nutrients, Genes and the Spread of Cancers," by Eric Sorensen, Washington State University Green Times, Sept. 20, 2012; <http://newsletters.cahnrs.wsu.edu/category/green-times/>)

Nonprofit groups in three cities recently looked at how they can **support city gardeners and farmers**. The Design Trust for Public Space partnered with Added Value to produce the report "Five Borough Farm: Seeding the Future of Urban Agriculture in New York City," which identified more than 700 food-producing farms and gardens, most 5,000 square feet or less. The report suggested tracking production (pounds of food, value, jobs and participation) and impact (dietary change, food literacy and social cohesion) and addressed land insecurity.

Toronto's Food Policy Council's "GrowTO: An Urban Agriculture Plan for Toronto" recommended creating an urban agriculture program within the city; updating city policies to support and implement urban agriculture; providing incentives for urban agriculture initiatives; and developing a web-based clearinghouse of urban agriculture information. Toronto highlighted YIMBY (Yes in My Backyard), enabling use of private yards there.

The Conservation Law Foundation's "Growing Green: Measuring Benefits, Overcoming Barriers, and Nurturing Opportunities for Urban Agriculture in Boston" is a feasibility study for a hypothetical commercial urban farm that would cultivate many sites in Boston, totaling 50

acres. The study found that commercial urban farms likely employed 2.6 to 4.5 people per acre and that Boston has at least 800 acres of vacant land suitable for urban agriculture. It details policy and initiatives in the city, including an urban agriculture zoning overlay district. (“North American Cities Produce Bumper Crop of Urban Agriculture Studies,” by Eli Zigas, Food Systems and Urban Agriculture Program Manager, San Francisco Planning and Urban Research Assoc., Sept. 6, 2012; www.spur.org/blog/2012-09-05/north-american-cities-produce-bumper-crop-urban-agriculture-studies)

The Maine Sustainable Agriculture Society (MESAS) and the University of Maine project “More Maine Meat” seek to improve economic returns for Maine livestock producers and **grow the Maine meat industry** with more forage-based resources so that Maine farmers can meet more of New England’s demand for red meat. The project will identify bottlenecks, provide information, data and support to entrepreneurs and provide expertise to specific enterprises as appropriate. (“More Maine Meat’ Project to Aid Maine Livestock Producers,” Sept. 5, 2012, <http://umaine.edu/livestock/blog/2012/09/05/more-maine-meat-project-to-aid-maine-livestock-producers/>)

The Association of Official Seed Certifying Agencies (AOSCA) has launched a free **Organic Seed Finder** for sourcing certified organic seed by crop type and variety, at www.organicseedfinder.org. Seed companies pay an annual fee to list their organic varieties in the database. Organic industry sponsorships also support Organic Seed Finder. For information, contact organicseedfinder@aosca.org or (309) 736-0120. (“AOSCA Announces New Organic Seed Database,” press release, Sept. 18, 2012)

The Whanganui River in New Zealand has become **the first river to become a legal entity** with a legal voice, to be recognized as a person under law. The New Zealand government and the Whanganui River Iwi are charged with protecting the river and deciding values for that protection. Their preliminary agreement recognizes the river as Te Awa Tupua (an integrated, living whole). (“Agreement entitles Whanganui River to legal identity,” by Kate Shuttleworth, Aug. 30, 2012; www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10830586)

Two **goats** kept on 30-foot tethers and moved every two to three days are **controlling poison ivy** and other weeds at Settlers’ Ghost Golf Course in Craighurst, Ontario; and San Francisco’s Presidio Golf Course has 300 goats for weed control. Settlers’ Ghost hasn’t used herbicides since the goats’ arrival. (“Goats as groundskeepers? Golf course says employing animals is eco-friendly alternative,” by Andrew Philips, Toronto Star, Aug. 20, 2012; www.thestar.com/news/canada/article/1244150--goats-as-groundskeepers-golf-course-says-employing-animals-is-eco-friendly-alternative)

Organic Issues

Stanford University researchers reviewed 17 human studies and 223 studies of nutrient and contaminant levels in unprocessed foods such as fruits, vegetables, grains, milk, eggs, chicken, pork and other meat. Their main findings, published in the September 2012 Annals of Internal

Medicine, were that conventional produce has a 30 percent higher risk for pesticide contamination than organic produce (based on the presence of any pesticide residue, not the number, concentration or combinations of pesticides or their relative toxicity) but that exposure to those pesticides is within EPA safety limits; that conventional chicken and pork have a 33 percent higher risk for contamination with bacteria resistant to three or more antibiotics than organic products do; that organic produce had higher levels of total beneficial phenols, organic milk and chicken had more omega-3 fatty acids, and organic chicken had more vaccenic acid. The Stanford team concluded that the “published literature lacks strong evidence that organic foods are significantly more nutritious than conventional foods,” basing its conclusion on the limited number of studies proving a “clinically significant” benefit in health related to consuming organic foods. The study also noted, however, that “Consumption of organic foods may reduce exposure to pesticide residues and antibiotic resistant bacteria.”

The study has been criticized for not using quality data from USDA and EPA on pesticide residue levels; for ignoring much of the literature concerning antibiotic use on conventional farms and its relationship to development of new strains of bacteria that are antibiotic resistant; for not defining its term “significantly more nutritious”; for citing in its references other, more rigorous studies that show positive effects of organic foods but not mentioning them in its findings and not discussing why its conclusions differ from those; for miscalculating the risk of being exposed to pesticides from organic vs. conventional foods (Charles Benbrook calculates it as an 81 percent difference rather than the Stanford team’s 30 percent; and in his own analyses of other studies finds a 94 percent reduction in the risk of exposure to pesticides by selecting several organic fruits); for not including long-term health studies of people who consume organic vs. conventional foods; for not considering the health of farm workers exposed to pesticides; for their association with Stanford’s Freeman Spogli Institute, which receives funds from agribusiness, and for one author’s links with the tobacco industry.

Charles Benbrook, who has reviewed most of the studies that the Stanford study cited, says, “Over time, I believe that unbiased analysis coupled with modern-day science is likely to show with increasing clarity that growing and consuming organic food, especially in conjunction with healthy diets rich in fresh, whole foods, is one of the best health-promotion investments we can make today as individuals, families, and a society.” (“Are Organic Foods Safer or Healthier Than Conventional Alternatives?: A Systematic Review,” Crystal Smith-Spangler, M.D., et al., *Annals of Internal Medicine*, Sept. 4 2012, Vol. 157. No. 5; <http://annals.org/issue.aspx>; “Stanford’s ‘Spin’ on Organics Allegedly Tainted by Biotechnology Funding,” The Cornucopia Institute, Sept. 12, 2012; www.cornucopia.org/2012/09/stanfords-spin-on-organics-allegedly-tainted-by-biotechnology-funding/; “Stanford researcher readily acknowledges limitations of study on organic versus conventional food,” by Heather Rogers, Sept. 10, 2012; www.remappingdebate.org/article/stanford-researcher-readily-acknowledges-limitations-study-organic-versus-conventional-food; “Press comment: American study of organic food,” Soil Association, Sept. 4, 2012; www.soilassociation.org/news/newsstory/articleid/4416/press-comment-american-study-of-organic-food; Organic Trade Assoc. press release, Sept. 4, 2012; “Initial Reflections on the *Annals of Internal Medicine* Paper ‘Are Organic Foods Safer and Healthier than Conventional Alternatives?’ A Systematic Review,” by Charles Benbrook, www.organicconsumers.org/benbrook_annals_response2012.pdf; Brandt, Kirsten et al., 2011, “Agroecosystem Management and Nutritional Quality of Plant Foods: The Case of Organic Fruits and Vegetables,” *Critical Reviews in Plant Sciences*, Vo. 30:177-197; “Stanford Scientists

Shockingly Reckless on Health Risk And Organics,” by Frances Moore Lappé, Common Dreams, Sept. 6, 2012; www.commondreams.org/view/2012/09/06-12)

A study in the Journal of Urology found that women who frequently **consumed high fat, non-organic dairy products** and few or no organic versions of these products were 118 percent more likely to have a son with **hypospadias, a birth defect of the penis**, compared with boys from 306 women who ate organic dairy and other organic foods. The authors say that exposure to pesticides or other chemicals in high fat dairy products may increase the risk of hypospadias – or that women who eat organic foods may have an overall healthier lifestyle that lowers the risk. (“Prenatal intake of non-organic dairy products linked to hypospadias in offspring,” by Jimmy Downs, Food Consumer, Oct. 7, 2012; www.foodconsumer.org/newsite/Nutrition/Food/non-organic_dairy_products_hypospadias_1007120502.html)

Prime Minister Jigmi Thinley of **Bhutan**, a Himalayan kingdom of 700,000 people, mostly farmers, living in just under 15,000 square miles, says Bhutan **will be the first country in the world to convert to 100 percent organic agriculture**. Much of the land is already organic, as synthetic chemicals and fertilizers are unavailable and unaffordable to most Bhutan farmers. The government wants to teach farmers to grow more food and help the country become more self-sufficient. (“Bhutan Bets Organic Agriculture Is The Road To Happiness,” by Eliza Barclay, July 31, 2012; www.npr.org/blogs/thesalt/2012/07/31/157645902/bhutan-bets-organic-agriculture-is-the-road-to-happiness?live=1%3Futm_source%3Dfp&utm_medium=facebook&utm_campaign=20120731)

The Organic Center is combining efforts with the Organic Trade Association (OTA) and relocating its headquarters from Boulder, Colorado, to Washington, D.C. The Organic Center will remain an independent non-profit but will be under the administrative auspices of OTA. The Organic Center conducts credible, evidence-based science on the health and environmental benefits of organic food and farming, and communicates those benefits to the public. Combining efforts under one administrative umbrella is expected to save money, improve access to government and foundation grants, stimulate greater research and increase information to the public to convince them of the benefits of organic. (“The Organic Center moves to D.C. and combines efforts with the Organic Trade Association,” Organic Trade Assoc. press release, Sept. 5, 2012; www.organicnewsroom.com/)

Aurora Dairy, operating in Colorado and Texas, has agreed to pay plaintiffs in a class-action consumer fraud lawsuit \$7.5 million to end litigation involving **fraudulent marketing claims**. Aurora and its major customers, supermarket chains including Walmart, Costco, Target, Safeway and other large grocery chains that sell private-label organic milk, were accused of misrepresenting the authenticity of their products. The Cornucopia Institute, an organic industry watchdog, filed legal complaints with USDA alleging that Aurora was producing milk on giant feedlots, confining as many as 4,400 milk cows, instead of grazing their cattle as federal organic standards require, and used non-organic subcontractors and illegally brought conventional cows into its organic operations. The lawsuit was brought on behalf of consumers in more than 30 states who felt defrauded after purchasing private-label, or store brand, organic milk originating from Aurora. (Cornucopia Institute press release, Sept. 10, 2012;

www.cornucopia.org/2012/09/bush-era-organic-scandal-ends-in-7-5-million-settlement/)

California fertilizer producer Kenneth Noel Nelson Jr., accused of selling as organic a product with synthetic ingredients (aqueous ammonia), has **pled guilty to four counts of mail fraud** in the case. Nelson's Port Organic Products Ltd., one of the largest organic fertilizer operations in the West, reportedly sold some \$40 million worth of the fertilizer from 2003 to 2009. Nelson was scheduled to be sentenced on Nov. 5, 2012. ("Bakersfield man pleads guilty in fertilizer case, AP, Aug. 10, 2012; www.mercurynews.com/breaking-news/ci_21284509/bakersfield-man-pleads-guilty-fertilizer-case; "Feds cracking down on organic-farming cheaters," AP, Aug. 9, 2014; www.mercurynews.com/top-stories/ci_21278731/feds-cracking-down-organic-farming-cheaters)

The Office of the Inspector General, after a **complaint** filed by The Cornucopia Institute, outlined its review of allegations that the **National Organic Standards Board (NOSB)** is colluding with corporate agribusiness, has conflicts of interest, and that illegal appointments and false information have tainted its decision-making process. The review confirmed that USDA's National Organic Program was correctly administering the process of reviewing non-organic and synthetic substances before they were added to the National List, says Cornucopia's Mark A. Kastel, but did not look thoroughly into allegations of illegal stacking the NOSB with corporate executives and consultants, he adds, rather than farmers for positions reserved for farmers. Cornucopia also alleges that Technical Reviews used by the NOSB to evaluate the health and environmental safety of synthetics allowed in organics were biased and performed by corporate agribusiness executives or consultants. ("USDA Organic Audit: Procedures for Approving Synthetics Followed, ^[L]_[SEP]Allegations of Corruption Unexamined," The Cornucopia Institute, July 25, 2012; www.cornucopia.org/2012/07/usda-organic-audit-procedures-for-approving-synthetics-followed-allegations-of-corruption-unexamined/)

In October 2012, the **National Organic Standards Board (NOSB)** **voted not to allow synthetic versions** of taurine, lycopene, lutein and l-carnitine in organic foods, including organic infant formula. The NOSB also rejected petitions for two synthetic preservatives for use in organic infant formula. The board did approve one synthetic nutrient, l-methionine, for use in organic soy-based infant formula only. Without the addition of l-methionine, soy-based formula is nutritionally incomplete. Cornucopia had recommended that l-methionine may be added to soy-based formula only, given that this is required by the FDA. ("National Organic Standards Board Votes to Reject More Synthetic Additives in Infant Formula, Cornucopia News, Oct. 18, 2012; www.cornucopia.org/2012/10/national-organic-standards-board-votes-to-reject-more-synthetic-additives-in-infant-formula/)

In September 2012, the National Organic Program published a final rule that extends the allowance **for synthetic methionine in organic poultry production at reduced levels**. Methionine is classified as an essential amino acid for poultry. The National Organic Standards Board determined that insufficient natural methionine exists to meet poultry producer needs. The rule allows poultry producers to continue to use synthetic methionine at the following maximum levels: laying and broiler chickens – 2 pounds per ton of feed; turkeys and all other poultry – 3

pounds per ton of feed. The rule urges the organic poultry industry to continue to find commercially sufficient yet allowable natural methionine sources. USDA has funded several research projects aimed at breeding organic feed corn with higher levels of natural methionine, and projects on poultry management strategies to reduce the need for supplemental methionine. Further research is needed in this area. (“Organic Poultry Producers Have Continued Access to Synthetic Methionine at Limited Amounts,” by Soo Kim, USDA Agricultural Marketing Service, Sept. 18, 2012;

www.ams.usda.gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateU&navID=LatestReleases&page=Newsroom&topNav=&leftNav=&rightNav1=LatestReleases&rightNav2=&resultType=Details&dDocName=STELPRDC5100544&dID=175797&wf=false&description=Organic+Poultry+Producers+Have+Continued+Access+to+Synthetic+Methionine+at+Limited+Amounts

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Antibiotics

Researchers have found that living in the southeast region of the Netherlands, which has many farms raising cattle, pigs and veal calves, increased people’s risk of being exposed to **methicillin-resistant Staphylococcus aureus (MRSA)**. MRSA can cause skin infections, pneumonia, and infections of the blood or surgical sites. Those living near pigs were 25 percent more likely to contact MRSA; near cattle, 77 percent. (“Study links living near livestock with drug-resistant infection,” by Tim Wheeler, Baltimore Sun, Oct. 11, 2012;

www.baltimoresun.com/features/green/blog/bal-bmg-study-links-living-near-livestock-with-drugresistant-infection-20121011,0,1620312.story; Livestock Density as Risk Factor for Livestock-associated Methicillin-Resistant Staphylococcus aureus, the Netherlands, by Beth Feingold et al., Emerging Infectious Diseases, Nov. 2012; wwwnc.cdc.gov/eid/article/18/11/11-1850_article.htm)

Arsenic

Consumer Reports’ tests of more than 60 rice and rice products found **inorganic arsenic**, a known human carcinogen, **in most name brand and other rice product samples**. Levels varied but were significant in some samples. Federal limits exist for arsenic in drinking water. Consumer Reports is urging the FDA to set limits for arsenic in rice and rice products. Findings include these:

- White rice grown in Arkansas, Louisiana, Missouri and Texas generally had more total arsenic and inorganic arsenic than rice samples from India, Thailand and California combined.
- Within tested brands offering brown and white rice versions, brown rice had higher average total and inorganic arsenic than white rice counterparts. (Aaron Barchowsky of the University of Pittsburgh says that brown rice and wheat germ contain vitamin B3, niacin and folates that help eliminate arsenic from the body.)
- Some brown rice samples were lower in arsenic than some white rice samples, possibly due to agricultural practices or geographic location.
- Infant rice cereals and drink products contained worrisome levels of arsenic. Consumer Reports advises that children under 5 not be given rice drinks daily, similar to advice given in the United Kingdom.

- People who ate rice had arsenic levels 44 percent greater than those who did not, according to Consumer Reports' analysis of federal health data. Certain ethnic groups were more highly affected, including Mexicans, other Hispanics, and a broad category that included Asians.
- Some food companies are concerned, and methods have been introduced to try to reduce arsenic levels in products.

Arsenic levels in each sample and a complete report are posted at www.ConsumerReports.org.

Consumer Reports recommends these government actions:

- The FDA should ban feeding arsenic-containing drugs to animals for the purpose of pigmentation, growth promotion, feed efficiency and disease prevention.
- The EPA should phase out use of all arsenical pesticides. Soil where cotton was treated with arsenic pesticides in the past is one source of arsenic in today's foods. Michael Hansen of Consumers Union, quoted in Grist, says one arsenic pesticide, MSMA, is still used in cotton "because of the increasing problem of Palmer pigweed — created by the overuse of Glyphosate [Roundup] due to [Roundup Ready] GMO seeds."
- The USDA and EPA should end the use of arsenic-laden manure as fertilizer for all foods and halt the feeding of manure to animals.

Consumer Reports suggests the maximum number of servings per week of various rice-containing foods at www.consumersunion.org/arsenic and recommends these steps as well:

- Rinse raw rice thoroughly before cooking and use 6 cups water to 1 cup rice for cooking (draining excess water afterward) to reduce arsenic levels.
- Try other grains. Though not arsenic-free, wheat and oats tend to have lower levels than rice.
- Eat a varied diet to help minimize risk of exposure.
- Some vegetables can accumulate arsenic when grown in contaminated soil. Clean vegetables thoroughly, especially potato skins.
- Limit consumption of other high-arsenic food, such as some apple and grape juice products that Consumers Union previously found to contain arsenic.
- If you are not on a public water supply, have your water tested for arsenic and lead.

The FDA has found similar results in its testing and says it is working on a proposal to limit the concentration of arsenic in rice. Partha Basu of Duquesne University says daily arsenic intake for a 220-pound adult shouldn't exceed 30 micrograms, and for a 50-pound child, 14 micrograms. Preliminary data from FDA show 6.7 micrograms of arsenic in a cup of cooked rice (but 3.5 in basmati rice), 5.4 in rice cakes, 3.8 in rice beverages, and 3.5 in rice cereals. (Consumer Reports press release, Sept. 20, 2012; "FDA working on plan to limit arsenic levels in rice," by Dina ElBoghady, Sept. 18, 2012, AP; www.washingtonpost.com/business/economy/fda-working-on-plan-to-limit-arsenic-levels-in-rice/2012/09/18/3238a578-0133-11e2-b257-e1c2b3548a4a_story.html; "There's arsenic in your rice — and here's how it got there," by Twilight Greenaway, Grist, Sept. 19, 2012; <http://grist.org/food/theres-arsenic-in-your-rice-and-heres-how-it-got-there/>; "The risks of eating rice," by Larry Roberts, Pittsburgh Post-Gazette, Oct. 8, 2012; www.post-gazette.com/stories/news/health/the-risks-of-eating-rice-656638/)

Climate

Low corn yields due to drought and expensive feed led some conventional farmers to feed their **cows** unusual products last summer, including ice cream sprinkles, **gummy worms**, cookies, fruit loops, distillers' grains, cottonseed hulls and other discarded products. ("Sweet times for cows as gummy worms replace costly corn feed," by Carey Gillam, Reuters, Sept. 23, 2012; www.reuters.com/article/2012/09/23/us-usa-cattle-candy-idUSBRE88M05N20120923)

Food Safety

The Center for Food Safety and the Center for Environmental Health sued the U.S. government in August. They say the government failed to issue final regulations for the **Food Safety Modernization Act**, signed into law in January 2011, by deadline dates, and they want a federal court to order the FDA Office of Management and Budget to enforce the law. The regulations would create standards regarding sources of produce contamination; would make food importers responsible for their imports' safety; and would require that companies identify potential sources of food contamination and ways to prevent contamination. ("Health groups sue U.S. for failing to protect food supply," by Carey Gillam, Reuters, Aug. 30, 2012; <http://uk.reuters.com/article/2012/08/30/us-usa-food-lawsuit-idUKBRE87T02520120830>)

A New York State Health Department preliminary study found **lead in 28 of 58 eggs** tested from chickens kept in community gardens in Brooklyn, the Bronx and Queens. Concentrations ranged from 10 to more than 100 parts per billion. The FDA does not have a limit for lead concentrations in eggs but set 100 parts per billion as the maximum for candy that small children may eat. Eggs containing lead in this study had a mean of 11.5 micrograms; the FDA acceptable daily intake for children ages 6 and younger is 6 micrograms. ("High Lead Found in City-Sourced Eggs," by Julie Scelfo, The New York Times, Oct. 8, 2012; www.nytimes.com/2012/10/10/dining/worries-about-lead-for-new-yorks-garden-fresh-eggs.html?_r=0)

A study published in PNAS Early Edition reports on the effects of nanoparticles on soybean plants. The crop was grown in soil amended with nanoparticles currently manufactured at high volumes for industrial applications: cerium oxide (CeO₂) as a catalyst and additive and zinc oxide (ZnO), widely used in sunscreens. Nano-CeO₂ **diminished plant growth** and yield and at high concentrations **shut down nitrogen fixation** in root nodules. Nano-ZnO was taken up and distributed throughout plant tissues, potentially giving an overdose of Zn to people and animals eating soy.

In other studies, both nanoparticles were toxic to cells. Nano-CeO₂ induced apoptosis (programmed cell death) and autophagy (self-ingestion) in human peripheral blood cells at relatively low doses, while human skin cells exposed to ZnO suffered oxidative stress (even at low concentrations) and DNA damage after 6 hours. Oxidative stress is implicated in cancer development.

Nanoparticles can enter soils through the atmosphere; nano-CeO₂ as fuel additive is released in exhaust when diesel fuel combusts. Nanoparticles can also enter soils in biosolids (sludge) from

conventional wastewater treatment plants. Half of U.S. biosolids are spread on land. Manufactured nanoparticles are neither monitored nor regulated and have a high affinity for activated sludge bacteria.

Soybeans, the second largest U.S. crop, are farmed intensely with fossil fuel-powered equipment with nanoparticles in the exhaust and are routinely amended with wastewater treatment biosolids, from which they bioaccumulate pharmaceuticals and metals.

(“Nanoparticles Bioaccumulate and Harm Soybean Crops,” by Dr. Mae-Wan Ho, ISIS report, Sept. 3, 2012;

http://www.i-sis.org.uk/Nanoparticles_Bioaccumulate_and_Harm_Soybean_Crops.php)

Sunland, Inc., a New Mexico peanut processor, has recalled its **Almond Butter and Peanut Butter** products manufactured between May 1, 2012, and September 24, 2012, because they may be contaminated with **Salmonella**. Between June 11, 2012, and September 2, 2012, 29 people reported Salmonella Bredeney illnesses in approximately 18 states, including Washington, California, Arizona, Texas, Louisiana, Missouri, Illinois, Minnesota, Michigan, Pennsylvania, Massachusetts, New York, Rhode Island, North Carolina, Virginia, Connecticut, New Jersey and Maryland, according to a Sept. 22, 2012, CDC report. Many organic products containing peanuts or peanut butter are included in the recall. (FDA press release, Sept. 24, 2012; www.fda.gov/Safety/Recalls/ucm320647.htm; list of affected products at www.fda.gov/Food/FoodSafety/CORENetwork/ucm320413.htm#recalled)

Pesticides

Maine BPC Addresses Spraying Mosquitoes

By Katy Green

The Maine Board of Pesticides Control (BPC) has been discussing possible actions to control in Maine diseases caused by arboviruses, including West Nile virus and Eastern Equine Encephalitis (EEE), which are spread through mosquito bites. Incidences in other New England states in summer 2012, including deaths in Vermont, prompted this discussion.

Vermont and Massachusetts sprayed pesticides aerially to treat mosquito populations. Maine BPC rules currently do not allow for unauthorized pesticide applications to private properties, which include the types of activities undertaken in other states. The BPC initiated this discussion to allow for spraying for mosquito control in certain circumstances. Toxicologist Lebel Hicks told the board that a group of synthetic pyrethroids and two organophosphates are labeled for this use in Maine.

The BPC enacted emergency rulemaking at its September 2012 meeting to allow for circumstances when both ground-based and aerial spraying can be used to target mosquitoes. The board acknowledged questions about the efficacy of these methods, but moved forward with rulemaking nonetheless.

The emergency rule allows for government-sponsored control of mosquitoes when the Maine Center for Disease Control & Prevention (CDC) recommends control for arboviral diseases. The

emergency amendment, which lasts only 90 days, requires that government entities make a reasonable effort to notify residents before spraying; to include an “opt out” provision for ground-based applications; and to prevent aerial applications on certified organic farms.

The MOFGA staff fought hard for the last provision and recognizes that it does not sufficiently protect certified organic farms or other sensitive populations. As the BPC likely pursues permanent rulemaking over the next few months to address the threat of arboviral diseases, MOFGA will work for strong provisions to protect those who do not wish to be sprayed or whose livelihoods spraying would negatively impact.

Also at the September 2012 meeting, Chuck Ravis, who had been a member of the BPC for one term, was not re-appointed, while Deven Morrill, a licensed arborist with Lucas Tree Experts, was newly appointed. Ravis was the lone voice opposing registration of some new genetically engineered products in Maine.

Product Registrations

In July 2012 the BPC approved a Section 18 Emergency Registration Request for HopGuard to control Varroa mites in managed bee colonies. HopGuard, a potassium salt of hop beta acids, differs from other products in that it can be used while bees are making honey. State apiarist Tony Jadcak spoke in favor of the registration but noted that although this product reduces mite populations, it is not a long-term solution, because the mites are just vectors for viruses – the real problem in bee health.

Also in July the board unanimously authorized the staff to work with the blueberry industry to develop specifics for a crisis Section 18 exemption for the use of Gowan Malathion 8 Flowable to control spotted wing drosophila on wild and cultivated blueberries. Malathion, an organophosphate insecticide, can affect the nervous system.

Variance Requests

The BPC granted a variance request to TransCanada Energy Ltd, for the Kibby Wind Power Project of New Hampshire, to control vegetation along a power transmission line in wetlands in northwestern Maine when no water is present. The 14-mile right-of-way would be treated with Rodeo, Arsenal Powerline and Escort XP applied with backpack sprayers.

In September 2012 the BPC approved a variance request for phragmites (reed) control within 25 feet of a wetland. Of the two genotypes of phragmites, one is invasive and causes monotypic stands, ultimately reducing biodiversity. Some green forest certifications require control of invasives, which is the impetus for this request. RCL Services and DASCO of Bangor and Presque Isle submitted this variance request; they intend to use Rodeo herbicide to control the stands. Board member Curtis Bohlen said it is very difficult to determine what type of phragmites is present in an area, and some of this control will likely be used on native stands. The BPC unanimously approved the request.

Consent Agreements

During its September 2012 meeting, the BPC reached a consent agreement with Purely Organic, a lawn care company based in York Harbor and accused of several violations, including fraud. (See the fall 2012 MOF&G.) Given the large number and serious implications of the alleged violations, the BPC considered sending the case to the attorney general's office rather than reaching a consent agreement with the company. A representative from the company attended the September meeting and detailed changes enacted since the alleged violations were uncovered. The board chose to approve the consent agreement with a motion that the conditional pesticide applicators license currently held by the company be reviewed annually, rather than refer the case to the attorney general's office. The board levied a \$37,000 fine, with \$19,000 suspended.

Also in September 2012, the board unanimously approved a consent agreement with Woodford Street Apartments, LLC, based in Cape Elizabeth, for a pesticide application violation at a building on Woodford Street in Portland. In this case a maintenance worker was instructed to apply Demand SC insecticide to all apartments and hallways in the building. This type of application requires a pesticide license, which the employee did not have. The pesticide was incorrectly mixed and applied at five times the label rate. A \$700 fine was levied.

The board reached a consent agreement with Paul's Lawn Care Inc. of Biddeford for a pesticide application to control crabgrass at the Lyman Town Hall in April 2011. In this case, somebody looking through town records revealed an invoice for the application from Paul's Lawn Care, and the BPC staff was notified. This pesticide application requires a license, which the applicator did not have. The company was fined \$250.

[End of BPC news]

Atrazine, the most commonly used herbicide in the United States and a suspected endocrine disruptor, may be linked to an increased risk of choanal atresia, a congenital abnormality of the nasal cavity, say researchers at Baylor College of Medicine (BCM) and other Texas institutions, in a study to be published in *The Journal of Pediatrics*. In choanal atresia, the back of the nasal passage is blocked by tissue formed during fetal development, affecting a baby's ability to breathe. It is typically treated through surgery. Chemicals that disrupt the maternal endocrine system may be associated with the risk, says Dr. Philip Lupo of BCM and Texas Children's Cancer Center. Mothers who lived in Texas counties with the highest estimated levels of atrazine applications were 80 percent more likely to have children with choanal atresia or stenosis (a less severe form of the condition) than women who lived in the counties with the lowest levels. ("Study: Exposure to herbicide may increase risk of rare disorder," by Dana Benson, Baylor College of Medicine, Sept. 28, 2012; www.bcm.edu/news/item.cfm?newsID=6287)

New York City boys exposed to Dow Chemical's widely used insecticide **chlorpyrifos** (sold as Lorsban) while in the womb had lower scores on short-term **memory** tests than girls exposed to similar amounts. Published in July 2012 in *Neurotoxicology and Teratology*, this is the first study correlating gender differences with harm from prenatal exposure to the organophosphate, measured in umbilical cord blood when the children were born. Other studies have linked chlorpyrifos to delayed mental and motor skill development, reduced IQ test scores and reduced short-term memory. The insecticide affects boys and girls, but has a greater effect in boys. The

neurotoxin was banned from home use in 2001, but residues remain in some homes, and the insecticide is used on some fruits and vegetables, and on golf courses to control mosquitoes. The EPA says it expects to complete its re-evaluation of chlorpyrifos by 2014. In the New York City study subjects, chlorpyrifos was not found in umbilical cord blood of those born after its 2001 ban for home use. (“Widely used pesticide seems to harm boys' brains more than girls’,” by Brett Israel, Environmental Health News, Aug. 20, 2012; www.environmentalhealthnews.org/ehs/news/2012/boys-and-chlorpyrifos)

When Argentine researchers injected pure **glyphosate**, the active ingredient in Roundup herbicide, into amphibian embryos at concentrations far below those used in the field, defects resulted that “**could be interfering in some normal embryonic development mechanism** having to do with the way in which cells divide and die,” said Andres Carrasco, embryology professor and one of the study authors. Genetically engineered herbicide-resistant soy is Argentina’s main crop. (“Herbicide Used in Argentina Could Cause Birth Defects,” Latin American Herald Tribune, Aug. 8, 2012; www.laht.com/article.asp?CategoryId=14093&ArticleId=331718)

The French government is considering banning use of Cruiser OSR, containing the neonicotinoid insecticide thiamethoxam, as a seed coating on oilseed rape. Two European studies have correlated chemicals in neonicotinoids with Colony Collapse Disorder in bees. The manufacturer, Syngenta, says no bee mortality has been linked to Cruiser OSR. In June 2012, French farm minister Stephane Le Foll withdrew Syngenta's marketing permit for Cruiser OSR. Britain's Food and Environment Agency says a study published in Science in April 2012 that prompted the ban did not show that thiamethoxam causes CCD but that the death rate of bees increased when they drank nectar containing thiamethoxam – and the increased size of colonies when bees feed in spring on oilseed rape may counter the population decline. The agency also questions the high dose of the pesticide used in the study. (“France to ban Syngenta pesticide linked to bee decline,” by Philip Case, Farmer’s Weekly, June 8, 2012; www.fwi.co.uk/Articles/18/06/2012/133289/France-to-ban-Syngenta-pesticide-linked-to-bee-decline.htm; “Honeybee homicide case against Syngenta pesticide unproven,” by Chris Wickham, Reuters, Sept. 20, 2012; <http://in.reuters.com/article/2012/09/20/us-science-bees-pesticide-idINBRE88J11L20120920>)

Washington State University research professor Charles Benbrook says **use of herbicides in producing genetically engineered (GE) herbicide-tolerant cotton, soybeans and corn has increased**, based on USDA National Agriculture Statistics Service data. His analysis, the first peer-reviewed, published estimate of the impacts of GE herbicide-resistant crops on pesticide use, appears in Environmental Sciences Europe. “Resistant weeds have become a major problem for many farmers reliant on GE crops, and are now driving up the volume of herbicide needed each year by about 25 percent,” Benbrook said. The annual increase in herbicides used to deal with tougher-to-control weeds on cropland planted to GE cultivars grew from 1.5 million pounds in 1999 to about 90 million pounds in 2011. “Impacts of genetically engineered crops on pesticide use in the U.S. – the first sixteen years” is available at <http://bit.ly/esebenbrook2012> and is summarized at <http://bit.ly/esebenbrookmajor>. (“Pesticide Use Rises as Herbicide-resistant Weeds Undermine Performance of Major GE Crops, New WSU Study Shows,” by Brian Clark, Washington State Univ. press release, Oct. 1, 2012;

<http://cahnrnews.wsu.edu/2012/10/01/pesticide-use-rises-as-herbicide-resistant-weeds-undermine-performance-of-major-crops-new-wsu-study-shows/>)

Monsanto's **Roundup is New York City's most heavily used liquid herbicide**, says a Department of Health report on the city's 2011 use of pesticides. The city Parks Department is the heaviest user. In a heavily referenced review of the herbicide, Anna Lenzer cites studies finding glyphosate (the active ingredient in Roundup) in all urine samples from nonagricultural workers tested in Berlin, at concentrations above the limit for drinking water, and she notes potential health concerns, including cancer, neurodegeneration and more. ("Monsanto's Roundup Is the Most Used Herbicide in NYC," by Anna Lenzer, Mother Jones, Sept. 17, 2012; www.motherjones.com/environment/2012/09/monsantos-roundup-most-used-herbicide-nyc)

Scotts Miracle-Gro Co. has been sentenced to pay \$12.5 million in fines and penalties for illegally **including insecticides in bird food products** sold for two years and for other violations, including giving EPA false documents. The \$4 million criminal fine and \$6 million civil penalties fine are the largest ever levied under the Federal Insecticide, Fungicide and Rodenticide Act, established in 1947. The pesticide was intended to prevent insect infestation in storage but was toxic to birds and not allowed by EPA. ("Pesticide violations cost Scotts Miracle-Gro \$12.5 million," by David Ingram, Reuters, Sept. 7, 2012; www.reuters.com/article/2012/09/07/us-usa-miraclegro-penalties-idUSBRE8861AW20120907)

The EPA has **banned sales of the neurotoxic insecticide azinphos-methyl (AZM)**, sold under the trade name **Guthion**, effective Sept. 30, 2012. Existing stock can be used for a year. Guthion is most widely used on apples, followed by cherries, pears and blueberries [including "wild" Maine blueberries]. Residues of the organophosphate are found on more than 30 percent of U.S. apples. ("EPA pulls toxic apple pesticide. Finally!" Pesticide Action Network, Aug. 30, 2012; www.panna.org/blog/epa-pulls-toxic-apple-pesticide-finally)

After Minnesota organic farmers Oluf and Debra Johnson **lost their organic certification (and their crops) due to pesticide drift**, they sought compensation and protection against future drift through state courts. An appeals court ruled in their favor, but a subsequent Minnesota Supreme Court ruling severely limits potential compensation and threatens organic enforcement standards. The Supreme Court ruled that pesticide drift cannot be considered trespass because it is an "intangible" substance that cannot be seen with the naked eye – even though the Minnesota Department of Agriculture documented the presence of drift on the Johnsons' farm. The justices also found that organic crops contaminated with pesticide drift from a third party may still be considered organic if pesticides are present at concentrations less than 5 percent of those tolerated by EPA – despite certifiers' more stringent standards. The Supreme Court did, however, say that the Johnsons' claim was one of nuisance rather than trespass – something the district court can now consider. ("MN court backtracks on pesticide drift," by Linda Wells, Aug. 17, 2012; www.panna.org/blog/mn-court-backtracks-pesticide-drift; "Supreme Court: Pesticide drift isn't trespassing," AP, Aug. 2, 2012, Marshall Independent www.marshallindependent.com/page/content.detail/id/248472/Supreme-Court--Pesticide-drift-isn-t-trespassing.html?isap=1&nav=5028)

The Connecticut Department of Energy and Environmental Protection found trace amounts of **resmethrin (Scourge) in tomalley and gonads of at least three of 10 lobsters** tested from Long Island Sound, and methoprene in at least one. The insecticides are used to control mosquitoes on Long Island and in parts of Connecticut. Lobstermen in the area have reported hauling more dead and weak lobsters than usual. (“Mosquito pesticide turning up in lobsters,” by Ellen Yan, Newsday, July 27, 2012; www.newsday.com/long-island/mosquito-pesticide-turning-up-in-lobsters-1.3865875)

“Children today are sicker than they were a generation ago. From childhood cancers to autism, birth defects and asthma, a wide range of childhood diseases and disorders are on the rise. Our assessment of the latest science leaves little room for doubt: pesticides are one key driver of this sobering trend.” So says a new report from Pesticide Action Network (PAN) called “A Generation in Jeopardy, How pesticides are undermining our children’s health & intelligence,” by Kristin S. Schafer, M.A., and Emily C. Marquez, Ph.D., at www.panna.org/sites/default/files/KidsHealthReportOct2012.pdf.

Dozens of recent studies show, says PAN, compelling evidence linking some of the 1.1 billion pounds of pesticides used in the United States annually with harm to the brain and nervous system; with cancer, birth defects and early puberty in children; and possibly with the current epidemic of childhood asthma, obesity and diabetes. “Extremely low levels of pesticide exposure can cause significant health harms,” says the report, “particularly during pregnancy and early childhood development.”

In addition to individual actions regarding food choices and avoiding pesticide uses in the home, the report recommends preventing the pesticide industry from selling agricultural products that can harm children’s health; protecting children from pesticides where they live, learn and play; and investing in helping farmers step off the pesticide treadmill.

Genetic Engineering (GE)

Professor and molecular biologist Gilles-Eric Seralini of CRIIGEN (Committee for Research & Independent Information on Genetic Engineering) in France and coworkers published a study in Food and Chemical Toxicology suggesting that **rats fed a diet with GE Roundup Ready NK603 corn**, or with water containing Roundup at concentrations allowed in U.S. drinking water, **developed cancers faster, died younger and had severe liver and kidney damage** compared with rats given a standard diet. The researchers followed the rats for their two-year lifespan. (Most GE crops are approved after 90-day feeding trials.)

Ten groups, each with 10 male and 10 female rats, were studied. Three groups consumed a standard lab-rat diet in which 11, 22 or 33 percent of the feed was replaced with Roundup Ready corn that had been treated with Roundup in the field. Three other groups had the same feed, but the corn was not treated with Roundup herbicide. Three other groups received no GE corn but had varying concentrations of Roundup in their drinking water similar to that in the food

chain from Roundup-treated crops. One control group had standard lab-rat chow with 33 percent non-GE corn in it.

The researchers found "severe adverse health effects including mammary tumors and kidney and liver damage, leading to premature death" associated with GE corn, with Roundup, or with both together. By the end of the study, 50 to 80 percent of non-control females had large tumors compared with 30 percent of control females. Non-control males had four times more large palpable tumors than controls. The first large detectable cancers appeared in non-control males and females after four and seven months respectively but only after 14 months in controls (and most cancers were detectable only after 18 months in controls).

Treated males had 2.5 to 5.5 times more liver congestion and necrosis than control males and up to 2.3 times more instances of marked and severe kidney disease. Of rats receiving GE corn and/or Roundup, up to 50 percent of males and 70 percent of females died prematurely, compared with 30 and 20 percent of controls

The French national academies of agriculture, medicine, pharmacy, sciences, technology and veterinary studies said, "This work does not enable any reliable conclusion to be drawn." Critics say the strain of rat used is prone to mammary tumors (although it is the same strain used by Monsanto and others); that the small number of rats in each treatment is problematic (although 10 is standard for a toxicity trial and is the number Monsanto analyzed in its study); and that statistical methods were below standard. Michael Hansen of Consumers Union noted that of 54 comparisons between treated and control rats, all but four had worse outcomes for treated rats. "That's suggestive that there's something going on and that there should be further research," he said.

A short video about the study, "GMOs: the moment of truth?" appears at <http://vimeo.com/49794058>. ("Study on Monsanto GM corn concerns draws skepticism," by Ben Hirschler and Kate Kelland, Reuters, Sept. 19, 2012; www.baltimoresun.com/features/green/sns-rt-us-gmcrops-safetybre88i010-20120919,0,4212626.story; "CRIIGEN Study Links GM Maize and Roundup to Premature Death and Cancer," Sept. 19, 2012; Sustainable Pulse, <http://sustainablepulse.com/2012/09/19/criigen-study-links-gm-maize-roundup-premature-death-cancer/>; Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize, Gilles-Eric S eralini et al., Food and Chemical Toxicology, 2012, <http://dx.doi.org/10.1016/j.fct.2012.08.005> and available at <http://research.sustainablefoodtrust.org/wp-content/uploads/2012/09/Final-Paper.pdf>; "Does GMO Corn Really Cause Tumors in Rats?" by Tom Philpott, Mother Jones, Sept. 2012; www.motherjones.com/tom-philpott/2012/09/gmo-corn-rat-tumor; "Study linking GM maize to cancer must be taken seriously by regulators," by John Vidal, The Guardian, Sept. 28, 2012;

www.guardian.co.uk/environment/2012/sep/28/study-gm-maize-cancer;
“Excess Cancers and Deaths with GM Feed: the Stats Stand Up,” ISIS Report, Oct. 16, 2012; www.isis.org.uk/Excess_cancers_and_deaths_from_GM_feed_stats_stand_up.php;
“Six French academies dismiss study linking GM corn to cancer,” Agence France-Presse, Oct. 2012;
www.google.com/hostednews/afp/article/ALeqM5j8XJ6iUXuJDzCEBqOGaOgE44PdMg)

Rats fed GE Bt corn for 90 days in a study at the Norwegian School of Veterinary Science became **slightly fatter** than rats fed non-GE corn. The same effect occurred when rats ate fish that were fed Bt corn. Salmon fed Bt corn ate more and were slightly larger than those fed non-GE corn, their intestines had a different microstructure, they were less able to digest proteins, and they exhibited changes to their immune system and blood, according to lead researcher Åshild Krogdahl. She does not know if these changes cause harm over time. Krogdahl also noted, “A frequent claim has been that new genes introduced in GM food are harmless since all genes are broken up in the intestines. But our findings show that genes can be transferred through the intestinal wall into the blood; they have been found in blood, muscle tissue and liver in sufficiently large segments to be identified. The biological impact of this gene transfer is unknown.” (“Growing fatter on a GM diet,” by Arild S. Foss, ScienceNordic, July 17, 2012; <http://sciencenordic.com/growing-fatter-gm-diet>)

A U.S.-backed study led by a Tufts University professor fed 60 grams daily of **GE Golden rice** to 24 Chinese children in Hengyang City in central China's Hunan Province for 35 days and found that the rice was as effective as taking carotene capsules and more effective than eating carotene-rich spinach. The rice was grown hydroponically in a USDA facility. Greenpeace East Asia said the study exposed the children to health risks and that supporting more diverse diets can treat marginal vitamin A deficiency. The study was sponsored in part by the U.S. National Institutes of Health and was published in August in The American Journal of Clinical Nutrition. (“US study feeds kids GM rice,” by Li Qian, Shanghai Daily, Sept. 1, 2012; www.shanghaidaily.com/nsp/National/2012/09/01/US%2Bstudy%2Bfeeds%2Bkids%2BGM%2Brice/; “US university confirms it used children in GM trial,” by Hu Min, Shanghai Daily, Sept. 5, 2012; www.shanghaidaily.com/nsp/World/2012/09/05/US%2Buniversity%2Bconfirms%2Bbit%2Bused%2Bchildren%2Bin%2BGM%2Btrial/)

In September about a dozen **opponents of GE foods**, organized by Occupy Monsanto, **blocked shipments and deliveries for about six hours at Monsanto's Seminis site** in California where a new GE sweet corn was developed. The activists chained themselves to cars blocking the entrance. Nine were arrested and charged with trespassing.

(“Protesters set sights on GMOs, close California facility,” by Mario Anzuoni, Planet Ark, Sept. 13, 2012; <http://planetark.org/enviro-news/item/66530>)

Despite opposition from consumers and activists, including a Food and Water Watch petition with 463,000 signatures, **Wal-Mart Stores Inc.** says it **does not object to selling Monsanto’s new GE sweet corn** that contains the Bt toxin and resists the herbicide Roundup. Whole Foods, Trader Joe’s and General Mills said they would not carry or use the GE sweet corn. Michael Hanson of Consumers Union notes a doubling of food allergies in the United States since 1996, asks if that increase might be related to the introduction then of GE foods, and says that without labeling of GE crops, links are difficult to prove. (“Wal-Mart OK with selling genetically modified sweet corn,” by Monica Eng, Chicago Tribune, Aug. 3, 2012; www.chicagotribune.com/news/local/breaking/chi-walmart-to-sell-genetically-modified-sweet-corn-20120803,0,7931450.story)

The U.S. farmer group **Save Our Crops has dropped its opposition to Dow AgroSciences’ new biotech crop-herbicide combination that uses Enlist – a combination of the herbicides glyphosate and 2,4-D.** Glyphosate is the active ingredient in Roundup. Dow, in return, says it will instruct farmers about minimizing drift and about applications near sensitive crops and will help investigate accidental crop damage. Dow wants to commercialize corn, soy and cotton that will survive exposure to Enlist in order to combat weeds that have become resistant to Monsanto’s Roundup herbicide, due largely to overuse of Roundup on Roundup Ready GE crops. Studies have associated exposure to 2,4-D with non-Hodgkin’s lymphoma, birth defects, and neurological and reproductive problems. The Center for Food Safety says it will sue if the government approves Enlist crops. Monsanto and BASF, meanwhile, are working on crops that tolerate a dicamba and glyphosate mix. (“Dow agrees to safeguards for new crops, 2,4-D weed killer,” by Carey Gillam, Reuters, Sept. 11, 2012; www.reuters.com/article/2012/09/11/us-usda-dow-crops-idUSBRE88A19W20120911)

Even as **corn, soy and cotton resistant to 2,4-D** herbicide are being developed, populations of weeds are developing resistance to the herbicide as well. Previously 17 weeds were known to be resistant to 2,4-D; now a 2,4-D-resistant variety of waterhemp – a major problem for crop production in the Midwest – has been found. (“A Waterhemp (*Amaranthus tuberculatus*) Population Resistant to 2,4-D,” Weed Science, Vol. 60, No. 3, July-Sept. 2012, www.wssajournals.org/doi/full/10.1614/WS-D-11-00170.1 Press release, Weed Science Soc. of Amer., Aug. 15, 2012; www.wssa.net/)

Purdue University researchers grew glyphosate-resistant and glyphosate-susceptible strains of giant ragweed, horseweed and common lambsquarter in sterile soil and in field soil and then treated the weeds with glyphosate, the active ingredient in Roundup herbicide. Both strains of giant ragweed were

damaged more from glyphosate in field soil than in sterile soil, as was the herbicide-susceptible version of common lambsquarter. Both strains of horseweed fared the same in both soils. The results suggest that microbes may invade some glyphosate-weakened herbicide-susceptible plants and that **glyphosate-resistant weeds may be more resistant to disease pressure**. Said one researcher, "We may be selecting not only for glyphosate resistance, but inadvertently selecting for weeds that have disease resistance as well." ("Glyphosate-resistant 'superweeds' may be less susceptible to diseases," July 17, 2012; by Brian Wallheimer, Purdue University News Service; www.purdue.edu/newsroom/research/2012/story-print-deploy-layout_1_20746_20746.html)

Hans Johr, corporate head of sustainable agriculture at Nestlé, says **GE food is not necessary** to feed the world, and the food industry should use resources, including water, more sustainably and should employ other techniques, including new non-GE breeding techniques. Still, Nestlé donated more than \$1 million to oppose California's initiative to label GE foods. ("Nestlé sustainability champion: GM food not 'answer' to feeding world," by Rod Addy, Aug. 30, 2012; www.foodnavigator.com/Financial-Industry/Nestle-sustainability-champion-GM-food-not-answer-to-feeding-world; "In a Surprising Contradiction, Nestlé Official Says GMOs Aren't Necessary," by Clare Leschin-Hoar, Aug. 30, 2012; Take Part, www.takepart.com/article/2012/08/30/nestle-and-gmos)

Howard Vlieger, a co-founder and agroecological farming advisor of Verity Farms in drought-stricken South Dakota, says a farmer grew both GE and Verity Farms' non-GE soy and corn side by side. Appraised yields for three fields of SmartStax Roundup Ready corn were 12, 27 and 28 bushels per acre, while non-GE corn on Verity Farm across the road yielded 108 bushels per acre. Results were similar with soy. Previous laboratory studies showed that glyphosate-treated crops yielded less per unit of water absorbed than non-treated crops. ("GM Crops Destroyed by US Drought but non-GM Varieties Flourish," by Dr. Eva Sirinathsinghji, Institute of Science in Society Report, Oct. 9, 2012; www.i-sis.org.uk/US_drought_destroys_GM_Crops.php)

In August 2012, **Monsanto Co. won a \$1 billion lawsuit against DuPont**, claiming that DuPont willfully infringed on Monsanto's patented Roundup Ready soybean technology when it combined the technology with its own Optimum GAT. The award is one of the top five patent verdicts in U.S. history and the largest relating to agricultural biotechnology. DuPont is appealing the verdict. In another, pending lawsuit, DuPont has accused Monsanto of anti-competitive behavior. The U.S. Department of Justice is also investigating antitrust practices in the seed industry. ("Monsanto wins \$1 billion in court battle with DuPont," by Georgina Gustin, Aug. 2, 2012; St. Louis Post-Dispatch; www.stltoday.com/business/local/monsanto-wins-billion-in-court-battle-with-dupont/article_4e1809dd-a180-5bee-a1cd-7c29385cb2f1.html)

In August 2012, the **Oregon Court of Appeals ordered a temporary halt to the state's plan to allow GE canola to be planted** in parts of the Willamette Valley until the court rules on a lawsuit filed by opponents of GE canola planting who say it threatens the state's \$32 million specialty seed industry. Opponents filing the suit include Friends of Family Farmers (based in Molalla, Oregon), the Center for Food Safety, and Oregon specialty seed producers Universal Seed, Wild West Seeds and Wild Garden Seed. The lawsuit and court order are in response to new rules, not subject to required public comment, that would allow planting of GE canola in areas previously deemed off-limits. Willamette Valley farmers who grow related plants for seeds to sell to production growers and gardeners fear that canola will cross-pollinate with crops such as cabbage, broccoli, cauliflower, kale and turnips. An Oregon State University report says, "The two greatest threats are canola seed blown from vehicles onto road shoulders and volunteers in fields previously planted to canola. Detecting and eliminating volunteers from a 2-kilometer [1.2 mile] radius around a seed field would be onerous and perhaps impossible. ("Court Blocks Planting of Genetically Engineered Canola in Oregon," Beyond Pesticides, Aug. 22, 2012; www.beyondpesticides.org/dailynewsblog/?p=7950)

The USDA Animal and Plant Health Inspection Service (APHIS) announced in July 2012 its **nonregulated status for a variety of GE Roundup Ready sugar beet**, saying the crop is as safe as traditionally bred sugar beets as it "is not likely to pose a plant pest risk." ("USDA Announces Decision to Deregulate Genetically Engineered Sugar Beets," July 19, 2012; www.aphis.usda.gov/newsroom/2012/07/rr_sugarbeets.shtml)

In October 2012, the **U.S. Supreme Court agreed to hear Indiana farmer Vernon Bowman's case against Monsanto Co.**, which claims Bowman used its GE Roundup Ready seeds without Monsanto's authorization. Bowman sowed his second crop of soy using less expensive commodity soybean seed purchased at a grain elevator; the second crop was contaminated with patented Roundup Ready genes, as 90 percent of the soy grown in the area is Roundup Ready. The Obama administration urged that the court reject the case, fearing that it would affect patents on biotech products. ("High court to hear farmer, Monsanto seed dispute," by Mark Sherman, Bloomberg Businessweek, Oct. 5, 2012; www.businessweek.com/ap/2012-10-05/high-court-to-hear-farmer-monsanto-seed-dispute; "Supreme Court to Rule on Patents for Self-Replicating Products," by David Kravets, Wired, Oct. 10, 2012; www.wired.com/threatlevel/2012/10/self-replicating-patents/)

In August 2012, the USDA Advisory Committee on Biotechnology and 21st Century Agriculture considered a **draft report**, more than a year in the making, **to compensate farmers whose crops have been contaminated by GE pollen, seeds or other material**. The report noted the difficulty of preventing contamination as well as concerns that addressing contamination could raise

questions among buyers about the purity and safety of U.S. crops – instead of the current “don’t ask, don’t tell” status on the issue, according to one official. The report says "it is not realistic to suggest that commercial seed producers can guarantee zero presence" of GE material in organic and non-GE seed. It suggests that taxpayer-subsidized crop insurance might compensate farmers who have contaminated crops – putting the burden of proof on victims of contamination. (“USDA panel gets altered-crops pay plan,” by Carolyn Lochhead, Aug. 24, 2012; www.sfgate.com/science/article/USDA-panel-gets-altered-crops-pay-plan-3814480.php)

California's Proposition 37, the Nov. 6, 2012, ballot initiative that failed, would have required labeling of some GE foods and would have banned labeling of GE-containing foods as "natural." Many large agribusiness and chemical corporations, as well as some companies that sell organic and "natural" food brands, spent about \$46 million to defeat the initiative.

Opponents of Prop. 37 are listed here, along with their organic or natural brands:

Bimbo Bakeries (Earth Grains, Sarah Lee)

Campbell Soup Co. (V8 Organic, Prego Organic, Swanson’s Organic, Pace Organic, Campbell’s Organic, Bolthouse Farms)

Coca-Cola (Honest Tea, Odwalla) – donated \$1,690,500

Con-Agra (Orville Redenbacher's Organic, Hunt's Organic, Lightlife, Alexia Foods; \$1,076,300)

Dean Foods (Horizon, Silk, White Wave, Organic Cow of Vermont; \$253,000)

DelMonte (DelMonte brand organic pickles and organic canned tomato products, Fruit Naturals) – donated \$674,100

General Mills (Muir Glen, Cascadian Farm, Larabar, Small Planet Foods, Gold Medal Organic; \$1,230,300)

Hershey (Dagoba)

Hormel Foods (Natural Choice)

Kellogg's (Kashi, Bear Naked, Morningstar Farms, Keebler Organic, Kellogg’s Organic, Wholesome & Hearty; \$632,500)

Kraft (Boca Burgers and Back to Nature; \$2,000,500)

McCormick (McCormick Organic Spices)

PepsiCo (Naked Juice, Tostito's Organic, Tropicana Organic; \$2,485,400)

Safeway ("O" Organics)

Smucker's (R.W. Knudsen, Santa Cruz Organic, Smucker's Organic Peanut Butter, Natural Brew, Tenderleaf Tea; \$555,000)

Other entities funding defeat of Prop. 37 included Monsanto (\$8,112,867), Dupont (\$4.9 million), BASF (\$2 million), Bayer CropScience (\$2 million), Nestle USA (\$1,315,600), Syngenta (\$2 million), Dow Agrosciences (\$2 million), Smythfield (\$684,000), Council for Biotechnology Information (\$375,000), Biotechnology Industry Organization (\$875,000) and Grocery Manufacturers Assoc. (\$2,002,000). Smaller donors included Wm. Wrigley Jr. Co., Morton Salt, Sunny Delight Beverages Co., McCain Foods, Mars, Inc., H.J. Heinz Co., Clorox Co., Croplife America, Smithfield Foods, Ocean Spray Cranberries, Inc., Land o'Lakes, Inc., and many more.

Financial supporters of Prop. 37 included Mercola.com (\$1,115,000), the Organic Consumers Fund, the organizational lobbying ally of the Organic Consumers Association (\$720,000), Nature's Path (\$610,000), Lundberg Family Farms (\$251,000), Dr. Bronner's (\$369,000), Earth Balance (\$102,000), Nutiva (\$50,000), Eden Foods, Organic Valley (\$100,000), Amy's Kitchen (\$100,000), Michael Funk (CEO of UNFI), Traditional Medicinals, Alex Bogusky, Clif Bar & Co. (\$100,000), Annie's (\$50,000), and others. More than 15,000 individual organic consumers and farmers also contributed to the campaign.

Maine organic farmer Jim Gerritsen told the Portland Press Herald, "The biotech industry is the only industry I know of that is so ashamed of its products that it's afraid of the American public finding out what's in them. In a democracy, everybody benefits when there is a free flow of information. When you deny that information, there is a dysfunction in the economy."

("Friends and Enemies of Your Right to Know," by Ronnie Cummins, Organic Consumers Association, Aug. 23, 2012;

www.organicconsumers.org/articles/article_26023.cfm; "The Big Picture:

Passing Prop 37 is the Key to Rapidly Expanding the Organic Food and Farming Alternative in North America," www.cornucopia.org/wp-content/themes/Cornucopia/downloads/prop37-poster.pdf; KCET Presents Election 2012;

www.kcet.org/news/ballotbrief/elections2012/propositions/prop-37-funding-genetically-engineered-food.html; Calif. Secretary of State, <http://cal-access.ss.ca.gov/Campaign/Committees/Detail.aspx?id=1344135&type=all&view=contributions>;

"Natural Foodie: Food-fight fallout may drift over Maine," by Avery Yale Kamila, Portland Press Herald, Sept. 5, 2012;

www.pressherald.com/life/foodandddining/food-fight-fallout-may-drift-over-maine_2012-09-05.html)

Farm and Farmland Data

The 9,140 USDA-certified **organic** farms and ranches in the United States sold **more than \$3.5 billion** of organically grown agricultural commodities in 2011, according to the 2011 Certified Organic Production Survey. This is the first time the National Agricultural Statistics Service (NASS) has conducted a survey focused solely on USDA-certified organic producers. The results will enable policymakers to better assess the Federal Crop Insurance program and its impact on the organic industry. Here are some highlights of the results:

U.S. Sales >\$3.5 billion – just under 1 percent of total agricultural cash receipts

Corn	> \$101.5 million	Alfalfa dry
hay	\$69.5 million	Winter wheat
\$54 billion		Livestock products \$1.31 billion
	Organic milk \$276 million	
	Chicken eggs \$115 million	
Broiler chickens		

Organic field crop acreage harvested

United States	3.65 million acres (~0.4 percent of 917 million acres of U.S. farm and ranch land)	Wisconsin
> 110,000 acres		New York > 97,000 acres
acres	California	> 91,000 acres

New England sales \$119.3 million – more than 4 percent of total agricultural cash receipts in New England

Livestock and poultry (including \$70 million)	products organic milk)
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Crops ~ \$40 million (maple syrup accounting for more than 25 percent)

Vermont	\$65.8 million (\$41.7 million, milk; \$10.4 million, maple syrup)
Maine	\$24.4 million
N.H.	\$16.8 million
Mass.	\$10.8 million
Conn.	\$1.2 million
R.I.	\$307,000

An Organic Trade Association survey found 2010 retail sales of organic goods represented about 4 percent of the overall food-products industry and about 12 percent of all U.S. produce sales.

The NASS survey results, including statistics on organically grown produce, value-added

products and marketing outlets, are posted at <http://bit.ly/2011OrganicSurvey> (“USDA Releases Results of the 2011 Certified Organic Production Survey,” USDA press release, Oct. 4, 2012; www.nass.usda.gov/Newsroom/2012/10_04_2012b.asp; “New England Highlights of USDA’s 2011 Certified Organic Production Survey, USDA NASS New England Office, Oct. 5, 2012; “Organic Food Sales Reached \$3.53 Billion in 2011, USDA Says,” by Alan Bjerga, Business Week, Oct. 4, 2012; www.businessweek.com/news/2012-10-04/organic-food-sales-reached-3-dot-53-billion-in-2011-usda-says)

Agricultural Resources and Environmental Indicators, 2012 discusses economic, technology, policy, resource use, input use and land management changes that can enhance or degrade economic, social or environmental sustainability.

Notable findings include the following:

- The number of U.S. farms varied between 2.1 and 2.2 million since 1992. In 2009, small farms made up 88 percent of all U.S. farms, but large-scale family and non-family farms accounted for more than 80 percent of the total value of production.
- In 2007, about 51 percent of the 2.3 billion acres in the United States was used for agricultural purposes, including cropping, grazing (in pasture, range and forests), and farmsteads and farm roads. Total cropland acreage in 2007 reached its lowest level since the Major Land Use series began in 1945. Over 1959-2007, forest-use land and grassland, pasture and range also decreased, while land in special uses (primarily recreation areas, transportation and national defense) and urban areas increased.
- From 2000 to 2010, national aggregate farm real estate values appreciated faster than residential values. Traditionally, farmland values were driven largely by returns from agricultural activities, but today in some regions farmland values are influenced by factors such as urban influence and income from hunting leases; so cropland values in these regions greatly exceed their implied agricultural use value.
- From 1948 to 2009, agricultural output grew 1.63 percent per year while aggregate input use increased only 0.11 percent annually, so positive growth in the farm sector was mainly due to productivity growth (1.52 percent per year).
- Total agricultural research and development funding generally increased since 2000; private sector funding grew to exceed that of the public sector, which grew slowly and sporadically until 2006 before declining. Private sector R&D tends to emphasize marketable goods, while public sector R&D tends to emphasize public goods such as environmental protection, nutrition and food safety.
- Corn, cotton and soybean growers have widely adopted GE herbicide-tolerant and insect-resistant seeds since 1996. Despite higher prices for GE seed than for conventional seeds, U.S. farmers are realizing economic benefits from increased crop yields, lower pesticide costs, and/or management time savings.

- Real expenditures (2010 US\$) and quantities for pesticide active ingredients declined an average 2.4 percent and 1.4 percent, respectively, per year during 1996-2007, even though expenditures and quantities applied increased from 2006 to 2007. However, herbicide use increased, and increasing glyphosate use on herbicide-tolerant crops and reduced diversity of weed management practices are associated with increased weed resistance.

- Commercial fertilizer consumption fell from 23 million short tons in 2004 to 21 million short tons in 2010, with high fertilizer prices contributing to the decline. Since 2004, nitrogen recovery rates (amount removed by harvested crop/amount applied) on corn and cotton have increased, and the shares of planted acreage where application rates exceed 125 percent of the crop's agronomic need have decreased. Phosphate recovery rates are relatively unchanged for corn and cotton. Mining phosphate in soybean plantings increased.

- In recent decades, on-farm irrigation efficiency – the share of applied water that is beneficially used by the crop – has increased: From 1984 to 2008, total irrigated acres in the West increased by 2.1 million acres, while water applied declined by nearly 100,000 acre-feet, reflecting improved water-use efficiency, as well as changes in irrigated acreage and regional cropping patterns.

- Since 2000, corn, cotton, soybean and wheat acreage under conservation tillage (mulch, ridge and no till) has increased, which may reduce soil erosion and water pollution but increase pest management costs. Over that same time, continuous corn and corn-inclusive rotations increased and continuous soybeans decreased due to higher corn prices, with uncertain effects on erosion and water pollution. Erosion control structures and conservation buffers are more widely used on highly erodible land than on other land, but overall, structures were more widely used and buffers less widely used on cotton and wheat than on corn and soybeans.

- From 2004 to 2011, organic food sales more than doubled from \$11 billion to \$25 billion, accounting for more than 3.5 percent of food sales in 2011. In 2008, growers practiced certified organic production on less than 1 percent of U.S. cropland and pasture/rangeland, but the percentage is higher for fruit/vegetable crops and for dairy production.

- Federal funding for voluntary programs that encourage land retirement and adoption of conservation practices on working lands was \$5.5 billion in 2010, higher than at any time since 1960 (when expressed in 2010 dollars); funding increased nearly tenfold for working-land conservation from 2003 to 2010. Enrollment in the Conservation Reserve Program (CRP) peaked at 36.8 million acres in 2007, but the 2008 Farm Act cut maximum enrollment to 32 million acres and high crop returns have discouraged new CRP bids, so 29 million acres were under 10- to 15-year contracts as of June 2012. Goals of the CRP

include soil conservation, improved water and air quality, and enhanced wildlife habitat. Total 2008-12 authorized funding for the Environmental Quality Incentive Program is \$7.25 billion; 60 percent is targeted for resource concerns in poultry and livestock production.

(“Agricultural Resources and Environmental Indicators, 2012,” Craig Osteen, Jessica Gottlieb and Utpal Vasavada (editors), USDA Economic Research Service Information Bulletin Number 98, August 2012;

www.ers.usda.gov/media/874179/eib98_reportssummary.pdf; full report at www.ers.usda.gov/publications/eib-economicinformationbulletin/eib98.aspx)

Agriculture Deputy Secretary Kathleen Merrigan in August 2012 announced a **9.6 percent increase in National Farmers Market Directory listings**. This USDA database, published at farmersmarkets.usda.gov, identifies 7,864 farmers’ markets operating throughout the United States, as reported by farmers’ market managers. Last year the directory listed 7,175 markets.

Users can search for markets based on location, available products, and types of payment accepted, including participation in federal nutrition programs. Directory features allow users to locate markets based on proximity to zip code, mapping directions and links to active farmers’ market websites. Customized datasets can also be created and exported for use by researchers and software application designers.

USDA has taken several steps to help small and mid-sized farmers as part of the department's commitment to support local and regional food systems, and increase consumer access to fresh, healthy food in communities across the country. For example, USDA's Food and Nutrition Service (FNS) is outfitting more farmers’ markets with the ability to accept SNAP (Supplemental Nutrition Assistance Program, formerly food stamps), announcing \$4 million in available funding to equip farmers' markets with wireless point-of-sale equipment. Currently, more than 2,500 farmers’ markets use Electronic Benefit Transfer technology.

Also, USDA recently released the 2.0 version of its KYF (Know Your Farmer) Compass, a digital guide to USDA resources related to local and regional food systems. The compass helps consumers locate local food resources, such as farmers’ markets, and plot them on an interactive map. (USDA press release, August 2012)

According to Oxfam, **land investors, speculators and biofuel producers** have, in the past decade, **taken over enough land worldwide** to feed nearly 1 billion people – but with the intention of producing, primarily, biofuels and other crops for export. Oxfam urged the World Bank to stop funding investments in such land grabs, most of which are in developing countries where hunger and poverty are already widespread. (“Land acquired over past decade could have produced food for a billion people,” by John Vidal, The Guardian, Oct. 3, 2012; www.guardian.co.uk/global-development/2012/oct/04/land-deals-preventing-food-production)

Maine Agriculture

The **Maine Department of Agriculture, Conservation and Forestry** (www.maine.gov/acf) became official on Aug. 30, 2012, merging the departments of Agriculture and Conservation. The department is headed by Commissioner Walter Whitcomb; Ed Meadows is deputy commissioner. The department will have a budget of \$96.5 million and 732 full-time and seasonal employees in seven divisions:

- Agricultural Resource Development
- Forestry
- Parks and Public Lands
- Quality Assurance and Regulations
- Animal and Plant Health
- Geology and Natural Areas
- Land Use Planning, Permitting and Compliance

Staff may be reached at 207-287-3200.

(Maine Dept. of Agriculture, Conservation and Forestry press release, Aug. 29, 2012)

Farm Bill

As we went to press, the U.S. 2008 **Farm Bill had expired**, as Congress had failed to pass a new bill before adjourning in September. Important programs, including training for beginning farmers, natural resource conservation and access to quality food, were in jeopardy unless Congress acted quickly after the Nov. 6 election. Partisan disagreement over the Supplemental Nutrition Assistance Program (food stamps) was largely responsible for Congress' failure to act. ("Farm Bill limbo leaves Maine businesses in lurch," by Ben McCanna, Morning Sentinel, Sept. 30, 2012; www.onlinesentinel.com/news/working-without-a-safety-net_2012-09-29.html)

Spring 2013

The Good News

A Cornell-led team of researchers is working **to expand the availability of broccoli at East Coast farms, farmers' markets and grocery stores**. The popularity of broccoli has increased due to its anti-inflammatory properties, high fiber content, effects on vitamin D, ability to help prevent certain cancers, and concentration of phytonutrients that aid in detoxification. But 90 percent of broccoli sold in the East is produced in California and Mexico. Thomas Björkman, associate professor of horticulture based at the N.Y. State Agricultural Experiment Station in Geneva, is leading a team that includes researchers from public broccoli-breeding programs and private seed companies, production specialists and economists in building a regional network that transforms broccoli from isolated production pockets to a year-round market worth \$100 million a year. The plan involves three public breeders using existing germplasm to develop hybrids with improved disease resistance, ease of harvest, tolerance to heat, humidity and other stresses, and high phytonutrient content; three seed companies to scale up seed production and market new releases to eastern growers; five

regional sites to demonstrate broccoli production; five eastern U.S. grower networks to produce a year-round supply; and one regional distribution network to source broccoli from different grower networks at different times of the year.

So far results show the additional expense involved in producing broccoli in the eastern U.S. can be offset by savings in transportation costs. According to one model, a 30 percent increase in eastern acreage can reduce costs by \$5 million a year under current diesel fuel prices; and a year-round eastern broccoli industry would reduce the broccoli growing and transportation system's CO2 emissions by 1.4 million pounds per year, roughly equal to taking 125 cars off the road. (“Study shows promise for East Coast broccoli industry,” by Kate Frazer, Chronicle Online, Jan. 8, 2013; www.news.cornell.edu/stories/Jan13/EastCoastBroccoli.html)

Dairy heifers raised on pasture in the Wisconsin Integrated Cropping Systems Trial **performed as well as or better than similar heifers raised in confinement.** In this study, heifers on managed pastures matched the weights and age at first calving of their confined counterparts and they outperformed confinement heifers in average daily gain during the pasture season and milk production in their first lactation. (“Pastured Heifers Grow Well and Have Productive First Lactations,” Univ. of Wisc. Madison, Center for Integrated Agricultural Systems, CIAS Research Brief #89, Jan. 2013; www.cias.wisc.edu/crops-and-livestock/pastured-heifers-grow-well-and-have-productive-first-lactations/)

Chickens fed a diet including **oregano oil** and cinnamon appear to resist bacterial diseases without using **antibiotics**. The oregano product, By-O-Reg Plus, is made by Dutch company Ropapharm International. A USDA SARE-funded test of oregano oil on four small farms in Maine found that the material controlled parasites and worms of goats and sheep. Diane Schivera of MOFGA coordinated this work. (www.mofga.org/Publications/MaineOrganicFarmerGardener/Spring2010/Regano/tabid/1556/Default.aspx) And a Georgetown University study of mice infected with staph bacteria found that those given oregano oil survived longer than those given carvacrol (in olive oil), thought to be the antibacterial component of oregano, and much longer than controls. Sanitation is also important in controlling bacterial infections. (“In Hopes of Healthier Chickens, Farms Turn to Oregano,” By Stephanie Strom, The New York Times, Dec. 25, 2012; www.nytimes.com/2012/12/26/science/chicken-farms-try-oregano-as-antibiotic-substitute.html?pagewanted=all&_r=0)

The **amount of land needed to grow crops** worldwide has peaked, and an area more than twice the size of France can return to its natural state by 2060 as a result of rising yields due to farmers' ingenuity and slower population growth, says Jesse Ausubel, director of the Program for the Human Environment at the Rockefeller University in New York. A June 2012 UN FAO report, however, said 70 million more hectares of land will have to be cultivated in 2050 to meet food needs. Ausubel assumed rising crop yields, slowing population growth, a slow rise in using crops for biofuels, moderate rises in meat consumption and no disruption from climate change. ("Peak farmland' is here, crop area to diminish: study," by Alister Doyle, Reuters, Dec. 17, 2012; www.reuters.com/article/2012/12/17/us-crops-idUSBRE8BG0QH20121217)

The average human produces 2 liters of urine per day. An ecosan – ecological sanitation – toilet separates urine from feces so that the **urine can be used to fertilize crops**. The DZI Foundation of Colorado and a Nepalese NGO are building more than 1,000 toilets in Sotang, a village in Nepal. One resident who chose an ecosan toilet used the urine as fertilizer and significantly increased his income from his vegetable plot. Urine poses negligible health risks, say UN experts. Separating urine at the source can prevent accidental contamination from fecal pathogens. Other safety measures include applying urine only to soils and not to leaves, and only on crops that will be cooked; and sanitary handling of food in the kitchen. Environmental contamination with traces of medicines and hormones is considered a minor concern – and soils may degrade these better than sewage treatment systems. Long-term effects on soil salinity are unknown in this area so far. ("Liquid gold: Farmers in Nepal find resourceful way to fertilize crops, by Smriti Mallapaty, Environmental Health News, Dec. 17, 2012; www.environmentalhealthnews.org/ehs/news/2012/urine-as-fertilizer)

More than \$4.5 million in grants for 68 projects in 37 states and the District of Columbia will **connect school cafeterias with local agricultural producers**. Among the grantees are the Portland Public Schools and Maine School Administration District 12. ("USDA Farm to School 2012 Grant Awards," USDA, Nov. 14, 2012; http://www.fns.usda.gov/cnd/F2S/pdf/F2S_Grants-FY2013.pdf)

Slow Food's Sixth International Congress, held in October 2012 in Turin, Italy, committed to reaching more of the world, including Africa and China; to continuing to assert itself politically; and to working to protect biodiversity worldwide. Vital to this task will be the continuing cataloguing of endangered products with projects such as the Ark of Taste. (Slow Food International press release, Nov. 2, 2012; www.slowfood.com)

Fellenz Family Farm and Mud Creek Farm are the first farms to qualify for the **Food Justice Pledge**, says NOFA-NY. The Agricultural Justice Project created this domestic fair trade label to reward in the marketplace sustainable and organic farms and food businesses where relationships are just and equitable. AJP standards emphasize fair pricing for farmers' products that fully cover production costs, including fair wages and benefits for farmers and farm workers, genuine learning opportunities for interns, and safe working conditions for everyone on the farm. AJP helps farms establish clear employee policies and set fair prices. The standards appear at www.agriculturaljusticeproject.org. (“Two farms are the first to qualify for NOFA-NY’s Food Justice Pledge on Human Rights Day,” NOFA-NY press release, Dec. 10, 2012; www.nofany.org)

Farmer Mark Shepard of New Forest Farm in Wisconsin has planted perennials such as chestnuts, apples, hazelnuts, nut pines, berry shrubs and more to diversify his crops and protect his soil – an alternative to annual row crops that are labor intensive and degrade soils. He aims to mimic nature as much as possible and produce crops with his “**restoration agriculture**,” which includes the permaculture technique of establishing berms and swales to capture rainwater. Annual and perennial vegetables grow in alleys between tree rows and provide food until perennial crops start to produce. Cattle and pigs graze under some trees; eventually chickens, sheep and turkeys will join them. Shepard calculates that the system can yield 30 percent more calories per acre than corn, and much more nutrition. (“The giving tree: Agroforests can heal food systems and fight climate change,” by Jake Olzen, Grist, Dec. 11, 2012; www.grist.org/food/put-a-tree-on-it-can-agroforestry-help-combat-climate-change/)

Since 1999, the global land area farmed organically has expanded more than threefold to 37 million hectares, according to Worldwatch Institute. Regions with the largest certified organic agricultural land in 2010 were Oceania (29.9 million acres), Europe (24.7 million acres) and Latin America (20.8 million acres).

Organic farming is now established in international standards, and 84 countries had implemented organic regulations by 2010, up from 74 in 2009. Definitions vary, but according to the International Federation of Organic Agriculture Movements, organic agriculture is a production system that relies on ecological processes, such as waste recycling, rather than the use of synthetic inputs, such as chemical fertilizers and pesticides.

"Although organic agriculture often produces lower yields on land that has recently been farmed conventionally, it can outperform conventional practices – especially in times of drought – when the land has been farmed organically for a longer time," says Laura Reynolds, a researcher with Worldwatch's Food and Agriculture Program. "Conventional agricultural practices often degrade the environment over both the long and short term through soil erosion, excessive water extraction, and biodiversity loss."

Organic farming can contribute to sustainable food security by improving nutrition intake and sustaining livelihoods in rural areas, while simultaneously reducing vulnerability to climate change and enhancing biodiversity. Sustainable practices associated with organic farming are relatively labor intensive. Organic agriculture uses up to 50 percent less fossil fuel energy than conventional, and common organic practices – including rotating crops, applying mulch to empty fields, and maintaining woody plants on farms – also stabilize soils and improve water retention, thus reducing vulnerability to harsh weather. On average, organic farms have 30 percent higher biodiversity, including birds, insects and plants, than conventional.

Certifications for organic agriculture are increasingly concentrated in wealthier countries. From 2009 to 2010, Europe increased its organic farmland by 9 percent, the largest growth in any region. The United States has lagged behind other countries in adopting sustainable farming methods. When national sales rather than production are considered, however, the U.S. organic industry is one of the fastest-growing industries in the nation, expanding by 9.5 percent in 2011 to reach \$31.5 billion in sales.

Sustainable food production will become increasingly important in developing countries, as most population growth is concentrated in the world's poorest countries. Agriculture in developing countries is often far more labor intensive than in industrial countries, so it is not surprising that approximately 80 percent of the 1.6 million global certified organic farmers live in the developing world. Countries with the most certified organic producers in 2010 were India (400,551 farmers), Uganda (188,625) and Mexico (128,826). Non-certified organic agriculture in developing countries is practiced by millions of indigenous people, peasants and small family farms involved in subsistence and local market-oriented production. ("Achieving a Sustainable Food System with Organic Farming," Worldwatch Institute, Jan. 15, 2013; www.worldwatch.org/achieving-sustainable-food-system-organic-farming)

Local Food

About **10 to 14 percent of the food eaten by the average Mainer comes from Maine**, says Mark Lapping of the University of Southern Maine Muskie School of Public Policy and a member of the Maine Food Strategy Initiative. The Initiative, coordinated by University of Maine Cooperative Extension, seeks to increase this percentage. More information about the Maine Food Strategy is available at <http://mainefoodstrategy.org/>. (“Natural Foodie: Maine Food Strategy reaching out to reap ideas,” by Avery Yale Kamila, Portland Press Herald, Jan. 23, 2013; www.pressherald.com/life/maine-food-strategy-reaching-out-to-reap-ideas_2013-01-23.html)

Organic

Former Salinas Valley fertilizer maker Peter Townsley, who owned and ran California Liquid Fertilizer from 2000 to 2006, has been **sentenced to 364 days in federal prison**, fined \$125,000, ordered to do 1,000 hours of community service, preferably related to organic farming, and ordered to three years of supervised release after he leaves prison, **for selling some \$6.5 million worth of Biolizer XN fertilizer to organic farmers**. The fertilizer, made from organic materials and water, was amended with ammonium chloride and ammonium sulfate, both banned from use in organic production. Townsley was charged with mail fraud, as he mailed statements to the Organic Materials Review Institute claiming that Biolizer XN materials were allowed in organic operations. Another California fertilizer producer, Kenneth Noel Nelson Jr., who ran Port Organic Products Ltd., has been sentenced to 6 1/2 years in prison after selling as organic a product amended with aqueous ammonia. (“Salinas Valley organic fertilizer maker gets year in prison,” by Larry Parsons, The Herald, Nov. 8, 2012; www.montereyherald.com/local/ci_21959190/salinas-valley-organic-fertilizer-maker-gets-year-prison; “Organic fertilizer fraud nets 364-day prison term, plus fine,” The Grower, Nov. 9, 2012; www.thegrower.com/news/regions/southwest/Organic-fertilizer-fraud-nets-364-day-prison-term-plus-fine-177956401.html?view=all; “Man who made fake organic fertilizer gets 6 1/2 years,” AP, San Jose Mercury News, Nov. 19, 2012; www.mercurynews.com/breaking-news/ci_22028563/man-who-made-fake-organic-fertilizer-gets-6)

As of January 1, 2013, **organic certifying agents must test** annually samples from at least 5 percent of the operations they certify to ensure they are not using materials prohibited in organic production. Testing can be done on soil, water, waste, seeds, plant tissue and processed product samples and can look for prohibited pesticides, hormones, antibiotics and genetically engineered products. In 2012, MOFGA Certification Services’ second year of testing, samples from 20 randomly selected Maine organic farms had no detectable residues of prohibited pesticides. Critics of the USDA requirement, including Charles Benbrook of Washington State University and Maine organic farmer Arthur Harvey, say limited testing without third-party involvement and without better recordkeeping by USDA is insufficient. (The NOP Organic Insider, USDA, Nov. 9, 2012; <http://archive.constantcontact.com/fs127/1103777415326/archive/1111480257249.html>; “Organic program steps up testing,” The Grower, Nov. 13, 2012; www.thegrower.com/news/regions/west/Organic-program-steps-up-testing-179121541.html; MOFGA Certification Services, LLC, 2012 Year in Review, report given at MOFGA’s annual meeting, Jan. 8, 2013; “Organic Holiday Fare to Face Pesticide Test Purists Call Flawed,” by

Andrew Zajac, Bloomberg, Nov. 21, 2012; www.bloomberg.com/news/2012-11-21/organic-holiday-fare-to-face-pesticide-test-purists-call-flawed.html)

Canadian organic farmer Sally Bernard, of Dunn Creek Organic Farm on Prince Edward Island, writes in her blog about confronting **a farmer who claims to his customers and to news reporters to be organic**, when, she alleges, he is not certified and feeds his animals non-organic, genetically engineered grain. She explains that his claim hurts the organic community, agriculture and the local food movement because he is reaping the price benefit of organic while paying lower prices for non-organic feed, and customers may lose trust in other farmers. Bernard suggests that customers ask for up-to-date organic certificates or ask farmers what they feed their animals. (“Why False Organic Claims Matter,” by Sally Bernard, Nov. 11, 2012; <http://barnyardorganics.blogspot.com/2012/11/why-false-organic-claims-matter.html>)

The **organic dairy sector provides more economic opportunity and generates more jobs in rural communities than conventional dairies**, says the Union of Concerned Scientists’ (UCS) report “Cream of the Crop: The Economic Benefits of Organic Dairy Farms.” The report compares the economic value generated by conventional and organic farms in Vermont if those farms experienced a hypothetical increase in sales. Under this scenario, organic dairy farms would be expected to contribute 33 percent more to the state’s economy than conventional, and employ 83 percent more workers.^[1]

Nationally, consumer demand for organic milk has jumped dramatically over the last decade. Organic dairy farming is now a \$750 million industry, and annual U.S. organic milk sales increased 12 percent in 2010, 13 percent in 2011, and 5 percent in the first seven months of 2012. In some regions, retail grocery chains have trouble keeping enough organic milk in stock.^[2]

Despite organic dairy farms’ benefits and rising consumer demand, USDA farm programs and taxpayer subsidies favor big CAFOs (Concentrated Animal Feeding Operations). The Farm Bill currently provides relatively little (but vital) support for the organic dairy sector.

The UCS makes four recommendations to support organic dairy:^[3] USDA should revise the federal milk marketing orders, which establish the minimum prices dairy processors must pay to farmers – The antiquated minimum-pricing order policies were written in the 1930s and fail to account for ways that organic milk production differs from conventional; Congress and USDA should offer a subsidized insurance program customized for organic dairy farmers – Insurance programs proposed in Farm Bill deliberations are designed only to support conventional dairies; Congress should increase funding for organic agriculture programs; and Congress should fund and the USDA should implement programs that support regional food system development, such as rural development grants. (Union of Concerned Scientists, Nov. 14, 2012; www.ucsusa.org/food_and_agriculture/solutions/advance-sustainable-agriculture/economic-benefits-of-organic-dairy.html)

Just a few companies dominate the market in each link of the food chain, says a report by Food & Water Watch called “The Economic Cost of Food Monopolies.” Data compiled by the University of Missouri-Columbia in 2012 show that the four largest agriculture and food

companies controlled 82 percent of the beef packing industry, 85 percent of soybean processing, 63 percent of pork packing and 53 percent of broiler chicken processing.

This concentration of economic power means farmers may pay more for supplies when only a few firms sell equipment and supplies; the few firms bidding for crops and livestock can drive down prices farmers receive; consumers have fewer choices; and food processors and retailers quickly raise prices when farm prices rise but are slow to pass savings on to consumers when farm prices fall.

Agricultural consolidation also harms rural communities. Communities with more medium- and smaller-sized farms have more shared prosperity, including higher incomes, lower unemployment and lower income inequality, than communities with larger farms tied to often-distant agribusinesses.

The goal of agribusiness concentration is to move income from farmers and rural economies to Wall Street. The Food & Water Watch report examines five case studies of agribusiness concentration: Iowa's hog industry; milk processing and dairy farming in upstate New York; poultry production on Maryland's Eastern Shore; organic soybean farming and soymilk production; and California's processed fruit and vegetable industry.

The report says the U.S. Department of Justice and USDA must end their decades-long hands-off approach to this consolidation, must strengthen oversight of this highly consolidated sector and create new fair-market rules. They must collect and disseminate information about the concentration; coordinate competition and antitrust policy for the food and farm sector; the USDA should have a special counsel's office on agricultural consolidation in the food and farm sector to coordinate agencies with jurisdiction over competition policy; prevent distortions in hog and cattle markets that currently allow meatpackers to avoid buying hogs and cattle on public markets, reducing competition and lowering the price farmers receive; and prevent unfair and deceptive "take-it-or-leave-it" practices in agricultural contracting. (Food & Water Watch, Nov. 2, 2012; www.foodandwaterwatch.org/reports/the-economic-cost-of-food-monopolies/)

North Dakota voters have put the right to farm in their state constitution, guaranteeing that farmers can engage in "modern" agriculture and barring laws limiting use of "agricultural technology, modern livestock production and ranching practices." The amendment is confusing state officials, who question whether it could survive court challenges. The state Farm Bureau collected signatures to get the amendment on the ballot so that special interest groups could not "tell us what to do and what not to do," said North Dakota Farm Bureau president Doyle Johannes. Meanwhile, in 2011-2012, legislators in 10 states, including New Hampshire, introduced Ag-Gag laws aimed at preventing employees, journalists or activists from exposing illegal or unethical practices on factory farms. The laws passed in Missouri, Iowa and Utah, which join North Dakota, Montana and Kansas as having such laws. ("Amendment protecting farmers raises questions," AP, The Bismark Tribune, Nov. 9, 2012; http://bismarcktribune.com/news/state-and-regional/amendment-protecting-farmers-raises-questions/article_f20a961e-2a36-11e2-b5a9-001a4bcf887a.html); "Shocking: Reporting Factory Farm Abuses to be Considered "Act of Terrorism" If New Laws Pass, by Katherine Paul, Ronnie Cummins, Alternet, Jan. 24, 2013;

www.alternet.org/environment/shocking-reporting-factory-farm-abuses-be-considered-act-terrorism-if-new-laws-pass?paging=off)

Genetic Engineering (GE)

In its fall 2012 partners in health newsletter, **Kaiser Permanente** – the largest U.S. managed healthcare organization – **recommended that its members limit their exposure to GE crops.** “Despite what the biotech industry might say,” reports Kaiser Permanente, “there is little research on the long-term effects of GMOs on human health. Independent research has found that several varieties of GMO corn caused organ damage in rats. Other studies have found that GMOs may lead to an inability in animals to reproduce.” The article recommends buying organic foods to avoid GE ingredients; avoiding foods made with non-organic corn, cottonseed, canola and soy oil; buying foods with the Non-GMO Project Verified seal; and asking at local markets if their foods are GE-free. (“Corporate Giant Comes Out Against GMOs,” Willamette Live, Nov. 15, 2012; www.willamettelive.com/2012/news/corporate-giant-comes-out-against-gmos/)

The Environmental Working Group (EWG) estimates that **the average American adult, weighing 179 pounds, consumes 193 pounds of GE food per year.** EWG used 2011 USDA data on per capita consumption of four foods commonly derived from GE crops: sugar, corn-based sweeteners, salad oil and “corn products.” It estimated the quantity of these foods likely to be GE, based on USDA data showing 95 percent of U.S.-grown sugar beets, 93 percent of soybeans and 88 percent of corn are GE; and federal data showing that 79 percent of the salad oil consumed in the United States is soybean oil, and 55 percent of our sugar comes from sugar beets. From these figures, EWG calculated that the average American annually consumes GE foods in these quantities: 68 pounds of beet sugar, 58 pounds of corn syrup, 38 pounds of soybean oil and 29 pounds of corn-based products. This is likely an underestimate, says EWG, since it does not include GE canola oil, cottonseed oil, papaya, yellow squash, soy products other than soybean oil, or animal feed that people may consume indirectly by eating meat raised on GE crops. (“Americans Eat Their Weight in Genetically Engineered Food,” Environmental Working Group, Oct. 15, 2012; www.ewg.org/agmag/2012/10/americans-eat-their-weight-in-genetically-engineered-food/)

On Jan. 10, 2013, the Court of Appeals for the Federal Circuit in Washington, D.C., heard the Appeal of Dismissal in **Organic Seed Growers and Trade Association et al v. Monsanto.** The lawsuit, originally filed in Federal District Court, Southern District of New York, in March 2011, challenges the validity of Monsanto's transgenic seed patents and seeks preemptive court protection for farmers when Monsanto seed trespasses onto their farms and contaminates their crops. Should contamination occur, innocent farmers would be placed in legal jeopardy and could be held liable by Monsanto for patent infringement because of the farmers' "possession" of Monsanto technology without having paid royalty on that "possession," says Jim Gerritsen of Wood Prairie Farm and president of OSGATA. Plaintiffs, including MOFGA and Fedco Seeds, are represented by lawyers from the Public Patent Foundation, who are providing pro bono legal services. Plaintiff lawyer Dan Ravicher asked Monsanto for a binding legal covenant guaranteeing family farmers that they would not be pursued for patent infringement should their crops become contaminated by Monsanto seed. Monsanto refused to provide this assurance to the farmers.

Thirty-one family farmers, plaintiffs in the lawsuit, traveled to Washington from across North America to attend the Oral Argument in the Appeal of Dismissal in January.

Monsanto has sued, or settled in court with, more than 844 family farms since 1997 over patent infringement after its seeds spread to nearby farms.

The farmers' Appeal brief, filed last summer, cites legal and factual errors by Federal District Court Judge Naomi Buchwald that caused her to erroneously conclude that the farmers lacked standing under the Declaratory Judgment Act to seek court protection. In addition, two powerful amicus briefs were filed in support of the farmers' position – one by a group of 11 law professors and another by a group of 14 nonprofit agricultural and consumer organizations. The three-judge Appellate panel will study these briefs during its deliberations; if two of the judges vote favorably for the plaintiffs, the case will return to district court.

"American family farmers have gone to court seeking justice and protection from Monsanto. We are not seeking one penny from Monsanto," said Gerritsen. "We satisfy the requirements of the Declaratory Judgment Act. We want our day in court so that our families can achieve protection from this perverse injustice. We are prepared to prove at trial that the U.S. Patent Office improperly granted Monsanto patents on their genetically engineered seed and that those patents are invalid."

After the Jan. 10 hearing, nearly 300 family farmers, activists and members of Food Democracy Now!, gathered in front of the White House. Included were Maine organic farmer Jim Gerritsen; Holli Cederholm, general manager of OSGATA and owner of Proud Peasant Farm in Washington, Maine; Aimee Good from Good Dirt Farm in Monticello; and Meg Liebman from South Paw Farm in Unity. The farmers assembled to demand that Monsanto end its campaign of intimidation against America's family farmers over GE crops, and that President Obama halt approval of GE food – including GE salmon – until independent, long-term safety tests are conducted.

As we went to press, the Appeals Court judges had not made a decision on the case. (Press release, Wood Prairie Farm, Nov. 23, 2012; www.woodprairie.com/pressrelease_112312; "Maine farmers get second chance in court against giant Monsanto," by Whit Richardson, Bangor Daily News, Nov. 23, 2012; <http://bangordailynews.com/2012/11/23/business/maine-farmers-get-second-chance-in-court-against-giant-monsanto/>; Wood Prairie Farm Seed Piece Newsletter, Jan. 10, 2013; "Four Maine farmers head to D.C. to challenge Monsanto in court on patents," by Whit Richardson, Bangor Daily News, Jan. 09, 2013; <http://bangordailynews.com/2013/01/09/business/four-maine-farmers-head-to-d-c-to-challenge-monsanto-in-court-on-patents/>)

In October 2012, the **Supreme Court** agreed to hear a case involving **Monsanto's GE soy**. Indiana soybean farmer Vernon Bowman plants two crops of soybeans each summer. He says that from 1999 to 2007, after planting his first crop using Monsanto-licensed Roundup Ready soybean seed, he bought less expensive commodity soybean seed from a grain elevator for his second, economically-riskier crop. Monsanto accused him of planting its licensed seed, sued

Bowman for infringing on its patents, and Bowman was ordered to pay more than \$84,000 in damages. The court explained that, “despite [Mr.] Bowman’s compelling policy arguments addressing the monopolizing effect of the introduction of patented genetic modifications to seed producing plants on an entire crop species, he has not overcome the patent law precedent which breaks in favor of Monsanto[.]” An appeals court upheld the decision, so the 74-year-old Bowman filed with the Supreme Court (<http://sblog.s3.amazonaws.com/wp-content/uploads/2012/04/11-796-Bowman-v.-Monsanto-Petition.pdf>). The Center for Food Safety filed an amicus brief supporting Bowman. It believes that patent protection for GE crops must be limited so that farmers can save their seeds and protect themselves against litigation. (“Food safety group calls for court to limit GMO seed patents,” by Carey Gillam, Reuters, Dec.10, 2012.

<http://uk.reuters.com/article/2012/12/10/us-monsanto-lawsuit-idUKBRE8B917T20121210>)

The **U.S. Department of Justice** in November 2012 ended its two-year **antitrust investigation** into possible anticompetitive practices in the U.S. seed market without taking any action and without explanation – despite, says reporter Tom Philpott, a “high degree of concentration, high and rising prices, limited choice, stagnant innovation ... hallmarks of an uncompetitive industry.” (“DOJ Mysteriously Quits Monsanto Antitrust Investigation,” by Tom Philpott, Mother Jones, Dec. 1, 2012; www.motherjones.com/tom-philpott/2012/11/dojs-monsantoseed-industry-investigation-ends-thud)

Several states, including Maine, are developing **local legislative or initiative efforts to label GE crops**. Ballot initiative 522, submitted in Washington state in January 2013, would require that food and seeds produced entirely or partly through GE and sold in-state be labeled as such, beginning July 1, 2015. Raw foods that are not packaged separately would have to be labeled on retail shelves. The state Legislature can vote on the initiative, take no action and send it to the November ballot, or recommend an alternative measure that will appear on the ballot with it. Meanwhile, citizens of Jackson County, Oregon, have filed signatures with the county clerk to put a measure on the county ballot for a ban on growing GE crops in the county, except for scientific research. The goal is to protect organic farmers’ crops from contamination by GE crops, such as sugar beets and alfalfa. And the nonprofit Non-GMO Project, a third-party certification program, has verified 764 products as GMO-free. (“30 States Pick Up Reigns on GMO Labeling Initiative After Prop 37 Defeat,” by Alex Pietrowski, Before It’s News, Nov. 13, 2012; <http://beforeitsnews.com/alternative/2012/11/30-states-pick-up-reigns-on-gmo-labeling-initiative-after-prop-37-defeat-2495408.html>; “Look Out Monsanto: Campaigns to Label Genetically Engineered Foods Are Heating Up,” by Ocean Robbins, AlterNet, Nov. 15, 2012; www.alternet.org/food/look-out-monsanto-campaigns-label-genetically-engineered-foods-are-heating; “Determined Resistance Grows After Stolen Election,” Wood Prairie Farm Seedpiece newsletter, Nov. 21, 2012; “Proposal would require genetically modified label, by Shannon Dininny, The Seattle Times, Jan. 3, 2013; http://seattletimes.com/html/localnews/2020053949_apwafoodlabeling5thldwritethru.html; “Organic farmers in southern Oregon seek ban on genetically modified crops,” AP, The Oregonian, Jan. 2, 2013; www.oregonlive.com/environment/index.ssf/2013/01/organic_farmers_in_southern_or.html)

Former GE crop critic **Mark Lynas** denounced that stand in a speech at the Oxford Farming Conference, where he **apologized for tearing up GE crops** and for his “anti-science environmentalism.” In his turnaround, Lynas said GE crops were good for biodiversity and necessary to feed the world. His stance was later challenged by University of Michigan evolution professor John Vandermeer; Union of Concerned Scientists’ Doug Gurian-Sherman; Dr. Brian John of UK’s Durham University; and Earth Island Journal’s Jason Mark.

Pesticide Action Network summarizes those challenged. Lynas failed to note that GE crops do not increase yield and that focusing on productivity alone will not solve world hunger. Rather, people are hungry because they can’t afford food (for political, social, economic and environmental reasons). Numerous reports have concluded that increasing investment in agroecological and diversified farming systems is crucial to meeting our climate, water, energy and food challenges. The UN Special Rapporteur on the Right to Food said that agroecological farming can double food production within 10 years, while mitigating climate change and alleviating poverty. Also, cutting the 30 to 50 percent of food that goes to waste globally could go far in resolving hunger problems.

After 25 years of research, 14 years of commercialization and millions of dollars in public funding, GE has failed to deliver, says Pesticide Action Network. GE crops neither increase yield nor provide nutritional benefits. Also, use of herbicide-resistant GE seeds has escalated pesticide applications over the past 16 years.

Organic farming, by removing synthetic chemical pesticides from the environment, helps protect farmers, farmworkers and their families, rural communities and children (as well as workers at pesticide manufacturing facilities).

Regarding biodiversity, GE soy in Brazil and Argentina are deforesting the Amazon, threatening the region’s fauna and flora.

Lynas said organic farmers violate the rights and ability of GE farmers to produce their crops, when GE production actually threatens organic and conventional farms with chemical drift and genetic contamination.

Finally, a meta-study showed that organic farms in developing countries outperformed conventional practices by 57 percent and that organic agriculture could supply 2,640 to 4,380 calories per person per day — more than the suggested intake for healthy adults.

Another UN study showed that organic farming is one of the most robust solutions to Africa’s food needs. And the Research Institute of Organic Agriculture (FiBL), the Rodale Institute and the Organic Farming Research Foundation have demonstrated organic farming’s high levels of water and land use efficiency. (“Debunking Mark Lynas’ Myths,” by Marcia Ishii-Eiteman, Pesticide Action Network, Jan. 15, 2013;

<http://www.panna.org/blog/debunking-mark-lynas-ge-myths>)

A USDA advisory report has recommended that growers who want to **protect their crops from contamination by neighboring GE crops** should pay to insure themselves against such contamination, rather than be compensated for their losses. The advisory committee also said

USDA should better determine economic losses related to GE contamination; that neighboring farmers should develop co-existence agreements; that USDA should establish and fund education and outreach programs related to co-existence; should fund and study ways to mitigate contamination; should evaluate availability of non-GE seed and support a diverse seed supply. "This proposal allows USDA and the agricultural biotechnology industry to abdicate responsibility for preventing GE contamination while making the victims of GE pollution pay for damages resulting from transgenic contamination," says the National Organic Coalition. ("Organic farmers condemn U.S. report, claim it favors GMO," by Carey Gillam, Reuters, Nov. 20, 2012; www.reuters.com/article/2012/11/20/us-usa-biotech-report-idUSBRE8AJ19Z20121120)

Dow Chemical Co. no longer plans to market its **GE 2,4-D corn** for the 2013 planting season but does have plans for 2014. Opposition to the 2,4-D-resistant corn by farmers (including conventional farmers, who worry about 2,4-D drift), consumers and public health officials seems to have slowed approval of the product, and a USDA decision on 2,4-D corn appears to be on hold. The product is just one of the new herbicide-tolerant GE products designed to combat increasing resistance of weeds to glyphosate used with Monsanto's Roundup Ready systems. A petition to USDA (http://action.panna.org/p/dia/action/public/?action_KEY=11896) to reject Dow's 2,4-D corn already has more than 400,000 signatures. ("On hold! Opposition slows Dow's 2,4-D corn," Ground Truth, Pesticide Action Network, Jan. 22, 2013; www.panna.org/blog/hold-opposition-slows-dows-24-d-corn)

Consumers Union (CU) says the FDA's Environmental Assessment (EA) of **GE Aquabounty salmon** is flawed and inadequate. CU says only six engineered fish were tested for allergenicity, and those tests showed an increase in allergy-causing potential. Also, safety testing has not occurred on fish grown in Panama, where Aquabounty intends to raise the salmon, and the health and safety of the fish can be affected by growing conditions. Furthermore, the FDA indicates that only 95 percent of the salmon may be sterile, so some could escape and mix with wild salmon. And fish at the egg production facility in Prince Edward Island, Canada, would not be sterile. ("Consumers Union Says FDA Assessment of GE Salmon Is Flawed and Inadequate," Dec. 21, 2012; www.consumersunion.org/pub/core_food_safety/018524.html)

Researchers report that **antibiotic resistance genes** used in molecular biology and genetic engineering experiments may have reached the environment. **In six Chinese rivers**, researchers found bacterial DNA carrying these synthetic genes ("Labs Could Contaminate Rivers With Antibiotic Resistance Genes," by Deirdre Lockwood, Chemical & Engineering News, Dec. 17, 2012. <http://cen.acs.org/articles/90/web/2012/12/Labs-Contaminate-Rivers-Antibiotic-Resistance.html>; A Survey of Drug Resistance bla Genes Originating from Synthetic Plasmid Vectors in Six Chinese Rivers, by J. Chen et al., Environ. Sci. Technol., Dec. 18, 2012; www.ncbi.nlm.nih.gov/pubmed/23215020)

Researchers with the European Food Safety Authority have found that 54 of 86 GE events (unique insertions of foreign DNA into plants) approved for commercial growing and food in the United States contain parts of a viral gene called Gene VI that comes from cauliflower mosaic

virus 35S promoter genes. **Such viral genes are engineered into plants such as corn and soy** to promote the expression of other inserted genes. The researchers say that segments of Gene VI “might result in unintended phenotypic changes” in plants. Such changes may make plants more susceptible to pests, for example. The researchers downplay effects on human consumers, but Jonathan Latham, Ph.D., and Allison Wilson, Ph.D., of the Bioscience Resource Project (www.bioscienceresource.org) say, “Since the known targets of Gene VI activity (ribosomes and gene silencing) are also found in human cells, a reasonable concern is that the protein produced by Gene VI might be a human toxin. This is a question that can only be answered by future experiments.” They add, “The discovery will also strengthen the argument for GMO labeling: if regulators and industry cannot protect the public then why should they not be allowed to protect themselves?” (“Uncovered, the 'toxic' gene hiding in GM crops: Revelation throws new doubt over safety of foods,” by Sean Poulter, Daily Mail, Jan. 21, 2013.

www.dailymail.co.uk/news/article-2266143/Uncovered-toxic-gene-hiding-GM-crops-Revelation-throws-new-doubt-safety-foods.html#ixzz2IiofRyQG; Possible consequences of the overlap between the CaMV 35S promoter regions in plant transformation vectors used and the viral gene VI in transgenic plants, By Nancy Podevin and Patrick du Jardin, GM Crops and Food: Biotechnology in Agriculture and the Food Chain, Oct.-Dec. 2012.

www.landesbioscience.com/journals/gmcrops/article/21406/; “Regulators Discover a Hidden Viral Gene in Commercial GMO Crops,” by Jonathan Latham and Allison Wilson, Independent Science News, Jan. 21, 2013; <http://independentsciencenews.org/commentaries/regulators-discover-a-hidden-viral-gene-in-commercial-gmo-crops/>)

Three officials who approved and conducted a 2008 test of GE Golden Rice on school children in China were fired in December 2012 for "violating relevant regulations, scientific ethics and academic integrity," says a statement by the Chinese Center for Disease Control and Prevention, Zhejiang Academy of Medical Sciences, and Hunan provincial CDC. The children, their parents and school authorities were not told that the rice was engineered. Greenpeace learned about and publicized the research when The American Journal of Clinical Nutrition published a paper saying that the rice effectively provided vitamin A to children. The research was a joint US-China project, approved by the National Institutes of Health and led by Tang Guangwen, director of the Carotenoid and Health Laboratory of Tufts University. (“China sacks officials involved in GM rice test,” by Tian Ying, Cheng Zhuo and Yan Hao, English.news.cn, Dec. 6, 2012;

http://news.xinhuanet.com/english/china/2012-12/06/c_132024160.htm)

Monsanto may receive \$40 million in U.S. dollars worth of financial support from the European Bank for Reconstruction and Development. The bank is considering supporting Monsanto in “unfunded risk participation in Monsanto Company’s portfolio of deferred payment sales contracts for the pre-financing of seeds and crop protection products to medium-large farmers and a small selection of key distributors in a number of the EBRD’s countries of operation (Bulgaria, Hungary, Russia, Serbia, Turkey, Ukraine). Through the Project, Monsanto would be able to increase its limits for this type of lending, thus enabling greater numbers of farmers to benefit from product characteristics such as higher disease and pest resistance and higher yields, thereby improving their profitability and assisting to fulfill the potential of the project countries to alleviate some food security concerns.” The bank’s board is scheduled to review the project on April 9, 2013. (“Monsanto Should Not Expand Relying on Public Money,”

CEE Bankwatch Network, Nov. 19, 2012; <http://bankwatch.org/news-media/for-journalists/press-releases/monsanto-should-not-expand-relying-public-money>; European Bank for Reconstruction and Development; www.ebrd.com/pages/project/psd/2012/43925.shtml)

Publisher Reed Elsevier came under pressure to retract a paper published in September 2012 in its journal Food and Chemical Toxicology. The paper suggesting that GE corn caused tumors and organ failure in rats was written by French researcher Gilles-Eric Seralini of the University of Caen. Hundreds of scientists and entities, including The European Food Safety Authority, said the study had design and methodology defects. Elsevier responded that the paper had been peer reviewed and revised before publication. (“Science journal urged to retract Monsanto GM study,” by Kate Kelland, Reuters, Nov. 30, 2012; www.reuters.com/article/2012/11/30/us-science-gm-journal-idUSBRE8AT10920121130; “Journal responds to firestorm over study of Monsanto GM corn,” by E.B. Solomont, St. Louis Business Journal, Nov. 30, 2012; <http://www.bizjournals.com/stlouis/news/2012/11/30/journal-responds-to-firestorm.html>; “EU rejects French report linking GM corn to cancer,” AFP, Nov. 29, 2012; www.sbs.com.au/news/article/1716121/EU-rejects-French-report-linking-GM-corn-to-cancer)

The British company Oxitec is **genetically engineering insects** to kill plant pests, such as the diamondback moth. The company inserts a lethal gene into male insects, which mate with wild females and pass on the gene so that resulting offspring die before they attack crops. Critics say the technique has not been tested sufficiently and that larvae with the lethal genes could get into human food. The company previously trialed GE mosquitoes in the Cayman Islands, Brazil and Malaysia to try to reduce the spread Dengue fever. (“Could millions of GM insects be released into British crop fields without safety checks?” by Sean Poulter, Daily Mail, Nov. 8, 2012; www.dailymail.co.uk/sciencetech/article-2229887/Millions-GM-killer-insects-released-British-crop-fields-safety-checks.html#ixzz2C0vyDZbm)

Pesticides

Maine Board of Pesticides Control Hears About EEE, WNV

By Katy Green

The Maine Board of Pesticides Control (BPC) continues to discuss arboviral diseases, including Eastern Equine Encephalitis (EEE) and West Nile Virus (WNV) – both spread to humans by mosquitoes – and its response plan in case a perceived need occurs for widespread spraying to control mosquitoes.

At its December meeting state epidemiologist Dr. Stephen Sears reviewed the threats of arboviral diseases and controls for public health. Sears explained that EEE is the most severe domestic arbovirus. About six cases per year have occurred in the United States since the 1960s. A 33 percent mortality rate exists among people infected with EEE, so public health officials are very concerned. (The Centers for Disease Control says, “Overall, only about 4-5% of human EEEV [equine encephalitis virus] infections result in EEE. EEEV infection is thought to confer life-long immunity against re-infection.” www.cdc.gov/EasternEquineEncephalitis/tech/epi.html)

West Nile Virus came to the United States in 1999 and has become widespread since. More than 5,000 cases of WNV were reported in the United States in 2012 – the most active year for WNV since 2003. Maine also had its first locally acquired human case of West Nile Virus in 2012.

In response to the increase in activity in 2012, the board adopted emergency legislation that year that would allow widespread spraying for mosquitoes when the CDC declares a high threat level. That emergency legislation will expire before this summer, when mosquito activity will begin to rise again, so the board plans to undertake rulemaking that will allow for widespread spraying if a threat to public health from EEE or WNV occurs. Rulemaking is required because the board does not allow for pesticide applications to property without the consent of the landowner. Widespread spraying programs are common in other U.S. states, and the board hesitates to hold up spraying in the case of a public health emergency.

MOFGA has expressed concern about the impact these programs would have on Maine's organic farmers and gardeners and sensitive populations. We continue to engage the board in discussions about the efficacy of spraying programs and the option of individual landowners to "opt out" of the spray zone. We anticipate that a public comment period on rule changes will open soon.

Sears also stressed that the most important control measures include those that individuals take, including wearing long sleeves and pants, and shoes and socks, avoiding being outside at dawn and dusk when mosquitoes are most active, and removing potential breeding spots (stagnant water) for mosquitoes around the home.

BPC Coming to MOFGA

Each year the board travels to a different part of the state to hear from the public and to give everyone easy access to a board meeting. We are thrilled that the board will be hosting its July 26, 2013, meeting at MOFGA's Common Ground Education Center in Unity. All are welcome to attend. Contact Katy Green if you'd like more information.

Consent Agreements

At its October meeting the board approved a consent agreement with TruGreen Lawncare of Westbrook. TruGreen employees applied pesticides to a property on two occasions without providing an abutting neighbor the notification required under the 2012 notification registry provisions. This registry requires registrants to pay an annual fee in order to receive notification. In this case notification did not happen for the applications in May or June. A fine of \$2,500 was levied for the two violations.

In December the board again discussed a consent agreement with TruGreen Lawncare of Westbrook. A TruGreen employee applied Merit 0.2 Plus Fertilizer to the property of a previous TruGreen customer. The customer had cancelled the services and the company was unable to provide proof that the pesticide application was authorized. This violates the board rule requiring consent from a property owner before a pesticide can be applied. A \$2,000 fine was imposed for this violation.

Also in December the board approved a consent agreement with The Lawn Dawg of Portland. This agreement covers two separate violations. In one, a company employee mistakenly applied Nutrite Professional Turf Fertilizer 25-0-3 with 0.172 percent Dithiopyr Herbicide to the wrong property in Scarborough. In the second, the company employee applied pesticides to a property within 100 feet of someone who is on the pesticide notification registry, without providing proper notification. The company has since submitted to the board an example of the training and corrective actions in place to prevent similar violations in the future. A total fine of \$1,700 was levied for these two violations.

The next BPC meeting is on March 1 in Augusta. See www.maine.gov/agriculture/pesticides/about/index.shtml#meeting

[End of BPC news]

Maine fruit, vegetable and grain growers who sell more than \$1,000 worth of edible produce to consumers or to processors to be made into products for human consumption and who use only general-use (over-the-counter) pesticides **must now be licensed by the Maine Board of Pesticides Control**. A pesticide is any naturally or synthetically derived substance used to kill, control or repel undesired insects, weeds, fungi, bacteria, mammals, birds, rodents or other organisms and may include insecticides or bug sprays; herbicides, including weed killers and top killer products; fungicides or disease controls; rodenticides; deer repellents; defoliants; growth regulators; and disinfectants. To obtain a license, growers must pass the BPC core exam. Exam candidates should review the Pesticide Education (Core) Manual before taking the exam. The manual is available from UMaine Cooperative Extension, <http://umaine.edu/ipm/pesticide-safety/certification-manual-prices/>, 1-800-287-0279 in Maine, 207-581-3880 outside Maine. The BPC plans to hold many training sessions before the requirement becomes fully enforceable on April 1, 2015. The exam can be taken at the BPC office in Augusta (207-287-2731) or at County Cooperative Extension offices. Contact the BPC office to have the exam mailed to the Extension office, and then make arrangements with Extension for taking the exam. The three-year license will cost \$15. One hour of continuing education per year will be required to maintain a license.

The Toxics Action Center report “A Call for Safer School Grounds: A Survey of **Pesticide Use on K-12 Public School Grounds in Maine**” surveyed 209 Maine public schools, representing less than 10 percent of Maine school districts, regarding their pesticide use. Of those, 51 percent spray pesticides, including Weed and Feed and Roundup. The report says the state’s Integrated Pest Management (IPM) Policy is inadequate at regulating pesticide applications and informing the public on pesticide practices. Although schools are required by state law to keep IPM policies and records of pesticide applications, 32 percent of schools surveyed reported that they do not keep records. IPM records were received from 9 percent of schools surveyed. The report recommends that the Maine legislature ban use of pesticides on public school grounds; ban use of pesticides for solely aesthetic reasons; that the Maine Legislature and the Maine Department of Education ban use of broad-based pesticides such as Weed and Feed and Roundup – the two most commonly used pesticides on school grounds in Maine – on public school grounds; that

schools must prepare more-specific IPM policies to alert parents about pesticide applications when necessary; and that the Maine Department of Education promote organic turf management practices. Nine schools reported using organic methods. ("New Report Says Children Across Maine at Risk from Toxic Pesticide Spraying," www.toxicsaction.org/news/tac/new-report-says-children-across-maine-risk-toxic-pesticide-spraying; "Concern over pesticide use at schools rises," by North Cairn, Portland Press Herald, Jan. 2, 2013; www.pressherald.com/news/concern-over-pesticide-use-at-schools-rises_2013-01-02.html)

A session sponsored by the **Maine Board of Pesticides Control** (BPC) at the Maine Agricultural Trades Show in January 2013 addressed "Talking About Pesticides with Customers and Neighbors." It featured Dr. Vincent Covello of the Center for Risk Communication (<http://centerforriskcommunication.org/>) and was intended to **teach Maine pesticide applicators how to effectively communicate "nightmare scenarios."** Covello was paid \$6,000 for his two-day, approximately four-hour presentation. Henry Jennings, director of the BPC, told MPBN News that Covello was hired because "it's so difficult for producers and other people who use pesticides to effectively communicate with their customers, their neighbors and the public in general about pesticide risks." Covello has worked as a Columbia University faculty member. Among clients listed on the Center for Risk Communication website are Nestlé, DuPont and Novartis. ("Organic Farmers Criticize Presentation Endorsed By State Pesticides Board," by Susan Sharon, MPBN, Jan. 9, 2013; www.mpbn.net/News/MaineNewsArchive/tabid/181/ctl/ViewItem/mid/3475/ItemId/25573/Default.aspx)

A new in vitro study shows that **glyphosate may alter the gut flora in poultry**. Pathogenic bacteria, such as Salmonella and Clostridium spp., are highly resistant to glyphosate, but most beneficial bacteria, such as Enterococcus faecalis, Enterococcus faecium, Bacillus badius, Bifidobacterium adolescentis and Lactobacillus spp., are moderately to highly susceptible, while Campylobacter spp. are susceptible. Hence, ingesting glyphosate could reduce beneficial bacteria in the gastrointestinal tract and disturb the normal gut bacterial community. Also, the toxicity of glyphosate to the most prevalent Enterococcus spp. could be a predisposing factor associated with increased C. botulinum-mediated diseases by suppressing the antagonistic effect of these bacteria on clostridia. (The Effect of Glyphosate on Potential Pathogens and Beneficial Members of Poultry Microbiota In Vitro, by A. A. Shehata et al., Curr Microbiol, Dec. 9, 2012; www.ncbi.nlm.nih.gov/pubmed/23224412)

Chlorine in tap water and in pesticides has been linked to the rising number of people developing food allergies. Of 2,211 people ages 6 and over, those with the highest concentrations of **dichlorophenols** in their urine were most likely to show **allergic reactions** to one or more food allergens. Dichlorophenols are widely used as pesticides and to chlorinate water. U.K. professor Jeni Colbourne says the likeliest sources of chlorine for British consumers are products impregnated with the antibacterial triclosan, including lipsticks, face washes, toothpaste and kitchen utensils. (Dichlorophenol-containing pesticides and allergies: results from the US National Health and Nutrition Examination Survey 2005-2006, by Elina Jerschow, M.D., et al., Annals of Asthma, Allergies & Immunology, Sept. 9, 2012; [www.annallergy.org/article/S1081-1206\(12\)00671-0/abstract](http://www.annallergy.org/article/S1081-1206(12)00671-0/abstract); "Chlorine in tap water linked to increase in number of people developing food allergies," by Nick McDermott, Dec. 3, 2012;

www.dailymail.co.uk/health/article-2242094/Chlorine-tap-water-linked-increase-number-people-developing-food-allergies.html#ixzz2E2snw5HM)

Neurologists at UCLA have suggested links between the **pesticides** paraquat, maneb and ziram **and Parkinson's disease** in farmworkers and those who lived or worked near treated fields. Now the researchers have added the pesticide benomyl to the list. Banned 10 years ago, its toxicological effects still linger. Benomyl prevents the enzyme ALDH (aldehyde dehydrogenase) from limiting DOPAL, a toxin that occurs naturally in the brain. When DOPAL accumulates, it damages neurons and increases the risk of developing Parkinson's. ("Pesticides & Parkinson's: UCLA researchers uncover further proof of a link," UC Health, Jan. 3, 2013; <http://health.universityofcalifornia.edu/2013/01/03/pesticides-parkinsons-ucla-researchers-uncover-further-proof-of-a-link/>)

A study published in the American Journal of Epidemiology reports that workers in Iowa and North Carolina exposed to certain **organophosphate and organochlorine pesticides** had significantly **higher prostate cancer risk**. The organophosphate pesticides fonofos, terbufos and malathion, one of the most commonly used organophosphate insecticides in the United States, was linked to increased prostate cancer risk; and a family history of prostate cancer combined with exposure to organochlorine pesticides (such as aldrin and lindane) was significantly associated with an increased risk of prostate cancer. ("Pesticides & prostate cancer. Again." Pesticide Action Network, Jan. 23, 2013; www.panna.org/blog/pesticides-prostate-cancer-again)

Maryland has become the first state to ban the use of additives containing **arsenic in chicken feed**, a practice already prohibited by Canada and the European Union. Pfizer, which made the arsenic-containing drug Roxarsone to combat parasites, had suspended sales of the drug after the FDA found arsenic in chicken livers, but some Maryland growers were still using stockpiles of Roxarsone-treated feed. Because chicken waste is often used as a soil amendment, it can add arsenic to soils and waters. ("New laws in Md. and Va. take effect Jan. 1, by John Wagner and Errin Haines, The Washington Post, Dec. 21, 2012; www.washingtonpost.com/local/md-politics/new-md-laws-on-chicken-feed-parole-and-identify-theft-take-effect-jan-1/2012/12/31/b2abe402-534c-11e2-bf3e-76c0a789346f_story.html)

A study of 501 couples in Michigan and Texas who were trying to conceive associated higher exposure to PCBs, perfluorinated compounds and organochlorine **pesticides** with a **longer time to get pregnant**. Men's chemical exposures were as important as or more important than women's in determining fertility issues. ("Persistent pollutants slow the time to pregnancy in couples," by Jennifer Wolstenholme and Wendy Hessler, Environmental Health News, Dec. 20, 2012; www.environmentalhealthnews.org/ehs/newscience/2012/11/2012-1212-persistent-pollutants-slow-time-to-pregnancy/)

A mother's exposure to **pesticides** before, during and after pregnancy may increase the risk of **infant leukemia** diagnosed before the age of 2, says a Brazilian study. Children were twice as likely to develop the rare cancers if their mothers were exposed three months before conception when compared to mothers who reported no exposures. A mother's exposure at any time to the

insecticide permethrin also raised the cancer risk for infants. (“Mom's pesticide exposure raises risk of infant leukemia,” by Lesliam Quirós-Alcalá, Environmental Health News, Jan. 30, 2013; www.environmentalhealthnews.org/ehs/newscience/2012/10/2013-0121-pesticides-permethrin-womb-leukemia/)

A review by researchers at University College London and the Open University of 14 studies shows that **low-level exposure to organophosphates**, used in some pesticides, aviation fuel and flame retardants, **can harm memory, information processing speed, and the ability to plan and have abstract thoughts**. These effects affect job performance, say the researchers, as farmers struggle to keep up at auctions and air traffic controllers have difficulty retaining information on the job. (“Pesticide exposure harms memory,” The Telegraph, Dec. 2, 2012; www.telegraph.co.uk/health/healthnews/9716249/Pesticide-exposure-harms-memory.html)

A Canadian study of more than 2,000 women found that those in **occupations** with potentially high exposure to carcinogens and endocrine disruptors, including agriculture, bars-gambling, automotive plastics manufacturing, food canning and metal working, had a greater **risk of breast cancer** than those in other occupations. Those on farms tend to begin work at a younger age than those in other occupations, possibly exposing prepubescent girls to hormone disruptors. Those working in canning may be exposed to more pesticides as they wash and prepare food, and to bisphenol A (BPA) by inhalation from heated can liners. (“Breast cancer risk in relation to occupations with exposure to carcinogens and endocrine disruptors: a Canadian case-control study,” by James T. Brophy et al., Environmental Health, Nov. 19, 2012; www.ehjournal.net/content/11/1/87)

Brain injury and pesticide exposure alone are each associated **with Parkinson’s disease**; a combination of the two is associated with a greater risk than that obtained by adding the two factors together, according to a study of people with traumatic brain injury living in farming areas where the insecticide was used. (“Brain injury and pesticide exposure combo may triple Parkinson's risk,” by Ryan Jaslow, CBS News, Nov. 13, 2012; www.cbsnews.com/8301-204_162-57549245/brain-injury-and-pesticide-exposure-combo-may-triple-parkinsons-risk/)

Researchers at UC Davis and UCLA measured people’s food-borne toxicant exposure by pinpointing foods with high levels of toxic compounds and determining amounts of these foods consumed. The researchers found that family members in the study, particularly preschool **children, are at high risk for exposure to arsenic, dieldrin, DDE (a DDT metabolite), dioxins and acrylamide** – compounds linked to cancer, developmental disabilities, birth defects and other conditions.

All 364 children in the study exceeded cancer benchmarks for arsenic, dieldrin, DDE and dioxins. More than 95 percent of preschool children exceeded non-cancer risk levels for acrylamide, a cooking byproduct often found in processed foods such as potato and tortilla chips. Pesticide exposure was particularly high in tomatoes, peaches, apples, peppers, grapes, lettuce, broccoli, strawberries, spinach, dairy, pears, green beans and celery.

Rainbow Vogt, lead author of the study, said, "Currently, the U.S. Environmental Protection Agency only measures risk based on exposures of individual contaminants. We wanted to

understand the cumulative risk from dietary contaminants. The results of this study demonstrate a need to prevent exposure to multiple toxins in young children to lower their cancer risk."

The researchers used data from the 2007 Study of Use of Products and Exposure-Related Behavior (SUPERB), which surveyed households in California with children between two and five to determine how their diets and other factors contribute to toxicant exposure. SUPERB honed in on 44 foods known to have high concentrations of toxic compounds: metals, arsenic, lead and mercury; pesticides chlorpyrifos, permethrin and endosulfan; persistent organic pollutants dioxin, DDT, dieldrin and chlordane; and the food processing byproduct acrylamide. Toxicant levels in specific foods were determined through the Total Diet Study and other databases.

The researchers note that organic produce has lower pesticide levels, and toxicant types vary in different foods, so varying diets could help reduce exposure to any one toxicant. They suggest reducing consumption of animal meat and fats, which may contain high levels of DDE and other persistent organic pollutants, and switching to organic milk. While mercury is most often found in fish, accumulation varies greatly by species. Smaller fish, lower on the food chain, generally have lower mercury levels. In addition, acrylamides are relatively easy to remove from the diet by avoiding chips and other processed grains. (Study Finds High Exposure to Food-Borne toxins, UC Davis Health System, Nov. 13, 2012; www.ucdmc.ucdavis.edu/publish/news/newsroom/7190)

The American Academy of Pediatrics says, "Epidemiologic evidence demonstrates associations between **early life exposure to pesticides and pediatric cancers, decreased cognitive function, and behavioral problems.**" The AAP makes several recommendations for pediatricians' and governmental actions, including promoting pesticide use reduction and use of less-toxic pesticides. ("Pesticide Exposure in Children Pediatrics," Council on Environmental Health, Pediatrics, Nov. 26, 2012; <http://pediatrics.aappublications.org/content/early/2012/11/21/peds.2012-2757.full.pdf+html>)

Children living near conventional **banana and plantain** plantations in Costa Rica are exposed to twice as much of the insecticide **chlorpyrifos** than those living near organic plantations. More than half the 140 children studied had higher daily exposures than U.S. standards consider safe. Residential use of the pesticide, linked to neurological effects in children, is banned in the United States, but the pesticide is still permitted on some crops. Costa Rica exports bananas and plantains to U.S. and European markets. ("Indigenous children living nearby plantations with chlorpyrifos-treated bags have elevated 3,5,6-trichloro-2-pyridinol (TCPy) urinary concentrations," by Berna van Wendel de Joode et al., Environmental Research, Aug. 2012; www.sciencedirect.com/science/article/pii/S0013935112001338)

Chronic exposure of bumblebees to neonicotinoid and pyrethroid insecticides at concentrations approximating field-level exposure impairs natural foraging behavior and increases worker mortality, leading to significantly reduced brood development and colony success. Worker foraging performance, particularly pollen collecting efficiency, was significantly reduced with resultant effects for forager recruitment, worker losses and overall worker productivity. Exposure to combinations of pesticides increases the likelihood of colonies to fail.

("Combined pesticide exposure severely affects individual- and colony-level traits in bees, by R.J. Gill et al., Nature, Nov. 1, 2012; www.ncbi.nlm.nih.gov/pubmed/23086150)

A U.K. Parliamentary inquiry questions the safety for **pollinators** of the systemic insecticide **imidacloprid** used on crops. The inquiry found that the insecticide can build up in soil to levels likely to be lethal to most insects, including bees that overwinter in soil. U.K. trials on winter barley fields showed a half-life for the insecticide in the soil of 1,333 and 1,268 days. Bayer, the manufacturer, says other studies show a half-life of 182 to 288 days, which is at odds with Australian pesticide authorities' number of up to 1,400 days. Then, in January 2013, scientists at the European Food Safety Authority (EFSA) and experts from across Europe concluded that Bayer's systemic insecticide imidacloprid should be used only on crops that don't attract honeybees and that Syngenta's neonicotinoid thiamethoxam was an "acute risk" to bees through droplets of sap that corn seedlings exude. ("Insecticide regulators ignoring risk to bees, say MPs," by Damian Carrington, The Guardian, Dec. 12, 2012; www.guardian.co.uk/environment/2012/dec/12/mps-insecticide-regulators-bees?fb=ative; "Insecticide 'unacceptable' danger to bees, report finds," by Damian Carrington, The Guardian, Jan. 16, 2013; www.guardian.co.uk/environment/2013/jan/16/insecticide-unacceptable-danger-bees)

Animal ID

On Dec. 20, 2012, USDA released its final **Animal Disease Traceability rule**. Among changes are exclusion of chicks sold by hatcheries across state lines from identification requirements; recognition of brands and tattoos as official forms of identification; continued use of back tags as an alternative to ear tags for cattle going to slaughter; and exclusion of beef feeder cattle from the rule, except for rodeo and show cattle. The rule was published in the Federal Register on December 28, 2012, to become effective 60 days later. For years corporate agribusiness pushed for an ID law allegedly giving feedlots an advantage over family farmers. Grassroots groups suggested the initiative was more about export promotion than preventing disease. Concerns of family farmers seem to have been heard. ("After Years of Livestock Industry Wrangling USDA Issues Final 'Animal ID Rule'" Cornucopia Institute, Dec. 20, 2012; www.cornucopia.org/2012/12/after-years-of-livestock-industry-wrangling-usda-issues-final-animal-id-rule/)

Antibiotic Resistance

Seven cases of **MRSA ST398** (methicillin-resistant *Staphylococcus aureus*) have been found from 1,500 samples of **bulk milk** from five farms in England, Scotland and Wales. MRSA can infect and sometimes kill people and cause udder infections in dairy cows. Pasteurization should kill the bacterium. Overuse of antibiotics in livestock is believed to contribute to antibiotic-resistant bacteria. ("MRSA found in our milk: Superbug strain can cause serious infections in humans and is resistant to antibiotics," by Sean Poulter, Dec. 21, 2012; Daily Mail, www.dailymail.co.uk/health/article-2251417/MRSA-milk-Superbug-strain-cause-infections-humans-resistant-antibiotics.html?ito=feeds-newsxml)

Two children injured in a Joplin, Missouri, tornado in 2011 **developed antibiotic-resistant infections from dirt and debris** that blew into their wounds. Doctors suspect overuse of antibiotics in livestock as the root cause. Eighty percent of U.S. antibiotic use is for meat animals – often to bulk up cattle (a practice banned in the EU), not to treat infections; and often to treat problems associated with acid conditions in the cows' stomachs due to consuming corn instead of grass. (“Building bigger cattle: An industry overdose,” by Mike McGraw, The Kansas City Star, Dec. 10, 2012;

www.kansascity.com/2012/12/09/3951718/overuse-of-antibiotics-in-livestock.html)

Yale University professor of ecology and evolutionary biology Nancy Moran found that beneficial bacteria in honeybee guts have acquired genes that make **bees resistant to the antibiotic tetracycline**. The antibiotic-resistant genes were absent in honeybees where such antibiotic treatment is banned, while U.S. bees, where tetracycline has been used in beehives longest, had the most resistant genes. Colony Collapse Disorder (CCD) began in 2006, when tetracycline was first introduced, said Moran. Scientists are still trying to understand the many possible causes of CCD. (“Antibiotic resistance killing off bees,” by Emma Goldberg, Yale Daily News, Nov. 6, 2012; www.yaledailynews.com/news/2012/nov/06/antibiotic-resistance-killing-bees/)

Biochar

Biochar, a byproduct of burning organic material under high-temperature/low-oxygen conditions (pyrolysis), may benefit plant growth and sequester carbon in soils where it is applied. In a preliminary greenhouse study, Iowa State researchers found that biochar applications seemed to reduce prairie biodiversity, especially in below-ground microbial communities. In subsequent field trials, however, using 1 or 3 percent additions of biochar to prairie soils, plant and soil biodiversity increased. Plants thrived with 3 percent biochar, but mycorrhizae (soil fungi that are symbiotic with plant roots) declined. (“Research looks at effects of biochar on prairies,” Leopold Center, Nov. 27, 2012; www.leopold.iastate.edu/news/11-27-2012/research-looks-effects-biochar-prairies)

Fumes from traditional open-fire cookstoves kill 3.5 million people a year – more than malaria and HIV/AIDS combined. **Biochar cookstoves** help counter this problem and create a soil amendment that holds carbon in the soil, improves water-holding capacity and adds nutrients. They also use less wood to cook a given amount of food. One researcher is even drying an invasive plant – water hyacinth – and burning it in biochar cookstoves. (“Biochar Cookstoves Boost Health for People and Crops,” by Stacey Schultz, National Geographic, Jan. 29, 2013; <http://news.nationalgeographic.com/news/energy/2013/01/130129-biochar-clean-cookstoves/>)

Biofuels

Expanded growth of **corn for biofuels** (40 percent of the U.S. corn crop) is **increasing food prices** worldwide and creating a shortage of land for growing food in many countries. Central America is being hit especially hard due to its corn-based diet and closeness to the United States. Guatemala, for example, imports almost half its corn – and much of its best land is being used to grow export crops, such as sugar cane and African palm, both used in cooking and for biofuels.

Guatemala increased its dependence on U.S. corn in the '90s when surplus, subsidized U.S. corn flooded its markets, prices dropped and Guatemalan farmers could not compete. ("As Biofuel Demand Grows, So Do Guatemala's Hunger Pangs," by Elisabeth Rosenthal, The New York Times, Jan. 5, 2013; www.nytimes.com/2013/01/06/science/earth/in-fields-and-markets-guatemalans-feels-squeeze-of-biofuel-demand.html?ref=world&_r=0)

Climate Change

Agriculture contributes some 25 to 30 percent of global greenhouse gas emissions, but done right **can help mitigate climate change**. The U.N. Food and Agriculture Organization estimates that agriculture could remove 80 to 88 percent of the CO₂ it emits. Its report, *Innovations in Sustainable Agriculture: Supporting Climate-Friendly Food Production*, suggests that farmers can mitigate and adapt to climate change by building soil fertility, practicing agroforestry, promoting urban agriculture, using cover crops and green manures, improving water conservation and recycling water, and preserving biodiversity and indigenous breeds. ("Supporting Climate-Friendly Food Production," WorldWatch Institute press release, Dec. 4, 2012; www.worldwatch.org/supporting-climate-friendly-food-production)

A study coordinated by Switzerland's Research Institute of Organic Agriculture FiBL shows that **on organic farms, soil organic carbon stocks were 1.6 U.S. tons per acre higher** than on non-organic farms, so organic agriculture could play an important role in reducing the level of atmospheric CO₂. (Enhanced top soil carbon stocks under organic farming, Andreas Gattinger et al., PNAS, Oct. 10, 2012; www.pnas.org/content/early/2012/10/10/1209429109.full.pdf+html)

A study released by 21 scientists says **climate change can change the northern hardwood forest**, harming the maple syrup industry, spreading wildlife diseases and tree pests and changing timber resources. At Hubbard Brook Forest in New Hampshire's White Mountains over the past 50 years, spring has come earlier and fall has lasted longer; rainfall has increased and snowfall decreased; winters are shorter and milder and snowpack melts some two weeks sooner. Soils thaw before plants grow, leading to nutrient loss from soils. Increased soil freezing without snow cover exposes tree roots to freezing damage. Some sugar maples die as a result, and remaining trees produce less sap because of warmer winters. Deer forage more with less snow, also damaging trees and spreading parasites. These weather conditions also affect logging and ski resorts. ("Maple Syrup, Moose, and the Impacts of Climate Change in the North," ScienceDaily, Nov. 20, 2012; www.sciencedaily.com/releases/2012/11/121120122045.htm; "Complex and Surprising Effects of Climate Change in the Northern Hardwood Forest," by Peter Groffman et al., BioScience, Dec. 2012; www.jstor.org/stoken/ucaltoken/cTUVAUnWXpVuVBq87uHV/full)

Warming temperatures have already made the **USDA's 2012 Plant Hardiness Zone Map obsolete**, says Dr. Nir Krakauer of The City College of New York. When USDA released its new map in January 2012, temperature boundaries had shifted north relative to its 1990 map, based on average annual minimum temperatures over the 30 years from 1976 to 2005; but zones now average about 2 degrees F warmer than that 30-year average, so true zones have moved even farther, says Krakauer.

“Over one-third of the country has already shifted half-zones compared to the current release, and over one-fifth has shifted full zones,” Krakauer reported in *Advances in Meteorology*. The winter is warming faster than the summer, he adds. His hardiness temperatures are based on minimum temperatures each year, which, he says, warmed roughly two and a half times faster than 30-year average temperatures. Krakauer’s technique allows gardeners and farmers to update the zone map annually instead of waiting for the official map – “just keep adding new data and recalculate,” he says.

His analysis also showed more warming over the eastern interior and less in the Southwest. Meanwhile, a U.N. conference in Doha, Qatar, yielded no progress on curbing greenhouse emissions. (“Warmer Temperatures Make New USDA Plant Zone Map Obsolete,” The City College of New York news release, Sept. 12, 2012;

<http://www1.cuny.edu/mu/forum/2012/09/13/warmer-temperatures-make-new-usda-plant-zone-map-obsolete/>; “Despair after climate conference, but U.N. still offers hope,” by Barbara Lewis and Alister Doyle, Reuters, Dec. 9, 2012; www.reuters.com/article/2012/12/09/us-climate-talks-process-idUSBRE8B808N20121209)

Hormone Disruptors

The EPA is examining whether low doses of **hormone-mimicking chemicals in food**, cosmetics, pesticides and plastics are harming human health and whether chemical testing should be overhauled. It will complete a “state of the science” paper by the end of 2013. The investigation follows scientists’ March 2012 criticism in *Endocrine Reviews* that the federal government’s strategy for testing chemicals – exposing lab rodents to high doses and extrapolating to human exposures – fails to address hormone-like chemicals that can affect health at low doses but not at high doses, e.g., “non-monotonic dose response.” The EPA also says it is investigating whether nanomaterials are harming human health or the environment. (“EPA responds to scientists’ concerns, initiates new effort for low-dose, hormone-like chemicals,” by Brian Bienkowski, *Environmental Health News*, Dec. 13, 2012; www.environmentalhealthnews.org/ehs/news/2012/epa-low-dose)

Farm Bill

On Dec. 31, 2012, Congress failed to pass a new five-year **Farm Bill** and instead extended for nine months the existing (2008) bill as part of a “fiscal cliff” bargain. That means discontinued funding for socially disadvantaged and beginning farmers, organic programs, and some 37 “orphan programs” helping to build a new food system. The deal continues \$5 billion worth of direct subsidies for commodity crops, regardless of price and income conditions – payments that would have been discontinued in the proposed 2012 farm now on hold. It continues the 2008 Farm Bill dairy policy that benefits large dairy processors but weakens the safety net for dairy farmers, and it discontinues funding for the Conservation Stewardship Program that enables farmers to improve soil and water conservation practices. Several proposed riders to the 2012 Farm Bill, including the “Monsanto Rider” that would have granted biotech firms immunity from federal law, are now on hold for at least nine months. The House and Senate agriculture committees are expected to present new bills this spring. (“Good News, Bad News: Farm Bill

Extended Under Fiscal Cliff Deal,” Organic Bytes, Jan. 3, 2013;
<http://www.organicconsumers.org/>)

Mercury

Humans and marine ecosystems worldwide are contaminated with mercury, **and mercury levels in humans and fish regularly exceed health advisory guidelines**. So says a report by IPEN, a global network of public interest organizations, and the Gorham, Maine-based Biodiversity Research Institute (BRI), which urge an overall reduction in mercury emissions.

The report, “Global Mercury Hotspots,” based on new data on mercury concentrations in fish and human hair samples, identifies places where mercury levels are high enough to seriously threaten ecosystems and human health. The report states that mercury contamination is ubiquitous in marine and freshwater systems around the world; that biological mercury hotspots are globally common and are related to chlor-alkali facilities, contaminated sites, coal-fired power plants, artisanal small-scale gold mining, mixed-used chemical industry sites and other sources.

When mercury falls into oceans and waterways, microorganisms transform it into especially toxic methylmercury, which then enters the food chain. Methylmercury is readily absorbed by the body; people are exposed primarily by eating fish. Fish samples from around the world regularly have mercury concentrations above EPA human health advisory guidelines. In the study, 43 to 100 percent of fish samples from nine countries exceeded a safe consumption level of one 6-ounce fish meal per month. Mercury concentrations in fish from sites in Japan and Uruguay were so high that no consumption is recommended.

More than 82 percent of human hair samples from eight countries exceeded EPA reference dose levels of 1 ppm.

Exposure to high levels of mercury can permanently damage the brain and kidneys. Harmful effects are passed from mother to fetus and can result in brain damage, mental retardation, blindness, seizures and an inability to speak. The organizations call for reductions of mercury emissions to air, land and water. (“Mercury Levels in Humans and Fish Around the World Regularly Exceed Health Advisory Levels,” Biodiversity Research Institute, Jan. 9, 2013; www.briloon.org/news/77/251/Mercury-Levels-in-Humans-and-Fish-Around-the-World-Regularly-Exceed-Health-Advisory-Level)

Microwave Weeds?

Dr. Graham Brodie of the University of Melbourne believes that microwave technology used to heat emergent weeds or steam seeds underground could be an alternative to herbicides. He is developing a prototype for field trials. Preliminary tests using a small microwave system in an 8-inch pot showed that a target plant can be killed while adjacent plants remain healthy. Targeting weed seeds in the soil is more difficult, mainly due to the time and energy needed to heat the soil sufficiently to kill the seeds. Brodie says microwaving kills soil biota in addition to weed seeds down to about 2.4 inches, but microbial activity is reestablished from below. (“Microwave

energy a potential new weed killer,” by Melissa Marino, Australian Government Grains Research and Development Corporation, Jan. 6, 2012; <http://www.grdc.com.au/Media-Centre/Ground-Cover/Ground-Cover-Issue-96-January-February-2012/Microwave-energy-a-potential-new-weed-killer>)

Priorities for Small Farms

The Cornell Small Farms Program’s “2012 **Recommendations for Strategic Investments in New York’s Small Farms**” details priorities for enhancing the viability of small farms in New York. It is based on a survey of 500 state farmers, educators and advocates and 150 attendees to a Feb. 2012 Small Farms Summit. The report generated specific goals for advancing these opportunities over the next five years – goals that apply to most Northeastern states.

Recommendations included research and extension around agroforestry, including silvopasturing, forest products and alley cropping; enhancing online communities for farmers to exchange ideas, equipment and land; consumer education around small-scale, locally produced food; and liaisons/educators to convey state regulations to farmers.

Survey respondents also listed these topics of interest:

- Develop food distribution strategies – e.g., collaborative marketing, product pooling and trucking, food hubs – to expand small farm access to local and regional markets
- Document economic impact of small farms on their communities to increase investment in and support of small farms
- Develop new and/or expand existing livestock processing facilities
- Evaluate livestock processing regulations and policy for impact on small farms
- Advocate for greater investment in small farm services, i.e., research, extension and education
- Identify alternative financing strategies for small farms
- Develop and promote affordable energy conservation and renewable energy sources for small farms
- Conduct trainings on alternative livestock production and marketing strategies to overcome processing bottlenecks
- Evaluate and promote profitable value-added processing of milk (e.g., yogurt, cheese) to expand market opportunities for small dairies
- Expand grazing education and research
- Develop strategies to expand agricultural land access
- Expand support for small farms producing in urban areas
- Expand production and processing of local biomass and biofuels for small farms
- Recruit youth, minorities and military veterans into farming
- Conduct research and education on food safety risks of small farms
- Identify novel technologies/practices to improve viability of small dairy milk production (“2012 Recommendations for Strategic Investments in New York’s Small Farms,” <http://smallfarms.cornell.edu/projects/summit/>)

Soil Loss

University of Sydney professor John Crawford says a rough calculation of current rates of soil degradation suggests **we have about 60 years of topsoil left**. Soil degradation leads to lost productivity. At current rates of soil loss, we will produce 30 percent less food over the next 20 to 50 years, he says. Also, degraded soil holds less water, and conflicts over water are already occurring in some areas. Crawford says we have to return carbon to the soil by reducing tillage, managing nutrients better, not over-grazing, using manure and considering using human waste. Plant breeding should focus on human nutrition, productivity, and soil-improving traits. Prices should include environmental, health and other costs. Farmers should be rewarded for regenerating the environment and producing food that supports a healthier society. “I find it quite ironic that while the Mars Curiosity Rover is poking around looking for life in Martian soil, we’re in the process of extinguishing life in our own,” said Crawford. (“What If the World’s Soil Runs Out?” by World Economic Forum, Dec. 14, 2012; <http://world.time.com/2012/12/14/what-if-the-worlds-soil-runs-out/#ixzz2GJSifrd7>)

Food Safety

The Kansas City Star, in a yearlong investigation, found that the beef industry is increasingly relying on a mechanical process to tenderize meat, exposing Americans to **higher risk of E. coli poisoning**. The industry then resists labeling such products, leaving consumers in the dark. (“Beef’s Raw Edges,” by Mike McGraw, The Kansas City Star, Dec. 6, 2012; www.kansascity.com/2012/12/06/v-project_one/3951690/beefs-raw-edges.html#storylink=cpy)

The Marcellus Shale, a geologic formation under much of West Virginia, Pennsylvania and New York state, holds vast quantities of natural gas below productive agricultural land. Accessing this gas through **fracking** (hydraulic fracturing) involves forcing millions of gallons of chemically-treated water into the shale to release the gas. In an investigative report, Elizabeth Royte discusses health problems faced by farmers and livestock in some fracked areas, including **damage to nervous, respiratory, gastrointestinal and reproductive systems**. Livestock that don’t die on the farm enter the food chain – legally. “Federal loopholes crafted under former Vice President Dick Cheney have exempted energy companies from key provisions of the Clean Air, Clean Water and Safe Drinking Water Acts, the Toxics Release Inventory, the Resource Conservation and Recovery Act, and the National Environmental Policy Act,” writes Royte. Also, fracking has led to the loss of thousands of acres of agricultural land, and some farmers are moving away from Marcellus shale areas. (“Fracking our food supply,” by Elizabeth Royte, The Nation, Nov. 28, 2012; www.thenation.com/article/171504/fracking-our-food-supply)

In November, the FDA halted operations at Sunland Inc. in New Mexico, the largest U.S. **organic peanut butter** processor, due to **salmonella** poisoning. Forty-one people in 20 states were sickened by salmonella after eating Sunland peanut butter sold at Trader Joe’s grocery chain. Sunland also sold peanut products to Whole Foods, Safeway, Target and other outlets. Sunland products have been the source of other outbreaks in the past. (“Largest organic peanut-butter plant ordered closed,” by Mary Clare Jalonick, Associated Press, Nov. 26, 2012; www.azcentral.com/business/consumer/free/20121126tainted-organic-peanut-butter.html)

The U.S. Centers for Disease Control and Prevention looked at 4,589 **food-related disease outbreaks** from 1998 to 2008, in 17 food categories, and found that 46 percent originated from leafy greens. Norovirus, causing diarrhea and stomach cramping, was responsible for many of these outbreaks. More than half the norovirus-related outbreaks were caused by sick food handlers, and more than 80 percent were due to food prepared in restaurants and other commercial settings. Meat and poultry were responsible for 29 percent of deaths due to foodborne diseases – many due to listeria on sliced deli turkey; some due to salmonella. (“Leafy greens responsible for 46% of food-borne infections, CDC says,” by Ricardo Lopez, Jan. 29, 2013; www.latimes.com/business/money/la-fi-mo-food-borne-illness-cdc-20130129,0,5126816.story)

Summer 2013

The Good News

The Maine School Garden Network’s **School Garden Open House** will take place on September 28, 2013, in conjunction with Maine Harvest Lunch week (September 23 – 27.) Open House events will take place at schools and educational gardens across Maine to promote garden-based learning and to highlight the many benefits of garden programs. MSGN will provide publicity, activity suggestions and logistical guidance. Participating schools plan and facilitate their own unique open house events. For more information, see www.msgn.org, email info@msgn.org, or call MSGN chair Kat Coriell at 926-3047.

The MSGN was recently awarded a USDA Specialty Crop Grant, which allowed it to hire its first staff member, who has begun outreach to school garden programs, has updated the website, and taken up grant-writing tasks. The network is transitioning to an official 501(c)3 organization. Anyone interested in joining the board or helping with individual projects is encouraged to contact the group.

Eastern Europeans have long **spread kidney bean leaves on floors of bedbug-infested rooms** at night. By morning, the bedbugs had become trapped in the leaves, which were gathered and burned. Now scientists have found that trichomes (hook-like hairs) on the leaves impale bedbugs’ legs so that they can’t escape. Scientists have tried to synthesize hooked materials, because bean leaves dry out and they are difficult to apply to anything but a horizontal surface. So far the synthetics haven’t worked as well as bean leaves. One MOFGA members suggests that our farmers connect with pesticide applicators, hotels, urban residents and clothing stores that have experienced bedbug problems, and sell bean leaves to them. (“How a Leafy Folk Remedy Stopped Bedbugs in Their Tracks,” by Felicity Barringer, The New York Times, April 9, 2013; www.nytimes.com/2013/04/10/science/earth/how-a-leafy-folk-remedy-stopped-bedbugs-in-their-tracks.html?_r=0; “Bean Leaves Can Trap Bedbugs, Researchers Find,” ScienceDaily, April 9, 2013; www.sciencedaily.com/releases/2013/04/130409211932.htm)

Tomato fruits from organic farms in Brazil were smaller than conventional, but titratable acidity, soluble solids and vitamin C concentrations were 29, 57 and 55 percent higher at maturity, respectively, and total phenolic content was 139 percent higher than in conventionally grown fruits. These results, plus greater activity of certain enzymes in organic fruits, led researchers to suggest that the organic fruits experienced stressing conditions that resulted in

increased nutritional quality. (“The Impact of Organic Farming on Quality of Tomatoes Is Associated to Increased Oxidative Stress during Fruit Development,” By Aurelice B. Oliveira et al., PLOS One, Feb. 20, 2013; www.plosone.org/article/info:doi/10.1371/journal.pone.0056354)

The **number of organic operations grew significantly** in California, Iowa and New England in 2012 and slightly in the southeastern United States. The USDA National Organic Program (NOP) published its 2012 list of certified organic operations in March, at <http://apps.ams.usda.gov/nop/>, providing information on 17,750 certified USDA organic farms and processing facilities in the United States – a \$32 billion industry.

That’s almost a 240 percent increase since the NOP began tracking the data in 2002. Worldwide, almost 25,000 certified organic operators represent more than 100 countries. This online tool, updated annually, enables searching to see if a particular operator is certified, to find certified farms and operators in a particular state, or to get a list of certified operators who produce a specific organic product.

The database also provides a way to identify and connect organic stakeholders across the supply chain, providing information about organic certifiers and organic operations, including the type of certification (such as crops, livestock or handling) and their products. The list supports the growth of the organic industry by identifying organic operations with complementary needs, and by helping people who want to start an organic business find a certifier or a certified partner to work with.

The number of certified organic operations in part of the Midwest and some Mountain states decreased in 2012. Internationally, since 2010, the number of certified operations has decreased in areas with equivalency agreements (Canada, European Union), as operations in these countries no longer need dual certification. (“Organic 101: Almost 25,000 Certified Operations at Your Fingertips,” by Miles McEvoy, National Organic Program Deputy Administrator, on March 28, 2013; <http://blogs.usda.gov/2013/03/28/organic-101-almost-25000-certified-operations-at-your-fingertips/>)

Of 1,239 U.S. households surveyed, **81 percent now report purchasing organic products** at least sometimes, according to the Organic Trade Association’s 2013 U.S. Families’ Organic Attitudes and Beliefs Study, conducted Jan. 18 to 24, 2013. Also, most of those buying organic foods are purchasing more items than a year earlier. New entrants to buying organic now represent 41 percent of all families – demonstrating that interest in the benefits of organic food and farming is on the rise.

Produce continues to be the leading category of organic purchases, with 97 percent of organic buyers saying they had purchased organic fruits or vegetables in the past six months. Breads and grains, dairy and packaged foods all scored above 85 percent among those who purchase organic. Organic buyers reported spending more per shopping trip, and shopping more frequently than those who never purchase organic food.

Among those who purchase organic foods, 48 percent said they do so because they are “healthier for me and my children.” Additionally, parents’ desire to avoid toxic and persistent pesticides and fertilizers (30 percent), antibiotics and growth hormones (29 percent) and genetically modified organisms (22 percent) ranked high among the reasons cited for buying organic products.

More consumers were more likely to look for the USDA Organic seal when shopping for organic products; and 42 percent said their trust in organic products has increased, versus 32 percent who indicated this point of view a year ago. Younger, new-to-organic parents were significantly more likely to report improved levels of trust in organic products. (“Eight in ten U.S. parents report they purchase organic products,” Organic Trade Assoc., April 4, 2013; www.organicnewsroom.com/2013/04/eight_in_ten_us_parents_report.html)

Fruit flies fed an organic diet (extracts of organic potatoes, soybeans, raisins and bananas from a grocery store) generally had **higher rates of fertility and lived longer** than flies fed a non-organic diet in a study conducted by high school student researcher Ria Chhabra, and Johannes H. Bauer and Santharam Kolli of Southern Methodist University in Dallas. Different groups of flies were fed each product independently and received no other nutritional supplements. (“Fruit Flies Fed Organic Diets Are Healthier Than Flies Fed Nonorganic Diets, Study Finds,” ScienceDaily, Mar. 26, 2013; www.sciencedaily.com/releases/2013/03/130326121732.htm; “Organically Grown Food Provides Health Benefits to Drosophila melanogaster,” by Ria Chhabra, Santharam Kolli, Johannes H. Bauer, PLoS ONE, 8(1), Jan. 9, 2013; www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0052988)

Conventional farmers in the United Kingdom are **incorporating organic farming techniques**, without necessarily converting to organic, to address increasing costs of fuel, fertilizers and crop establishment. Improved soil management, manure management and nutrient cycling can help with such cost savings. To meet this need, the Soil Association created a Future Farming program in which organic and non-organic farmers can test new approaches through on-farm trials where growers meet to view and assess organic approaches. (“Conventional farmers go 'organic' to cut costs,” by Johann Tasker, Farmers Weekly, March 26, 2013; www.fwi.co.uk/articles/26/03/2013/138341/conventional-farmers-go-39organic39-to-cut-costs.htm)

In April, Maine Rep. Chellie Pingree and Sen. Sherrod Brown, D-Ohio, re-introduced the **Local Farms, Food and Jobs Act**, intended to remove barriers so that schools and food stamp recipients can buy more of their food from local farmers. Sarah Smith, co-owner of Grassland Organic Farm in Skowhegan, a MOFGA certified organic farm, spoke in favor of the bill at an April press conference in Washington, D.C. The bill would establish a test program using smartphone technology to accept food stamps electronically at farmers’ markets, and it would enable schools to buy more cafeteria food locally. It would also create crop insurance programs more suited to diversified organic farmers. (“Pingree bill would enable purchases of local food,” by Kevin Miller, Portland Press Herald, April 9, 2013; www.pressherald.com/news/Pingree-bill-would-enable-purchases-of-local-food.html)

The 2013 Strolling of the Heifers Locavore Index ranks Vermont highest among **states committed to raising and eating locally grown food**. Maine ranks second, based on USDA data of per-capita number of farmers' markets, food hubs and community supported agriculture farms, and is followed by New Hampshire, North Dakota and Iowa. ("Vermont again top state in locavore index," WRAL.com, April 13, 2013; www.wral.com/vermont-again-top-state-in-locavore-index/12337410/)

The third annual **Food Day**, on October 24, 2013, will bring together prominent voices for change in the food movement, united by a vision of food that is healthy, affordable and produced with care for the environment, farm animals and the people who grow, harvest and serve it. Food Day builds all year with national and local activities and culminates on October 24. The focus this year is food education, as children who know where food comes from and how to cook meals will have a big health advantage.

"Food Day is an important event that addresses some of the critical problems facing America's food system," says Sharon Kitchens, Maine state coordinator for Food Day. "By encouraging healthy, locally grown food to be readily available in schools, we are supporting local farmers and strengthening local economies. The sustainable food and farming movement would not be where it is today without a lot of collaboration." To become involved in Food Day – e.g., by offering cooking lessons in a school, planting an edible garden, hosting a community celebration with healthy and local foods or encouraging better local food policies, contact Food Day at foodday@cspinet.org or visit www.foodday.org.

Organic

On March 14, **Kathleen Merrigan**, deputy secretary of USDA, announced that she would resign her post. "I am grateful to President Obama for the opportunity to serve as Deputy Secretary and be part of his leadership team," Merrigan said in a statement. "It has been an ambitious first term. From implementing the 2008 Farm Bill, improving school meals, expanding opportunities for American farmers, spending countless hours in the White House situation room, to shepherding USDA budgets through challenging times, it has been an honor to play a small part in history." As deputy secretary, Merrigan championed local and regional food systems and advocated for organic and sustainable agriculture. (USDA Office of Communications, March 14, 2013)

The U.S. Supreme Court has let stand a Minnesota Supreme Court ruling in Johnson v. Paynesville Farmers Union Cooperative Oil Co. The decision says the Minnesota **organic farmers cannot recover against pesticide applicators** for financial harm due to loss of organic certification when pesticides drift or are over-sprayed on their land. Organic farmers Oluf and Debra Johnson's fields were contaminated by Farmers Union pesticide overspray in 2005, 2007 and 2008 and were subsequently decertified. The Johnsons sued the applicator for damages, but the Minnesota court said the company was not responsible for the Johnsons' financial loss due to decertification. The Court also said, erroneously, that federal organic regulations do not require that the once-organic land be decertified. ("U.S. Supreme Court Let's Stand Minnesota Ruling Regarding Pesticide Drift on Organic Farmland, 2/20/2013 www.corporatecrimereporter.com/news/200/minnesotaoverspraycase02202013/)

The **National Organic Program (NOP)** has initiated a “Sound and Sensible” initiative with an overall goal of **making organic certification accessible, attainable and affordable**. It plans to reduce paperwork and other burdensome aspects of organic certification while maintaining high standards, ensuring compliance and protecting organic integrity. The initiative involves identifying and removing barriers to certification, streamlining the certification process, focusing enforcement on egregious violations and correcting small issues before they become larger.

Five principles will guide the initiative:

Efficient Processes – Eliminate bureaucratic processes that do not contribute to organic integrity.
Streamlined Recordkeeping – Ensure that required records support organic integrity and are not a barrier for farms and businesses to maintain organic compliance.

Practical Plans – Support simple Organic System Plans that clearly capture organic practices.

Fair, Focused Enforcement – Focus enforcement on willful, egregious violators; handle minor violations in a way that leads to compliance; and publicize how enforcement protects the organic market.

Integrity First – Focus on factors that impact organic integrity the most, building consumer confidence that organic products meet defined standards from farm to market.

Among the NOP projects underway to introduce Sound and Sensible principles across organic accreditation and certification processes are these:

New Technical Assistance Instruction – Many certifiers and inspectors worry about being perceived as "consulting" if they try to help clients come into compliance. This instruction will outline what certifiers and inspectors can and can't do to assist organic operations.

Updated Certification Instructions – The NOP is updating instructions related to the "5 Steps to Certification," recordkeeping, certificates and other topics to reflect sound and sensible principles based on certifier feedback and accreditation audit results.

Auditor Training – The NOP held "recalibration" training sessions with NOP accreditation auditors to teach auditing using sound and sensible principles and to help increase consistency.

"Removing Barriers" Project – The NOP is identifying key barriers to organic certification and determining ways to eliminate these barriers.

(The NOP Organic Insider, March 29, 2013;

<http://archive.constantcontact.com/fs127/1103777415326/archive/1112908455449.html>)

Cornell University’s Food and Brand Lab researchers found that **an organic label can influence perceptions of taste, calories and value**. The researchers call this the “health halo.” They asked 115 people at a shopping mall in Ithaca, New York, to evaluate two yogurts, two cookies and two potato chip portions. One of each pair was labeled “organic,” and the other was labeled “regular” – but all product pairs were organic and identical. Participants estimated that the cookies and yogurt had significantly fewer calories when labeled “organic” and they were willing to pay up to 23.4 percent more for them; they said the “organic” cookies and yogurt tasted “lower in fat” than the “regular” variety; they thought the “organic” cookies and chips were more nutritious;

the “organic” chips seemed more appetizing; and “organic” yogurt was judged to be more flavorful. “Regular” cookies were reported to taste better – possibly because people often believe healthy foods are not tasty. People who regularly read nutrition labels, who regularly buy organic food, and who exhibit pro-environmental behaviors (such as recycling or hiking) were less susceptible to the organic “health halo” effect. (“Organic Labels Bias Consumers Perceptions through the ‘Health halo effect,’” by Rachel Eklund and Wan-chen Jenny Lee, Cornell University Food and Brand Lab, April 14, 2013; <http://foodpsychology.cornell.edu/outreach/organic.html>; “You taste what you see: Do organic labels bias taste perceptions?” by Wan-chen Jenny Lee et al., Food Quality and Preference, Volume 29 (1):33-39)

An online March 2013 Harris Poll of 2,276 U.S. adults (ages 18-plus) found that

- 38 percent of respondents are concerned for the current and future state of the environment (the figure was 31 percent in 2012)
- 59 percent (63 percent of men and 54 percent of women) agreed that **labeling products as organic** is just an **excuse to charge more**
- 41 percent think organic food tastes better and/or fresher than non-organic
- 23 percent knew what the term "dirty dozen" means (The Environmental Working Group's annual list of foods with the largest number of pesticide residues)
- 80 percent said they will seek green products, but only 30 percent will pay extra for them
- 60 percent prefer to use environmentally friendly cleaning supplies

(“Majority of Americans See Organic Label as an Excuse to Charge More,” April 15, 2013; www.harrisinteractive.com/NewsRoom/HarrisPolls/tabid/447/ctl/ReadCustom%20Default/mid/1508/ArticleId/1180/Default.aspx)

Food Sovereignty (or not)

On March 4, 2013, **Brooksville** residents approved the “**Local Food and Community Self-Governance Ordinance**,” which states that producers or processors of local foods are “exempt from licensure and inspection” when they sell their food directly to a consumer. The ordinance also says it is “unlawful for any law or regulation adopted by the state or federal government to interfere with the rights organized by this ordinance.”

Brooksville joins Sedgwick, Penobscot, Blue Hill, Trenton, Hope, Plymouth, Livermore and Appleton in passing food sovereignty ordinances, which the state says hold no legal weight. In April, Maine’s LD 475, “An Act to Increase Food Sovereignty in Local Communities,” which would have prohibited state law from preempting the right of local government to regulate food systems via local ordinance, was voted “ought not to pass” by the Joint Standing Committee on Agriculture, Conservation and Forestry. (“Brooksville becomes ninth Maine town to defy state on sales of local foods,” by Mario Moretto, Bangor Daily News, March 11, 2013;

<http://bangordailynews.com/2013/03/11/news/hancock/brooksville-becomes-ninth-maine-town-to-defy-state-on-sales-of-local-foods/>; “Maine farmers speak out against local food sovereignty movement,” by Mario Moretto, Bangor Daily News, April 21, 2013; <http://bangordailynews.com/2013/04/21/news/state/farmers-speak-out-against-local-food-sovereignty-movement/>)

Walmart now has **25 percent of the U.S. retail grocery market**, and in almost 40 metro areas it takes in about half or more of consumer spending on groceries, undermining local family businesses. “Like Midas in reverse,” says writer Stacy Mitchell, “Walmart extracts wealth and pushes down incomes in every community it touches, from the rural areas that produce food for its shelves to the neighborhoods that host its stores. Walmart has made it harder for farmers and food workers to earn a living.”

Mitchell also notes that four meatpackers slaughter 85 percent of U.S. beef, and one dairy company handles 40 percent of U.S. milk. She cites a study showing that as about 3,000 Walmart stores opened nationally, each caused a net decline of about 150 jobs and lowered total wages paid to retail workers; and another showing increased poverty rates and food-stamp use in areas after Walmarts opened. Walmart plans to open 220 to 240 new U.S. stores this year. (“Walmart's Death Grip on Groceries Is Making Life Worse for Millions of People (Hard Times USA),” AlterNet, by Stacy Mitchell, March 26, 2013; www.alternet.org/print/food/walmarts-death-grip-groceries-making-life-worse-millions-people-hard-times-usa)

A half dozen companies control two-thirds of seed production, 70 percent of pesticide production and 75 percent of private agricultural research budgets. “But in the past 50 years, peasant agriculture has donated 2.1 million varieties of 7,000 crops to gene banks around the world. In the same time, seed companies have contributed just 80,000 varieties,” says Via Campesina. Seeds from peasant farmers are vastly superior, adds Via Campesina, as they are adapted for local growing conditions, while industrial seeds are selected to work in uniform conditions with synthetic chemical fertilizers. Also, the world's top six agribusiness companies focus their research on just a dozen crops. Peasants grow 70 percent of the world's food, and the industrial farming system has put peasant agriculture at risk, says Via Campesina. The organization cites the “Alliance for a Green Revolution in Africa” (AGRA), a huge project backed by the Gates Foundation and others, and its claims to help small farmers produce more – as AGRA promotes commercially-owned seeds, such as genetically engineered seeds. Activist groups that met in Tunis in 2013 say peasants should save, safeguard and share their own seed; fight laws that strip them of their rights regarding seed; and stop GE seed cultivation. (“Tunis 2013: If we rely on corporate seed, we lose food sovereignty,” by Via Campesina, GRAIN, ETC Group, April 2, 2013; www.grain.org/bulletin_board/entries/4675)

Oxfam’s “Behind the Brands” report says **the world's largest food companies do not meet ethical standards to protect farmers, communities and the environment**. Oxfam rated the world’s 10 largest food and beverage companies based on corporate transparency (on where they source ingredients, for example), on ensuring women’s and workers’ rights on farms in the supply chain, on rights and access to land and water and their sustainable use, and on reducing greenhouse gas emissions and helping farmers adapt to climate change. The campaign is intended to give consumers the information they need to hold the Big 10 accountable for what happens in their supply chains.

The companies were Nestle, PepsiCo, Unilever, Mondelez, Coca-Cola, Mars, Danone, Associated British Foods (ABF), General Mills and Kellogg’s. None received good overall

ratings. All sourced commodities such as palm oil, soy and sugar from communities where land and water grabs occur.

Oxfam says “Behind the Brands” is part of its GROW campaign “to help create a world where everyone has enough to eat. Right now, nearly one in eight people on earth go to bed hungry. Sadly, the majority of these people are farmers or farm workers supplying the very food system that is failing them. Yet there is enough food for everyone...

“[W]e know that the world’s largest food and beverage companies have enormous influence. Their policies drive how food is produced, the way resources are used and the extent to which the benefits trickle down to the marginalised millions at the bottom of their supply chains.” (Behind the Brands, www.oxfam.org/en/grow/campaigns/behind-brands; “Oxfam reveals global food firms' gaping ethical shortfalls,” by Damian Carrington, The Guardian, Feb. 26, 2013; www.guardian.co.uk/environment/2013/feb/26/oxfam-behind-brands-ethical-failures)

Food Safety

The Organic Center has signed an agreement with USDA's Agricultural Research Service (ARS) for ARS scientists to study factors affecting the presence of **arsenic in organically grown rice**, thanks to grants to The Organic Center from the UNFI (United Natural Foods Inc.) Foundation and the Organic Farming Research Foundation. Factors include varieties, flooding and fertilizers. (“The Organic Center steps up research focus,” PRNewswire-USNewswire, March 5, 2013; www.prnewswire.com/news-releases/the-organic-center-steps-up-research-focus-195288511.html)

Commercially available **rice imported into the United States** – about 7 percent of the U.S. rice supply – **has higher lead levels** than FDA regulations suggest are safe – some samples having 120 times more. Rice from China and Taiwan had the highest lead levels. The lead may come from raw sewage, untreated industrial effluent and/or electronic waste being sent to developing countries. (“US rice imports 'contain harmful levels of lead,’” by Jason Palmer, BBC, April 10, 2013; www.bbc.co.uk/news/science-environment-22099990)

At a public meeting in February on its draft **food safety rules**, the U.S. FDA was thanked for moving forward on implementing the 2011 Food Safety Modernization Act; criticized for exempting several produce items that allegedly are rarely consumed raw but in fact often are (such as figs and kale); questioned about exemptions for small farms and for consumers who buy some foods directly from small operations; questioned about operations that both grow and process food; and asked why testing is not mentioned, except for sprouts and agricultural water. The White House Office of Management and Budget still has to release rules for the foreign supplier verification program, preventive controls for animal feed, and third party certification. Meanwhile, the comment period for the draft rules has been extended 120 days. (“Stakeholders Offer Broad Range of Feedback on FSMA in First Public Meeting,” by Helena Bottemiller, Food Safety News, March 4, 2013; www.foodsafetynews.com/2013/03/stakeholders-offer-broad-range-of-feedback-on-fsma-in-first-public-meeting/#.UTUqW-vtgfL; “Comment Period for New Food Safety Regulations

Extended,” National Sustainable Agriculture Coalition, April 18, 2013;
<http://sustainableagriculture.net/blog/fsma-comment-period-extended/>)

The National Antimicrobial Resistance Monitoring System, an FDA, USDA and CDC program, found that more than half the 480 samples each of ground turkey, pork chops and ground beef collected from supermarkets in 2011 tested positive for **a bacterium resistant to antibiotics**. The USDA says almost 80 percent of antibiotics sold in the United States are used in animal agriculture. (“Report on U.S. Meat Sounds Alarm on Resistant Bacteria,” by Stephanie Strom, April 16, 2013; www.nytimes.com/2013/04/17/business/report-on-us-meat-sounds-alarm-on-superbugs.html?_r=0)

Researchers at the University of Rochester tested the urine of 10 pregnant women in an Old Order **Mennonite** (OOM) community for **metabolites of BPA and phthalates**, both used in many plastic products and both linked to hormone disruption. The researchers also asked participants to report on their household environment, product use and lifestyle for the 48 hours before urine collection. Concentrations of BPA metabolites and of three phthalate metabolites were significantly lower in the OOM women than in pregnant women in the National Health and Nutrition Examination Survey. Possible explanations are that Mennonites consume mostly homegrown produce, do not use cosmetics, limit use of personal care products and rarely travel in cars. (“Lifestyle behaviors associated with exposures to endocrine disruptors,” by C. A. Martina et al., Neurotoxicology. Dec. 2012. Abstract at www.ncbi.nlm.nih.gov/pubmed/22739065)

In a small study in Washington state, members of five families who ate catered, organic foods that were stored and prepared without plastic utensils had twice as much **Bisphenol-A (BPA)** and 24 times as much **DEHP** (a phthalate used to soften plastics), on average, as members of five families who were just told to avoid these hormone-mimicking chemicals by, for example, not eating canned foods. Researchers later found that organic milk, which was from local, grass-fed cows and stored in glass bottles, and coriander in the catered diet were responsible for the high concentrations of hormone mimics. They speculate that the compounds may have come from plastic tubing through which milk flows, or soil, or pesticides. DEHP is not allowed in such tubing in Europe. (“Chemical Creep: How Toxic Chemicals Are Sneaking Into Your Food, And Your Body,” by Lynne Peeples, The Huffington Post, March 7, 2013; www.huffingtonpost.com/2013/03/07/toxic-chemicals-food-body_n_2829270.html?ncid=txtlnkushpmsg00000040&utm_hp_ref=fb&src=sp&comm_ref=false#sb=438687)

Eating fresh produce is often associated with outbreaks of human norovirus (hNoV), the highly contagious “winter vomiting bug.” Because well water and surface waters can harbor hNoV, researchers diluted eight pesticides with hNoV-contaminated water and found that pesticides did not counteract the effects of the contaminated water. The authors conclude that **applying pesticides on fresh produce may be a chemical as well as microbiological risk factor** for public health. (“New Study Highlights Pesticide Application as Potential Source of Noroviruses in Fresh Food Supply Chains,” Elsevier, March 12, 2013; www.alphagalileo.org/ViewItem.aspx?ItemId=129275&CultureCode=en)

The Cornucopia Institute has asked the FDA to remove the common additive **carrageenan** from the U.S. food supply. In its report “Carrageenan: How a ‘Natural’ Food Additive Is Making Us Sick,” Cornucopia says studies link food-grade carrageenan in the diet of laboratory animals to **gastrointestinal disease**, including colon tumors. Carrageenan, a processed additive extracted from red seaweed, contributes no nutritional value or flavor but is added to affect the texture of many foods and beverages. It is used, for example, in some chocolate milk products to suspend cocoa particles so that consumers do not have to shake the drink before consumption. Some companies, including Stonyfield Farm and Eden Foods, have committed to removing carrageenan from their products. (“FDA Puts Industry Profit Over Public Health – ^{F11}~~SEP~~ Agency Defends Controversial Food Additive,” The Cultivator, The Cornucopia Institute, March 19, 2013. “Carrageenan: How a ‘Natural’ Food Additive Is Making Us Sick” and a shopping guide to carrageenan-free products are available at www.cornucopia.org.)

Bees

Communities of **wild pollinators** were twice as effective as honeybees in pollinating 41 crops in 600 fields in a study covering every continent except Antarctica and at enterprises ranging from industrial almond farms to backyard gardens. The researchers say trucking in managed honeybee hives is risky because it depends on a species that is susceptible to pests and environmental problems. Wild pollinators visit more plants and use more pollinating techniques than honeybees, so they tend to pollinate more flowers.

Another study comparing data recorded in 1888 and 1891 by entomologist Charles Robertson in Carlinville, Illinois, with records from 1971-1972 and 2009-2010 shows that 54 of the 109 wild bee species recorded by Robertson were lost in the 20th century. The remaining species were unable to pollinate many plants, and climate change appears to be changing flowering to times when particular bees are not always active, interfering with bee-flower partnerships. Researcher Laura Burkle of Montana State University in Bozeman said, “I would strongly advocate for a native plant garden at your house.”

(“Loss of wild pollinators serious threat to crop yields, study finds,” by Damian Carrington, The Guardian, Feb. 28, 2013;

www.guardian.co.uk/environment/2013/feb/28/wild-bees-pollinators-crop-yields; “Native pollinators boost crop yields worldwide,” by Susan Milius, Science News, March 1, 2013; www.sciencenews.org/view/generic/id/348685/description/Native_pollinators_boost_crop_yields_worldwide; “Plant-pollinator interactions over 120 years: loss of species, co-occurrence and function,” by L.A. Burkle et al., Science;

www.sciencemag.org/content/early/2013/02/27/science.1232728; “Wild pollinators enhance fruit set of crops regardless of honey bee abundance,” by L.A. Garibaldi et al., Science.

www.sciencemag.org/content/early/2013/02/27/science.1230200)

Fields with **diversified, organic crops get more buzz from wild bees**, concludes a synthesis of 39 studies on 23 crops around the world published March 11 in the journal Ecology Letters. The study found that wild bees were more abundant in diversified farming systems.

“The way we manage our farms and agricultural landscapes is important for ensuring production of pollinated-food crops, which provide about one-third of our calories and far higher

proportions of critical micronutrients,” says study senior author Claire Kremen of the University of California, Berkeley. “This result provides strong support for the importance of biologically diversified, organic farming systems in ensuring sustainable food systems.” (“Wild bees get boost from diverse, organic crops,” by Sarah Yang, UC Berkeley press release, March 12, 2013; <http://newscenter.berkeley.edu/2013/03/12/crop-diversity-boosts-bees/>)

Climate

A **USDA report** says **farmers need to be prepared to adapt to climate change** and suggests that expanding sustainable agricultural techniques (e.g., crop rotations, biological diversification, building soil health) is key. The report notes the following:

- For vegetables, exposure to temperatures in the range of 1 to 4 C (about 2 to 6 F) above optimal for biomass growth moderately reduces yield, and exposure to temperatures more than 5 to 7 C (about 9 to 13 F) above optimal often leads to severe, if not total, production losses.
- Perennial specialty crops have a winter chilling requirement (typically expressed as hours below 10 C [50 F] and above 0 C [32 F]) ranging from 200 to 2,000 cumulative hours. Yields decline if the chilling requirement is not completely satisfied because flower emergence and viability is low. So by the middle to end of the 21st century, the chilling requirement of California’s fruit and nut trees may not be met. For most of the Northeast United States, perennial crops requiring 400 hours or less of chilling will continue to produce, but yields could be reduced, particularly in the southern part of the Northeast, in crops requiring 1,000 or more hours of chilling.
- Midwinter warming can lead to early bud-burst or bloom of some perennial plants, resulting in frost damage when cold winter temperatures return.
- For many livestock species, deviations of core body temperature greater than 2 to 3 C (about 4 to 6 F) disrupt performance, production and fertility, limiting an animal’s ability to produce meat, milk or eggs. Deviations of 5 to 7 C (about 9 to 13 F) often result in death.
- For cattle that breed during spring and summer, exposure to high temperatures decreases conception rates.
- Livestock and dairy production may be more affected by changes in the number of days of extreme heat than by adjustments of average temperature.

The report says adaptation measures such as developing drought, pest and heat stress resistance in crops and animals, diversifying crop rotations, integrating livestock with crop production systems, improving soil quality, minimizing off-farm flow of nutrients and pesticides, and other practices typically associated with sustainable agriculture, may increase the capacity of the agricultural system to minimize the effects of climate change on productivity. (“Climate Change and Agriculture in the United States: Effects and Adaptation, USDA Technical Bulletin 1935,” by C. L. Walthall et al., 2012; [www.usda.gov/oce/climate_change/effects_2012/CC%20and%20Agriculture%20Report%20\(02-04-2013\)b.pdf](http://www.usda.gov/oce/climate_change/effects_2012/CC%20and%20Agriculture%20Report%20(02-04-2013)b.pdf))

Scientists investigated **40 organic and 40 conventional** crop and dairy farms across Germany's four agricultural regions, recording all relevant **climate gas** streams during the entire production process, including methane, nitrous oxide and carbon dioxide. For dairy farms, they also factored in purchase of soybean meal from South America and all related greenhouse gas emissions. Organic farms were more energy efficient and produced less land-specific CO₂ emissions but had lower yields, say the researchers. The pilot organic crop farms in the study produced around 20 percent lower emissions per yield unit than conventional holdings.

"There are different ways of improving a farm's climate balance," says Professor Kurt-Jürgen Hülsbergen from Technische Universität München (TUM). "One effective strategy is for landholders to grow feed themselves rather than purchase soy from another source. Farms can also streamline production processes and deploy modern technology to obtain higher yields without increasing the amount of energy required."

In crop farming, increasing nitrogen (N) efficiency is a key factor. High levels of nitrous oxide are released into the environment if crops cannot use all the N fertilizer that was spread. Producing N fertilizer is also energy intensive, further increasing the climate balance of unused nitrogen.

In contrast, CO₂ can be stored long term as humus in the soil, and thus eliminated from the climate balance. "This can be achieved by planting legumes as part of a diversified crop rotation strategy," says Professor Gerold Rahmann at the Thünen Institute. "Using soil less intensively and applying organic fertilizer also helps."

Organic dairy farms use more plant fodder grown on site and do not import soybean meal. So, Hülsbergen says, "the pilot organic farms we looked at emit around 200 grams less CO₂ per kilogram of milk than conventional farms with the same milk yield."

Yields and greenhouse gas emissions fluctuated significantly among organic farms – sometimes even more than between organic and conventional holdings – showing that individual know-how of farm managers is important in the greenhouse gas balance and that significant potential for improvement exists at individual farms. ("Improving climate protection in agriculture," press release, Feb. 28, 2013, Technische Universität München; www.tum.de/en/about-tum/news/press-releases/short/article/30452/)

Fertilizers

A U.N. report called "**Our Nutrient World**" says that excess nitrogen (N) and phosphorus (P) fertilizers are polluting air and water in some places, while insufficient nutrients limit food production and lead to land degradation in other areas – all while supplies of some fertilizers are becoming limited.

To feed 7 billion people, we have more than doubled land-based cycling of N and P, says the report, so the world's N and P cycles are now out of balance, causing major environmental, health and economic problems. Still, insufficient access to nutrients limits food production and contributes to land degradation in places, while finite P reserves are a potential risk for future

global food security, so they must be used prudently. Global efforts must reduce nutrient losses, reduce environmental pollution and improve nutrient use efficiency while producing more food and energy.

Among the report's recommendations are improving nutrient use efficiency in crop and animal production, improving animal manure use, having low-emission combustion and energy-efficient systems, including renewable sources, developing NO_x capture and utilization technology, improving nutrient efficiency in the fertilizer and food supply, reducing food waste, recycling N and P from wastewater systems, and lowering consumption of animal protein in populations consuming high rates. ("Our Nutrient World," by Mark Sutton et al., United Nations Environment Programme, Feb. 13, 2013; <http://www.gpa.unep.org/gpnm>)

Pesticides

Public to BPC: No Widespread Spraying to Fight Mosquitoes

By Katy Green

Much of the discussion at the Maine Board of Pesticides Control (BPC) meetings over the past several months has focused on arboviral diseases – viruses transmitted by arthropods, such as mosquitoes and ticks – and the resulting BPC response. After the board's public hearing in March and reading of written comments, the message was clear: The public overwhelmingly asked the board to reconsider its approach, protect those who choose not to be sprayed and consider the negative impacts of spraying.

During its April meeting the board summarized those comments and listed points to consider as it works toward finalizing rules. The question at hand is this: Should BPC rules allow for widespread spraying to control mosquitoes if the Centers for Disease Control (CDC) makes that recommendation? The board appears not to want to stand in the way of the CDC recommendation and will continue with rulemaking that allows for government-sponsored spray programs.

In a parallel discussion at the legislature, the Agriculture, Conservation and Forestry (ACF) Committee considered the role the board, and more broadly the Maine Department of Agriculture, should play in controlling arboviral diseases. The ACF committee also believes the board needs to reconsider its approach and asked that it report back with a plan in December 2013. This issue will be building for the foreseeable future as the threat of arboviral diseases increases.

The board will hold its July 26, 2013, meeting at MOFGA's Common Ground Education Center in Unity. This is a great opportunity to meet

board members and let them know what you think they should work on. We'd love to have a large turnout. Contact Katy Green (kgreen@mofga.org) if you have questions about this meeting.

Product Registrations

In January the board approved two new genetically engineered (GE) Bt corn products for use in Maine. The products, Agrisure Viptera 3220 Refuge Renew Corn and Agrisure 3122, both require only a 5 percent spatial refuge of non-BT corn. The precedent for the smaller refuge was made in 2012 when the board approved refuge-in-a-bag corn, which contains Bt and a little non-Bt seed. At that time the board believed the reduced refuge was acceptable because the non-GE seed was mixed in the bag with GE and therefore had to be planted. These two new GE corn varieties do not contain a refuge in the bag, but the board used its prior approval of refuge-in-a-bag corn to justify the need for these varieties. Board members Deven Morrill, Clark Granger and Bruce Flewelling approved the registration; John Jemison and Carol Eckert opposed it.

In March the board approved two products for beekeepers to control Varroa mites in managed bee colonies: HopGuard (potassium salt of hop beta acids), a renewal of a request made last year; and Avipar (Amitraz), a new request.

At its April meeting the board approved a Special Local Need request for Gowan Malathion 8 Flowable to control spotted wing drosophila in wild blueberries. In 2012 the board approved an emergency exemption for this same need, although the request this year included higher application rates.

Variance Requests

The board has considered two variance requests at recent meetings that are similar in nature. Both deal with controlling invasive species within 25 feet of the high water mark on oceanfront properties.

In one instance the board approved a request from Southern Maine Forestry Services Inc. to use Garlon 3A on a Scarborough property to treat honeysuckle and bittersweet. In the second the board asked that Terry Stephens, who initiated the request, return with more information about the application need and property specifications of a site in Northeast Harbor that he proposes treating to control Japanese knotweed.

Consent Agreements

In March the board unanimously approved a consent agreement with Essex Power Services Inc., of Boston, Massachusetts. In this case an Oakland, Maine, resident witnessed what appeared to be a pesticide application taking place on the dam outlet from Messalonskee Lake in Oakland and subsequently questioned the applicator, who admitted to applying the herbicide. The Oakland resident then alerted the BPC. A board inspector followed up and confirmed that use of Bayer Advanced Dura Zone Ready to Use Weed & Grass Killer in this case violated three rules: The product is intended for outdoor residential use only; is not to be applied where it can run off into surface waters; and was used in a careless, negligent or faulty manner. A \$400 fine was levied.

Also in March the board unanimously approved a consent agreement and \$300 fine with J & S Oil Co. of Manchester, Maine, for applying pesticides at its Farmingdale store. In this case the caller witnessed an application of Scotts Turf Builder Plus 2 Weed Control to a public area and notified the board. A follow-up investigation found that the applicator did not have the required license.

At its April meeting the board reached a consent agreement with TRP Logging of East Machias. In this case the caller observed an application of Ortho Weed B GON to turf at McDonald's Restaurant in Machias. A BPC inspector determined that nobody at TRP Logging is a licensed commercial applicator as is required to make pesticide applications to public spaces. The board unanimously approved the \$350 fine.

In a similar case the board fined Firehouse Property Maintenance of Falmouth \$500 for an unlicensed pesticide application to Bank of America Property in Gardiner. In this case the applicator used Roundup Weed & Grass Killer, and the person who alerted the board noted that the wind was gusting during the application. The fine in this case was slightly larger, primarily because the board discovered that the product used was in concentrate form and that the container was empty, signaling to the inspector that more than one improper application likely was made.

In an unusual incident the board considered and unanimously approved a consent agreement with Bruce Hunter of Farmington, Connecticut, for an unauthorized pesticide application to the Chebeague Island Golf Club. (Hunter's family owns a cottage on Chebeague Island.) Staff at the golf course noticed browning shrubs along the property line shared with Mr. Hunter and along the ocean side of the course that is in line with his view. Factual disputes exist,

and Mr. Hunter has not admitted to the violation to the board, but residue tests confirmed that glyphosate, the active ingredient in RoundUp and similar products, was present in the areas of browning shrubs. This is a violation of Maine rules that do not allow for applications of pesticides to a property of another unless prior consent for the application has been obtained from the owner, manager or legal occupant of that property. A \$600 fine was levied. Mr. Hunter disputes the facts in this case but signed the consent agreement nonetheless.

Sidebar

Organic Growers May Need Pesticide Licenses

Maine organic growers: Do you apply spinosad to your sweet corn? PyGanic on your carrots? You may need a pesticide applicator's license!

By April 1, 2015, any Maine grower who sells annually more than \$1,000 worth of plants or plant products intended for human consumption and who uses any general-use pesticide – one with an EPA registration number on the label – on those crops must be licensed by the Maine Board of Pesticides Control (BPC).

This law applies to those who grow fruits, vegetables, herbs and grains for human consumption; to growers of the above crops who make bread, jam, french fries, wine, cider, juice, etc., or sell produce to be processed into such products; and to greenhouse growers selling fruit, vegetable and herb seedlings. The Agricultural Basic pesticide license is for growers who use only general-use pesticides on property they own or lease.

To obtain an Agricultural Basic pesticide applicator license, growers must pass the BPC core exam, which is based on the Pesticide Education (Core) Manual (available from UMaine Cooperative Extension at <http://umaine.edu/ipm/pesticide-safety/certification-manual-prices/> or by calling 207-581-3880). The exam can be taken at the BPC office in Augusta (207-287-2731) or at county Cooperative Extension offices. Contact the BPC office to have the exam mailed to the Extension office and then arrange with Extension to take the exam.

Licenses expire on October 31 of the third year after issuance and cost \$15. To maintain a license, growers must obtain three hours of continuing education credit during the three-year license period. For

more information, see Chapter 33 of the BPC rules at www.thinkfirstspraylast.org.

[End of BPC news]

In 2012, when Kathryn Kuivila of the U.S. Geological Survey sampled 24 bodies of ground water and shallow water in Maine, Idaho and Wisconsin for 33 fungicides used on potatoes, **75 percent of surface water samples and 58 percent of ground water samples were contaminated with traces of at least one fungicide**. Limited toxicological data are available for many of these compounds, and no mandatory reporting for their use exists. Studies have linked even low concentrations of some fungicides to obesity in mice, while others, such as maneb and benomyl, have been linked to Parkinson's disease. ("Fungicide use surging, largely unmonitored," by Brett Israel, Environmental Health News, 2/22/2013; www.environmentalhealthnews.org/ehs/news/2013/fungicides)

The French consumer magazine 60 Millions de Consommateurs and the NGO Fondation France Libertés commissioned tests of **bottled water** found on supermarket shelves in France. Of 47 brands, 10 contained **residues of prescription drugs or pesticides** – including tamoxifen, a hormone used to treat breast cancer, and drugs used to treat high blood pressure. While concentrations were very small, the magazine says the "potential cocktail effect" is of concern. ("One in five French bottled waters 'contain drugs or pesticides'," by Kim Willsher, The Guardian, March 25, 2013; www.guardian.co.uk/world/2013/mar/25/french-bottled-waters-contaminated-brands)

The herbicide **glyphosate** (the active ingredient in Roundup) can disrupt certain activities of bacteria in the human gut, **resulting in "most of the diseases and conditions associated with a Western diet**, which include gastrointestinal disorders, obesity, diabetes, heart disease, depression, autism, infertility, cancer and Alzheimer's disease," say the authors of a new review of the herbicide. ("Glyphosate's Suppression of Cytochrome P450 Enzymes and Amino Acid Biosynthesis by the Gut Microbiome: Pathways to Modern Diseases," by Anthony Samsel and Stephanie Seneff, Entropy 2013, 15, 1416-1463; <http://people.csail.mit.edu/seneff/Entropy/entropy-15-01416.pdf>)

When researchers exposed aquatic water fleas *Daphnia magna* to the herbicide glyphosate and its commercial formulation Roundup, Roundup showed slightly lower acute toxicity but greater chronic toxicity than glyphosate alone. Both compounds reduced juvenile size. Fecundity and abortion rates were affected only in animals exposed to Roundup. The researchers suggest that "aquatic invertebrate ecology can be adversely affected by relevant ambient concentrations of this major herbicide" and that **"glyphosate and Roundup toxicity to aquatic invertebrates have been underestimated."** Because both are "significantly more toxic than previously assumed from regulatory documentation" to aquatic organisms, the researchers call for revised regulation of the materials. ("Clone- and age-dependent toxicity of a glyphosate commercial formulation and its active ingredient in *Daphnia magna*," by Marek Cuhra, Terje Traavik, Thomas Bøhn, Ecotoxicology, March 2013, Volume 22, Issue 2, pp 251-262; <http://link.springer.com/article/10.1007%2Fs10646-012-1021-1>)

Between 1999 and 2010, **monarch butterfly populations declined** by 81 percent along with a 58 percent decline in their essential food, milkweed, in the Midwest, paralleling use of the herbicide **glyphosate**, the active ingredient in Monsanto's Roundup weed killer. Mexico's annual report on monarch populations in its reserve region says that the area occupied by the butterflies in the 2012-2013 winter was only 2.94 acres – 59 percent less than the previous year and the smallest population in nearly two decades. The hot, dry summer is believed to have harmed the population as well. (“Climate Change, Herbicide May Doom Monarch Butterfly Migration,” by Ines Perez, Scientific American, 3/27/2013; <http://www.scientificamerican.com/article.cfm?id=climate-change-herbicide-may-doom-monarch-butterfly-migration>)

Neuroscientist Geraldine Wright and Sally Williamson of Newcastle University in England have found that “prolonged exposure to field-realistic concentrations of the **neonicotinoid, imidacloprid**, and the organophosphate acetylcholinesterase inhibitor, **coumaphos** [used to treat Varroa mites in beehives], and their combination **impairs olfactory learning and memory formation in the honeybee.**” Sublethal doses of the two pesticides together significantly impaired bees' foraging behavior. The researchers say this implies that pollinator population decline may result from a failure of neural function of bees exposed to pesticides in agricultural areas. (“Exposure to multiple cholinergic pesticides impairs olfactory learning and memory in honeybees,” by Sally M. Williamson and Geraldine A. Wright, The Journal of Experimental Biology, Feb. 7, 2013; <http://jeb.biologists.org/content/early/2013/02/04/jeb.083931.abstract.html?papetoc>)

The American Bird Conservancy (ABC) report, “The Impact of the Nation's Most Widely Used Insecticides on Birds,” reviews 200 studies and concludes that **neonicotinoids are lethal to birds and to the aquatic systems on which they depend.**

The ABC has called for a ban on use of neonicotinoids as seed treatments and for suspension of all applications pending an independent review of the products' effects on birds, terrestrial and aquatic invertebrates, and other wildlife.

“The environmental persistence of the neonicotinoids, their propensity for runoff and for groundwater infiltration, and their cumulative and largely irreversible mode of action in invertebrates raise significant environmental concerns,” says Cynthia Palmer, report co-author and ABC pesticides program manager.

“A single corn kernel coated with a neonicotinoid can kill a songbird,” says Palmer. “Even a tiny grain of wheat or canola treated with the oldest neonicotinoid – called imidacloprid – can fatally poison a bird. And as little as 1/10th of a neonicotinoid-coated corn seed per day during egg-laying season is all that is needed to affect reproduction.”

The report concludes that neonicotinoid contamination levels in surface- and ground water around the world are beyond the threshold found to kill many aquatic invertebrates; and that EPA risk assessment grossly underestimated the toxicity of neonicotinoids, in part due to its reliance on its standard test species, *Daphnia magna*, a freshwater flea that is insensitive to neonicotinoids. (“Birds, Bees, and Aquatic Life Threatened by Gross Underestimate of Toxicity

of World's Most Widely Used Pesticide,” American Bird Conservancy, March 19, 2013; www.abcbirds.org/newsandreports/releases/130319.html)

The European commission proposed a two-year suspension of three **neonicotinoid insecticides** in its 27 member states after the European Food Safety Authority found their use too risky, but Britain and Germany failed in March to back the suspension. Ministers said they needed more scientific evidence of harm from the insecticides to bees and that a ban may disproportionately damage food production. Contamination of control sites by neonicotinoid residues in pollen and nectar confounded field experiments that have been done. (“Bee-harming pesticides escape European ban,” by Damian Carrington, The Guardian, March 15, 2013; www.guardian.co.uk/environment/2013/mar/15/bee-harming-pesticides-escape-european-ban)

The European commission was charged in April with enforcing the world's first continent-wide **ban on three neonicotinoid insecticides** – thiamethoxam, clothianidin and imidacloprid – widely used and identified as risks to bee health by the European Food Safety Authority. (“Bee-harming pesticides banned in Europe,” by Damian Carrington, The Guardian, April 29 2013; www.guardian.co.uk/environment/2013/apr/29/bee-harming-pesticides-banned-europe)

Four professional beekeepers and five environmental and consumer groups (Beyond Pesticides, Center for Food Safety, Pesticide Action Network North America, Sierra Club and the Center for Environmental Health), represented by the Center for Food Safety, have **sued the EPA** in the Northern District Court of California, demanding that it suspend use of the **neonicotinoid insecticides** clothianidin and thiamethoxam. These are systemic insecticides – i.e., they are taken up by and transported throughout the vascular system of plants. The insecticides have been used heavily for almost 10 years; simultaneously, beekeepers have experienced widespread losses of colonies. The plaintiffs say EPA committed legal violations related to approval of the pesticides, and they challenge the agency’s use of expedited conditional registrations for more than two-thirds of these products. These insecticides are used on more than 100 million U.S. acres of corn, wheat, soy and cotton; home gardeners also use them. (“Groups sue EPA over honey bee deaths, blame some insecticides,” by Carey Gillam, Reuters, March 21, 2013; www.reuters.com/article/2013/03/21/us-usa-bees-lawsuit-idUSBRE92K13320130321)

The Natural Resources Defense Council (NRDC) says the federal government has improperly using a regulatory loophole to approve many untested or under-tested pesticides. The NRDC report, “Superficial Safeguards: Most Pesticides are Approved by Flawed EPA Process,” says the **EPA** has used “**conditional registration**,” which Congress intended to be used sparingly, to approve most pesticides. It also reveals that the EPA cannot easily track the history of conditionally approved pesticides to determine whether required toxicity data were submitted, whether that caused a dangerous use of a pesticide to be cancelled, or whether the uses or restrictions should be modified based on such data.

“The EPA has casually approved more than 10,000 pesticides for use in consumer products and in agriculture through this loophole,” said Jennifer Sass, NRDC senior health scientist and report co-author. “They’ve done so without transparency or public comment, and, in some cases, without toxicity tests to determine safety guidelines for public use.”

The report highlights two case studies on conditionally approved pesticides. The first, nanosilver – which may damage cells in the brain, liver and other organs, and can pass from mother to fetus – is widely used as an antimicrobial agent in clothing. The second, clothianidin, was approved based on a flawed bee field test. Both remain on the market.

The NRDC calls on the EPA to take six corrective actions:

- Review all previously conditional registrations to ensure they comply with the law.
- Immediately cancel pesticide registrations with overdue studies or those that pose a risk to the public, including nanosilver and clothianidin.
- Properly track conditional registrations to provide transparency for the public.
- Establish a public comment process for conditional pesticide registrations.
- Make all submitted data accessible to public review.
- Return to congressional intent and grant conditional pesticide registrations only in rare cases.

(“NRDC Report: More than 10,000 Pesticides Approved by Flawed EPA Process,”
March 27, 2013; www.nrdc.org/health/pesticides/flawed-epa-approval-process.asp)

The Environmental Working Group’s (EWG) latest **Dirty Dozen** list ranks **produce** based on six measures of **pesticide contamination** detected by USDA tests of washed or peeled produce:

- Percent of samples tested with detectable pesticides
- Percent of samples with two or more detectable pesticides
- Average number of pesticides found on a single sample
- Average amount of all pesticides found
- Maximum number of pesticides found on a single sample
- Total number of pesticides found on the commodity

The Dirty Dozen (with the highest, or worst, scores) were apples, celery, cherry tomatoes, cucumbers, grapes, hot peppers, imported nectarines, peaches, potatoes, spinach, strawberries and sweet bell peppers. A Plus category highlighted added domestically-grown summer squash and leafy greens (kale and collards), which did not meet traditional Dirty Dozen criteria but were commonly contaminated with pesticides exceptionally toxic to the nervous system.

The list “is not built on a complex assessment of pesticide risks,” says EWG, “but instead reflects the overall pesticide loads of common fruits and vegetables. This approach best captures the uncertainties about the risks and consequences of pesticide exposure.”

The Clean Fifteen are asparagus, avocados, cabbage, cantaloupe, sweet corn, eggplant, grapefruit, kiwi, mangos, mushrooms, onions, papayas, pineapples, frozen sweet peas and sweet potatoes. The EWG notes that zucchini, Hawaiian papaya and some sweet corn may be genetically engineered. (“EWG’s 2013 Shopper’s Guide to Pesticides in Produce™,”
www.ewg.org/foodnews/summary.php)

Genetic Engineering (GE)

On April 24, 2013, the **Genetically Engineered Food Right to Know Act** was introduced in **both the U.S. Senate and the House**. Senator Barbara Boxer (D-CA) and Congressman Peter

DeFazio (D-OR) sponsored the legislation that would require labeling of all GE foods. This is the first labeling bill to be introduced in the Senate since 2000.^[1] Nine other senators and 22 representatives are co-sponsors. Last month an amendment to the Senate budget resolution required labeling of GE fish.

(“First Federal Labeling Bill Introduced in the Senate in Over a Decade,” Center for Food Safety, April 24, 2013; www.centerforfoodsafety.org/press-releases/2116/federal-legislation-introduced-to-require-the-labeling-of-genetically-engineered-foods)

Whole Foods Market will require labeling of all GE foods sold in its 339 U.S. and Canadian stores by 2018. The move comes in response to consumer demand, says the grocer. Whole Foods had been criticized earlier for advertising “Nothing artificial, ever” on its stores while selling unlabeled GE foods, and for its reluctance to back Proposition 37, California’s bill to label GE foods. (“Major Grocer to Label Foods With Gene-Modified Content,” by Stephanie Strom, The New York Times, March 8, 2013; www.nytimes.com/2013/03/09/business/grocery-chain-to-require-labels-for-genetically-modified-food.html?_r=0; “Whole Foods announces mandatory GMO labeling by 2018; here's how it happened,” by Mike Adams, Natural News, March 9, 2013; www.naturalnews.com/039405_Whole_Foods_GMO_labeling_Monsanto.html)

In June, the U.S. Supreme Court ruled in favor of Monsanto in **Bowman v. Monsanto Co.**, a case involving Indiana farmer Vernon Hugh Bowman and Monsanto Co., which claims the farmer violated its patents on Roundup Ready soybean seeds. While Bowman bought and planted Monsanto’s GE soy for his first crop, he bought cheaper soybean seed from a local grain elevator for his second crop, which often produces less and, Bowman thought, didn’t warrant the extra expense of Monsanto’s GE seed. Bowman did this for eight years, knowing that the grain elevator’s seed (sold primarily for animal feed) was likely Roundup Ready – the main crop grown in the area. Bowman believes that Monsanto's patent was exhausted once the original seeds were planted, and that the company does not have the right to restrict use of second-generation seeds. Monsanto sued Bowman for planting its patented seed and won an \$84,456 judgment in a lower court. Bowman’s lawyer tried to convince the court that Monsanto bullies farmers through patent law. Justice Elena Kagan did ask Monsanto attorney Seth Waxman about the ubiquity of Monsanto's GE seeds, saying, “Your position has the capacity to make infringers out of everybody.” (“High court seems to favor Monsanto in patent case,” by Mark Sherman, San Francisco Chronicle, Feb. 19, 2013; www.sfgate.com/news/politics/article/High-stakes-fight-over-soybeans-at-high-court-4287317.php 3/3; “Supreme Court: Justices seem skeptical about soybean farmer's challenge of biotech patents,” by Jeremy P. Jacobs, E&E, Feb. 19, 2013; www.eenews.net/public/Greenwire/2013/02/19/3; “Monsanto's lawsuit win poses issues for Mainers,” by Dennis Hoey, Portland Press Herald, May 14, 2013; www.pressherald.com/news/monsantos-lawsuit-win-poses-issues-for-mainers_2013-05-14.html)

In its report “**Seed Giants vs. U.S. Farmers**,” the Center for Food Safety investigates how the current seed patent regime has led to a radical shift to consolidation and control of global seed supply and how these patents have abetted corporations, such as Monsanto, to sue U.S. farmers for alleged seed patent infringement.

Three agrichemical firms – Monsanto, DuPont and Syngenta – control 53 percent of the global commercial seed market, says the report; and the top 10 seed firms, with a majority stake owned by U.S. corporations, account for 73 percent.

The report tells the history of seed and plant breeding and U.S. intellectual property policies and outlines how the current intellectual property regime has resulted in seed industry consolidation, rising seed prices, loss of germplasm diversity and strangling of scientific inquiry.

It documents lawsuits and threats of lawsuits by the largest agrichemical companies in the world against U.S. farmers for alleged infringement of seed patents. As of December 2012, says the report, Monsanto had filed 142 alleged seed patent infringement lawsuits involving 410 farmers and 56 small farm businesses in 27 states. Sums awarded to Monsanto in 72 recorded judgments total \$23,675,820.99, it reports.

The draconian technology agreements that farmers using GE seeds must sign are now being used on non-GE seeds, such as Seminis tomato seed packets that notify purchasers that upon opening the packet, they are engaging into a contract with the company and cannot save and replant seeds or use them for any kind of research.

The report provides policy options to help protect farmers and food resources and to generate seed innovation and research through fair access to seeds and other resources. It recommends that seeds be understood to be part of the public domain and be protected in the public trust; that the Patent Act be amended to exclude sexually reproducing plants from being patented; and that existing plant protection measures as codified in the Plant Variety Protection Act (PVPA) are sufficient. Under the PVPA, Certificates of Protection awarded to new plant varieties balance marketing rights of the breeder with rights of farmers to save seed and of researchers to continue to innovate and improve varieties.

The report recommends passing state and local legislation to control or limit intrusive and aggressive alleged patent infringement investigations of farmers and farm businesses. The report is posted at

www.centerforfoodsafety.org/wp-content/uploads/2013/02/Seed-Giants_final.pdf.

An article in The Organic & Non-GMO Report reviews the **loss of seed options for farmers since the introduction of GE crops**. For example, researchers who analyzed seed catalogs found that in Spain, with wide adoption of GE corn, seed choices declined and increasingly involved GE varieties, while German, Australian and Swiss catalogs offered the same or more corn seed varieties than in the 1990s; GE corn is banned from cultivation in these countries. In the United States, non-GE corn seed varieties decreased by two-thirds between 2005 and 2010, while GE varieties increased by 6.7 percent. Not only are fewer non-GE varieties of major crops available, but those still on the market are old and have limited disease resistance. The situation is similar in South America, South Africa, India and other countries. In the case of sugar beets, all varieties are now Roundup Ready GE. Low levels of GE contamination in U.S. organic corn seed and in Canadian canola seed have put seed supplies for those industries at risk, as well. The article notes small but increasing efforts to breed non-GE varieties. (“Farmers’ seed options drastically reduced in GMO-producing countries,” by Ken Roseboro, The Organic & Non-GMO

Report, Feb. 28, 2013; www.non-gmoreport.com/articles/march2013/farmers-seed-options-GMO-producing-countries.php)

According to the ETC Group (Action Group on Erosion, Technology and Concentration), the six largest corporations involved in agricultural biotechnology – **Monsanto, DuPont, Syngenta, Dow, Bayer and BASF** – have formed a “charity cartel” promising, among other things, cheap, post-patent GE seeds. Their alleged goal, says ETC, is “to mollify antitrust regulators and soften opposition to transgenics while advancing their collective market control.” The six companies account for 76 percent of total private R&D expenditures in both the seed and agrochemical sectors, says ETC, and the three largest have 53.4 percent of commercial seed sales. The ETC Group says the world needs agricultural biodiversity to achieve the Right to Food and to respond to the uncertainties of climate change. (“Gene Giants Seek ‘Philanthropopoly’,” ETC Group, March 2013; www.etcgroup.org/content/Ecomm-gene-giants-seek-philanthropopoly)

An article called “**Regulators Discover a Hidden Viral Gene in GMO Crops**,” published by Independent Science News (ISN), addressed a recent scientific publication showing that regulators have repeatedly approved crops carrying a transgenic viral sequence that they did not realize also encoded part of a viral gene. The “hidden” viral gene, called Gene VI, resides within a DNA sequence called the cauliflower mosaic virus (CaMV) 35S promoter. The CaMV 35S promoter is almost ubiquitous in commercial GE crops. The ISN article proposed that Gene VI of CaMV represents a potential threat to crop and human health.

In response to the article, the European Food Safety Authority (EFSA) and Food Safety Australia New Zealand (FSANZ) defended their risk assessments and conclusions. Independent Science News, in turn, found the EFSA and FSANZ responses to be scientifically misleading and inadequate to meet public interest concerns.

For example, FSANZ says, “Human exposure to DNA from the cauliflower mosaic virus and all its protein products through consumption of conventional foods is common and there is no evidence of any adverse health effects.” ISN says it is unaware of any controlled experiments of feeding CaMV DNA or its viral proteins to experimental animal or human subjects, or of epidemiological data linking CaMV consumption with human health status.

FSANZ also says, “Genes from the virus in question have been used safely in transgenic plants for almost 30 years.” ISN says that “safe history of transgenic plant use is a matter of speculation.” Direct animal feeding studies are contradictory, with multiple reports of harm to animals consuming transgenic crops, and epidemiological studies on real populations are lacking. Reports by Ewen and Pusztai in 1999 attributed some intestinal abnormalities in rats fed GE potatoes to something other than the transgenic protein itself. These researchers speculated that part of the DNA construct (which included the CaMV 35S promoter) was a potential cause. “It is possible that what Ewen and Pusztai observed is explained by the presence of Gene VI fragments,” ISN says.

“Genes from the virus in question have been extensively characterized,” FSANZ continues, with ISN responding that characterizing CaMV and its genome is an active scientific field with ongoing research and that a new function for Gene VI was recently identified.

“There is no credible scientific evidence suggesting its [Gene VI] use poses a risk to human health or safety,” says FSANZ. ISN says 20 years of research describes Gene VI as a plant toxin; as interfering with host plant defenses; as interfering with the basic mechanism of protein production (which is common to humans and plants); and as disrupting RNA silencing (also a conserved biological mechanism shared by animals and humans).

Gene VI “belongs to a plant virus (Cauliflower Mosaic Virus) that cannot infect animals or humans,” says EFSA; ISN replies, “CaMV is not a normal human pathogen; however, the more relevant scientific question is whether CaMV can reproduce itself inside individual human cells and interfere with their normal functioning. To our knowledge, there have been no attempts made to infect animal cells or human cells with CaMV in a scientific experiment ... It is known, however, that parts of CaMV are functional in mammals. The CaMV 35S promoter is active in hamster and human cell lines.”

Gene VI “presents no threat to human or animal health,” EFSA concludes. It is false, responds ISN, “to equate the hazards of a living, replicating viral infection with the hazards from a gene fragment found (and potentially highly expressed) in every cell of a GMO food plant.” Gene VI DNA may, says ISN, produce either a simple viral protein fragment or a chimeric (part-viral) protein; neither would be equivalent in structure, cellular location or quantity, to any protein produced by the virus. Also, while the natural hosts of CaMV are plants in the brassica family, Gene VI is found in GE soybeans, cotton, maize and canola. Only the latter is a brassica, so “the genetic and physiological context of transgenic Gene VI is typically not equivalent to a natural viral infection.”

Gene VI in nature is produced in the context of an active viral infection process, says ISN; but if Gene VI is expressed in a transgenic plant, it will mostly occur in uninfected cells where it will not be interacting with other CaMV proteins. In the natural infection process, viral proteins are commonly modified by viral infection or transport each other to different cellular compartments.

“Thus,” concludes ISN, “one can reasonably propose, that in the presence of the virus itself, intact Gene VI may behave even radically differently compared to a transgenic protein fragment encoded in a CaMV promoter. It may therefore pose a substantially different risk. For both EFSA and FSANZ to use the implied safety of CaMV (which as mentioned has never been established) to infer the inherent safety of Gene VI fragments is therefore misleading.”

The figwort mosaic virus (FMV) 35S promoters may pose the same or greater risks, says ISN, since this virus has never been part of the human diet; so ISN recommends a recall of all Gene VI-containing GM crops; a ban on future use of viral sequences in commercial GMOs; and meaningful GMO monitoring. (“Is the Hidden Viral Gene Safe? GMO Regulators Fail to Convince,” by Jonathan Latham and Allison Wilson, Independent Science News, Feb. 27, 2013; <http://independentsciencenews.org/commentaries/gmo-regulators-hidden-viral-gene-vi-regulators-fail/>)

Researchers say government regulators are not considering risks of **new kinds of GE plants** – those designed to **make double-stranded RNA (dsRNA)**. While most GE plants are designed to make new proteins, these new GE plants make dsRNA in order to alter the way genes are expressed. Research has shown that dsRNAs can transfer from plants to humans and other animals through food. They may also be transferred into people by inhaling plant dust (e.g., breathing flour from GE grains while baking) or by absorption through the skin.

The researchers reviewed decisions of three food or environment safety regulators with jurisdiction in Australia, Brazil and New Zealand on three kinds of GE plants that do or may produce new dsRNA molecules and were intended for use as food or animal feed.

"Each regulator found reasons not to ask the product developers to specifically test for effects from dsRNA, and thus relied on assumptions rather than testing to determine safety," said researcher Sarah Agapito-Tenzen.

"To our surprise, we found that there are no internationally agreed protocols or even guidelines for how to conduct a thorough and proper risk assessment on products with new dsRNA molecules in them," said researcher Prof. Jack Heinemann. To fill this gap, the researchers developed the first formal assessment procedure for dsRNA-based products, whether living GE organisms or agents sprayed onto plants. ("New kinds of GM plants and pesticides not being assessed for safety," press release, Centre for Integrated Research in Biosafety, University of Canterbury, New Zealand European Network of Scientists for Social and Environmental Responsibility, March 21, 2013; www.ensser.org/; "A comparative evaluation of the regulation of GM crops or products containing dsRNA and suggested improvements to risk assessments," by Jack A. Heinemann et al., Environment International, Vol. 55, May 2013, pp. 43–55; www.sciencedirect.com/science/article/pii/S0160412013000494)

Monsanto is threatening legal action against the European Food Safety Authority (EFSA) because the EU's central science agency published Monsanto data relating to its risk assessment of Monsanto's GE NK603 corn – the variety that Séralini et al. linked to increased cancer risk (published in Food and Chemical Toxicology last September) – findings the EFSA debated. The EFSA said it published the data about NK603 to enhance transparency in the risk assessment process and in its decision-making processes.

The NK603 data are available at

www.foodnavigator.com/Legislation/Monsanto-threatens-to-sue-EFSA-over-publication-of-maize-GM-data?utm_source=copyright&utm_medium=OnSite&utm_campaign=copyright ("Monsanto threatens to sue EFSA over publication of maize GM data," by Shane Starling, Food Navigator, March 8, 2013; <http://www.foodnavigator.com/Legislation/Monsanto-threatens-to-sue-EFSA-over-publication-of-maize-GM-data>)

Claims of confidential business information (CBI) often marginally protect commercial interests while unnecessarily **limiting transparency and public peer review** of data submitted to regulatory authorities, says K.M. Nielsen, a member of the GMO panels of the European Food Safety Authority and the Norwegian Scientific Committee for Food Safety. Also, CBI proprietary claims restrict access to transgene sequence data, transgenic seeds and other GMO materials,

which precludes development of independent research and monitoring, the author continues, adding, “In the long run, such claims are counterproductive to the safe and responsible commercial development of GM technology as they hinder the accumulation of biosafety data in the open, peer-reviewed literature, which is needed for both public and scientific consensus-building on safety issues and for improvements to the risk-assessment procedure itself. The increasing recognition of conflicts of interest as an invariable part of market-oriented safety-data production, interpretation, and risk communication also calls for transparency and open access to safety-related data and assessments.” (Biosafety Data as Confidential Business Information, by K. M. Nielsen, PLoS Biol 11(3), March 5, 2013; www.plosbiology.org/article/info%3Adoi%2F10.1371%2Fjournal.pbio.1001499;jsessionid=6CC6CD75FF933E6E5A66B1EEE3498DF0)

Irish plant scientist Ewen Mullins is testing a **GE potato**, A15-031, for resistance to late blight, as aggressive strains of the disease have hit Ireland’s crop for the past five years. The variety uses genes from some half-dozen related wild potatoes – so this is a “cisgenic” rather than “transgenic” plant; the latter uses genes from unrelated species. If the potato tests well and gets EU approval, Wageningen University, the Dutch university that developed it, will license it to companies to introduce on a nonexclusive basis to avoid monopoly control and will make the potatoes available free in developing countries with humanitarian need. Mullins is testing effects of the potato on soil organisms and is checking the ability of the blight fungus to evolve resistance to the variety. Irish gardeners who tested non-GE potato varieties with **non-GE blight resistance**, from the Sarvari Research Trust in North Wales, found 90 percent resistance among these. (“Genetically modified potatoes are studied, criticized in Ireland,” by Adrian Higgins, The Washington Post, March 16, 2013; www.washingtonpost.com/local/genetically-modified-potatoes-are-studied-criticized-in-ireland/2013/03/16/8035108c-8756-11e2-9d71-f0feafdd1394_story.html)

The Resistance and Solidarity against Agrochemical TNCs (Resist Network), a coalition of farmers, scientists and consumers, is asking Philippine President Benigno Aquino III not to make **GE golden rice** available there. Golden rice contains beta carotene and is touted as the solution to vitamin A deficiency. Resistance members say the product has not gone through safety testing or toxicity studies – or if it has, studies are not available to the public. Also, eating diverse foods is a better way to address malnutrition than eating a single crop – and the Philippines has abundant spinach, sweet potatoes, carrots and other vitamin A-rich foods. Even without Golden rice, vitamin A deficiency among 6-month- to 5-year-old children decreased from 40.1 percent in 2003 to 15.2 percent in 2008. (“Scientists, farmers, consumers shun golden rice,” by Ronalyn V. Olea, Bulatlat.com, March 18, 2013; <http://bulatlat.com/main/2013/03/18/scientists-farmers-consumers-shun-golden-rice/>)

The U.S. **government’s oversight of GE plants and animals is based on old laws** that were written for other purposes and don’t necessarily apply to these new organisms. So GE salmon, which incorporates a growth hormone from Pacific salmon, is regulated by the FDA’s Food, Drug and Cosmetic Act of 1938 as a “new animal drug.” Cotton containing the gene to produce the insecticidal Bt toxin is regulated by the EPA under the Federal Insecticide, Fungicide and Rodenticide Act of 1972. The USDA oversees many GE crops as “potential plant pests” under the Federal Plant Pest Act of 1957 because they contain parts of viral genes to activate inserted

genes, and bacterial DNA is used to insert the target gene(s) into the plant. The EPA and USDA review Bt corn, and FDA assesses it voluntarily, but most GE crops need no FDA safety review. The FDA considers GE plants safe if they are “substantially equivalent” to non-GE plants and contain no new allergens or toxins. Regulations don’t address the problem of herbicide-resistant weeds or movement of engineered genetic material into conventional or wild plants. With the ability to make cis-genic GE plants (without moving foreign genetic material into them but by manipulating existing genes within the plant), regulations are even more out-of-date. (“Genetic modification strains old food and drug laws,” By Rosie Mestel, Los Angeles Times, March 23, 2013;

www.latimes.com/news/science/la-sci-gmo-regulations-20130324,0,7244741.story)

Trader Joe's, Whole Foods, Bi-Rite Market in San Francisco and the discount chain Aldi say they will not sell AquaBounty’s **GE AquAdvantage salmon**, expected to be approved soon by the FDA. The FDA said in December 2012 that the salmon would not significantly impact the environment. Meanwhile, The Guardian reports that U.S. company AquaBounty Technologies is raising its GE salmon in a leased, “rundown shed at a secretive location in the Panamanian rainforest miles inland and 1,500m above sea level.” The engineered Atlantic salmon, raised from eggs imported from Prince Edward Island, includes growth genes from a Chinook salmon and a seal eel, says The Guardian. The same location produces non-GE trout for U.S. markets. The Guardian adds that some 30 other species of GE fish as well as GE cows, chickens and pigs are being developed.

(“Bay Area grocery stores pledge not to sell genetically modified fish,” by Heather Somerville, San Jose Mercury News, March 20, 2013;

www.mercurynews.com/business/ci_22828193/grocery-stores-pledge-not-sell-genetically-modified-fish;

“GM salmon's global HQ – 1,500m high in the Panamanian rainforest,” by Suzanne Goldenberg, The Guardian, April 24, 2013;

www.guardian.co.uk/environment/2013/apr/24/genetically-modified-salmon-aquabounty-panama-united-states)

In March 2013, President Obama signed into law the Consolidated and Further Continuing Appropriations Act, 2013, a bill with a “Farmers Assurance Provision” rider that would require USDA to ignore any court ruling that would halt planting of new GE crops. The so-called “**Monsanto rider**” or “**Monsanto Protection Act**,” Section 735 refers to GE crops for which USDA issued approval that a judge later overturned, such as GE alfalfa and sugar beets. Growers can now plant and sell these crops even before USDA’s environmental impact studies are done. The law to which the rider is attached is valid until September. Andrew Kimbrell of the Center for Food Safety calls this corporate welfare for biotech companies. Food Democracy Now! collected and delivered more than 250,000 signatures asking President Obama not to sign the bill because of the Monsanto Protection Act. Food Democracy Now! says the rider strips judges of their constitutional mandate to protect Americans’ health and the environment while opening the floodgates for planting new, untested GE crops. The organization notes that Sen. Roy Blunt (R-MO), who put the rider into HR 933, received \$74,250 from Monsanto during the 2012 election cycle. Bloomberg quotes Josh Sewell, policy analyst for Taxpayers for Common Sense: “This was done in secret, behind closed doors, and then it shows up in a bill right before a vote. This is just not how things should be getting done.” (“Monsanto Provision Tucked in Spending Bill Draws Critics,” by Alan Bjerga and Derek Wallbank, Bloomberg, Apr 2, 2013;

www.bloomberg.com/news/2013-04-02/monsanto-provision-tucked-in-spending-bill-draws-critics.html; “Monsanto Teams up with Congress to Shred the Constitution,” by Michele Simon, Appetite for Profit, March 25, 2013; www.appetiteforprofit.com/2013/03/25/monsanto-teams-up-with-congress-to-shred-the-constitution/; “Monsanto's Hometown Paper Takes Missouri Senator Roy Blunt to Task for Monsanto Protection Act,” Food Democracy Now!, April 11, 2013; www.fooddemocracynow.org/blog/2013/apr/11/monsantos_hometown_paper_spanks_senator_blunt/)

GeneWatch UK has asked the European Food Standards Authority (EFSA) to suspend adoption of new guidance rules for **release of GE animals into the environment** while the European Ombudsman investigates EFSA. The investigation follows a complaint by GeneWatch UK about conflicts of interest on EFSA's Working Group on GM insects, and EFSA's failure to consult on risks of allowing GE insects to enter the food chain. Releasing GE insects may affect birds or bats; may increase other types of pests; and the insects may enter the food chain, dead or alive, in or on produce. The draft guidance rules would also cover GE fish and GE pesticide-resistant bees.

EFSA's Working Group on GM Insects, which helped develop the proposed rules, includes an Oxford University researcher who is funded by the UK Biotechnology and Biological Sciences Research Council to work with UK company Oxitec on developing GM insect regulations. Oxford University is an investor in the company and would profit from commercial releases of GE insects. At least four other members of the Working Group have links with Oxitec, and two others work for the International Atomic Energy Agency's program on the use of GE insects.

Oxitec has released millions of GE mosquitoes in experiments in the Cayman Islands, Malaysia and Brazil and is developing GE agricultural pests, including GE olive flies, fruit flies, cabbage moths and cotton bollworms. Most of Oxitec's senior staff, some board members and consultants have worked for multinational agriculture company Syngenta, which has funded some of its research. (“GeneWatch UK PR: GM insects in food, environment: European Ombudsman investigates conflicts-of-interest at EU regulator,” GeneWatch, March 26, 2013; [www.genewatch.org/article.shtml?als\[ciid\]=492860&als\[itemid\]=572226](http://www.genewatch.org/article.shtml?als[ciid]=492860&als[itemid]=572226))

The population of North American **monarch butterflies** in Mexico last winter was the lowest ever measured and was 59 percent below the previous winter and 18 times smaller than in 1996. University of Kansas insect ecologist Orley Taylor says one factor is increased **Roundup herbicide applications on Midwestern GE corn and soy** land and the resulting loss of milkweed, on which monarchs depend. The demand for ethanol is another factor – the 25.5 million-acre increase in land growing these crops has cut into almost 10 million acres of Conservation Reserve Program land, as well as marginal land and field edges that previously supported milkweed. Taylor suggests that gardeners plant wildlife habitats, but admits this is just a partial solution. (“Tracking the Causes of Sharp Decline of the Monarch Butterfly,” by Richard Conniff, Yale Environment 360, April 1, 2013; <http://e360.yale.edu/content/print.msp?id=2634>)

Okanagan Specialty Fruits of British Columbia has **engineered ‘Granny Smith’ apples** to prevent the chemical reaction responsible for browning when apples are cut or bruised. Its ‘Arctic’ apples are close to final approval for sale in U.S. markets. Genetic material was inserted

using the bacterium *Agrobacterium tumefaciens* to silence the biochemical pathway leading to browning. The U.S. Apple Association says any commercial benefit from the GE apple does not justify the “costs to the industry in the form of labeling and marketing efforts that would be required to differentiate conventional apples from the GE apples.” The association is also concerned about pollen transfer from GE trees to non-GE and organic crops. (“Engineered Apples Near Approval,” by Craig Bettenhausen, Chemical & Engineering News, April 8, 2013; cen.acs.org/articles/91/i14/Engineered-Apples-Near-Approval.html)

Fall 2013

The Good News

MOFGA member Michael Zuck will offer a class called “**Growing Winter Greens in the Greenhouse: A Simplified Approach**” through Bangor Adult Education, Bangor High School, on Mondays from 6 to 8 p.m., from Oct. 28 through Nov. 25. This class will detail a new technique for organically producing lettuce, spinach, arugula, kale and Asian greens in sub-irrigated pots in a lightly heated winter greenhouse. The growing system has been developed at the former Everlasting Farm in Bangor and allows for continuous production of multiple crops over a 20-week season starting in mid-October. The class will pay careful attention to each detail of the growing system, and will incorporate the fundamentals of sustainable greenhouse operation. The final class will be a field trip to see the greens growing operation in full swing. Subject to meeting minimum enrollment; see <http://bangor.maineadulted.org/>

Maine Organic Milling, a farmer-owned cooperative feed grain mill in Auburn, Maine, **recently hired Charlie Lemons to be its general manager**. Lemons moved to Maine from Arkansas, where he was operations manager in charge of production, quality, safety and process engineering at DeWafelbakkers, a food processing company in Little Rock. Lemons’ extensive background in manufacturing and management will help Maine Organic Milling improve operating efficiencies at the mill to lower costs and better serve Maine’s organic livestock farmers. For more about the Maine Organic Milling cooperative, see www.maineorganicmilling.com.

In our spring 2013 MOF&G **farm hack** article, we reported, “Some participants mentioned **Colin Caissie** of Whitefield, Maine (Colin@longhopefarm.com, 549-3338), who custom builds basket weeders, root washers, and modifies and repairs existing cultivation and irrigation equipment for small farmers.” Caissie tells us that he has since “gone into production” of the **root washers**. His reasonably priced unit saves shipping costs relative to other suppliers. Locally built and made with locally obtained materials, it has a sustainable, wooden base frame instead of a welded aluminum channel; a larger, more durable chain that resolves chronic chain slippage problems with some other units; is variable speed; and has replaceable components. Caissie even offers drawings so that a customer could make a new wooden base after 10 years of use in the weather. Caissie also makes pen dollies for moving poultry pens; a chili roaster; a centrifuge control panel; and probably more!

Producers switching to organic crops can get premium prices and build healthy soil and sequester carbon, making **organic agriculture useful for dealing with climate change**. So says a study published in *Crop Management*, based on results from the Long-Term Agroecological Research (LTAR) Experiment, one of the longest running replicated comparisons of organic and conventional agriculture in the country, begun in 1998.

“Farmers interested in transitioning to organic production will be happy to see that, with good management, yields can be the same, with potentially higher returns and better soil quality,” says project leader Kathleen Delate, agronomy and horticulture professor at Iowa State University.

The ISU experiment showed that some of the biggest changes over time were in soil quality, particularly once the system was established. Soils in the organic plots (three- and four-year rotations of corn, soybean, oats and alfalfa) were significantly better than in plots using a conventional two-year rotation of corn and soybeans. The organic plots had up to 40 percent more biologically active soil organic matter. Organic soils also had lower acidity and more carbon, nitrogen, potassium, phosphorous and calcium.

Healthy soils hold more water and improve water infiltration, increasing a farm’s resilience to drought, heavy rainfall and extreme weather. Farming practices that build soil health also increase carbon storage in soil, called carbon sequestration, which buffers climate change and contributes to water quality.

The LTAR, located on 17 acres, compares four crop rotations using identical varieties repeated four times in 44 plots. The conventional rotation received synthetic nitrogen, herbicides and insecticides at ISU recommended rates. The organic corn plots received composted manure from a local chicken operation. Weeds are managed by timely tillage, longer crop rotations, cover crops and allelopathic chemicals from rye and alfalfa.

Corn and soybean yields were statistically equivalent in organic and conventional systems during both the transitional (1998-2001) and established (2002-2010) phase of the experiment. Yields for organic oats and alfalfa exceeded county averages.

Based on plot-level data, organic crops earned roughly \$200 more per acre over the 13 years of the study due to premium market prices and reduced input costs. In 2010, for example, an acre of land planted with the four-year organic rotation returned \$510, while an acre planted with conventional corn-soybean returned \$351.

On average, labor requirements doubled for organic systems. No significant difference occurred in the number of crop pests.

The results suggest that skilled management practices can overcome the need for synthetic inputs, ISU says. (“Iowa State study shows soil-building benefits of organic practices,” Leopold Center for Sustainable Agriculture, May 23, 2013; www.leopold.iastate.edu/news/05-23-2013/soil-building-benefits-organic-practices; Peer-reviewed study: “The Long-Term Agroecological Research (LTAR) Experiment supports organic yields, soil quality and economic performance in Iowa,” by Kathleen Delate et al., *Crop Management*, April 29, 2013;

<http://www.plantmanagementnetwork.org/pub/cm/symposium/organic/farm/LTAR/>; Details about the project are posted at www.leopold.iastate.edu/long-term-agroecological-research)

A nationwide survey of more than 750 farmers in 36 states by USDA's Sustainable Agriculture Research and Education program confirms that farmers are seeing multiple **benefits from cover crops**, including the following:

- During the fall of 2012, corn planted after cover crops had a 9.6 percent increase in yield compared to side-by-side fields with no cover crops; soybeans yielded 11.6 percent more following cover crops.
- In the hardest hit drought areas of the Corn Belt, yield differences were even larger, with an 11.0 percent yield increase for corn and a 14.3 percent increase for soybeans.
- Surveyed farmers are rapidly increasing acreage of cover crops used, with an average of 303 acres of cover crops per farm planted in 2012 and with farmers intending to plant an average of 421 acres of cover crops in 2013. Total acreage of cover crops among farmers surveyed increased 350 percent from 2008 to 2012.
- Farmers identified improved soil health as a key overall benefit from cover crops. Others were reduced soil compaction, improved nutrient management, and reduced soil erosion.
- Farmers are willing to pay a median amount of \$25 per acre for cover crop seed and an additional \$15 per acre for establishment costs (either for their own cost of planting or to hire a contractor to do the seeding).
- Most farmers (72 percent) plant winter cereal grains as a cover crop, while 62 percent choose brassicas and 58 percent, legumes. Roughly one-third of respondents plant multi-species mixes, which can fix nitrogen, scavenge nutrients and break up hard pan; most plant cover crops to reduce soil compaction and erosion; more than 40 percent plant cover crops primarily for nitrogen scavenging benefits.

Perhaps most importantly for producers, respondents reported increases in 2012 cash crop yields in fields where they used cover crops – an average corn yield of 126.2 bushels per acre after cover crops vs. 115.1 bushels per acre without cover crops. The 2012 drought profoundly impacted corn yields in much of the country. Proponents of cover crops note that water held in the soil by shading from cover crops, and the additional moisture-holding capacity of soil in which long-term cover cropping and other conservation practices have increased soil organic matter, likely accounted for much of the yield gain where cover crops were planted. (“New USDA/SARE Survey Shows Benefits of Cover Crops,” National Sustainable Agriculture Coalition, July 9, 2013; http://sustainableagriculture.net/blog/usda-cover-crop-survey/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+Sustainable+AgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29)

Deepika Kundaji and her husband, Bernard Declercq, grow 90 varieties of vegetables for seed conservation at their 7-acre Pebble Garden, once a degraded piece of land in Auroville, India. Reclamation involved planting trees and building soil by layering wet acacia leaves, soil and urine-soaked charcoal, reports Anupama Chandrasekaran. These gardeners are especially interested in crops that **tolerate adverse climate conditions**, including a drought-resistant eggplant variety and Malabar spinach. Growing diverse crops is a traditional way people have dealt with variable weather, says Kundaji. Another grower is using permaculture techniques (including multicropping rice, bananas and vegetables) in case a pest attacks one crop or rains

are late. Still another has planted trees and created catchment ponds to fill aquifers. (“For Farmers Fearing Drought, Auroville Offers Some Lessons,” by Anupama Chandrasekaran, The New York Times, May 30, 2013;

<http://india.blogs.nytimes.com/2013/05/30/for-farmers-fearing-drought-auroville-offers-some-lessons/>)

The Union of Concerned Scientists (UCS) has launched its **vision for healthy farms** that make agriculture work for people and the environment – rather than wasting scarce water, reducing biodiversity, contributing to climate change and polluting ground and surface waters. The work of many farmers and scientists “has resulted in cumulative knowledge that demonstrates that farming based on ecological principles, or agroecology, can be highly productive and can greatly reduce our environmental impact, while improving life for farmers and farming communities,” says UCS. The UCS recommends four major changes: Use longer crop rotations that greatly reduce the need for pesticides and synthetic fertilizers, recycle nutrients, increase biodiversity and protect the water and air; see the farm as part of a larger, biodiverse landscape that protects the land; grow cover crops when cash crops are not growing; and integrate livestock and crops. Read more at

<http://blog.ucsus.org/ucs-vision-for-healthy-farms-in-the-21st-century-agroecology-has-the-answers-12>

Maine’s Own Organic Milk Company (MOOMilk) completed its third round of investment funding in May, totaling \$3,900,000, and reorganized its board of directors.

MOOMilk was formed in 2009 by 10 Maine organic dairy farmers after HP Hood terminated their supply contract. Unable to find another processor, they and a small group of early supporters, including MOFGA, Maine Farm Bureau and local investors, started the company. MOOMilk now includes 12 Maine family farms and has increased its distribution to more than 200 retail stores in Maine, Massachusetts and Rhode Island and to organic ice cream producers in Connecticut, New York, Maine and Rhode Island.

The company has appointed representatives of its three major investors to its board. New investor Norman Cloutier, founder and former CEO and chairman of United Natural Foods, Inc., joins Steve Ruchefsky, representative of early investor Donald Sussman, and Ron Phillips of Coastal Enterprises Inc. as outside directors. CEO Bill Eldridge and three farmer members complete the board.

Cloutier also joined the company’s executive committee to oversee development of marketing, production and distribution programs to support MOO’s introduction of new products and expansion into new markets. Following his retirement in 1999 from United Natural Foods after 24 years, Cloutier founded Fairfield Farm Kitchens in Brockton, Mass., which he later sold. Cloutier and his wife, Wendy, now operate Schoolhouse Farm in Tamworth, N.H., where they raise registered Icelandic sheep and produce organic alfalfa hay and related products.

Eldridge says the new investments and additions bring “both financial stability as well as the opportunity to grow the business throughout New England. While sales have more than doubled over the past year and a half, there still exists a huge potential in southern New England ...

Investing in the markets in support of this growth will firmly establish MOO as New England's premier local organic milk company.”

“From day one, MOOMilk has taken an innovative approach to putting the future of dairy farming back in the hands of family farmers,” says Sussman, an early supporter of the company and owner, with Congresswoman Chellie Pingree, of Turner Farm, an organic farm on North Haven. “I invested in MOO because I believe in Maine farmers and the healthy food, community pride and economic growth that comes from all their hard work.”

Ron Phillips, CEO of CEI, the Wiscasset-based community development and investment organization, says, “MOO exists today because of the resiliency of the Maine dairy farmer, the persistence of its board and staff to overcome the odds in a tough economy, the support of retailers and consumers to carry and purchase the high quality organic milk product and, most importantly, the patience of a group of social investors to hang in when the odds might say otherwise.” (“Maine’s Own Organic Raises \$3.9MM – Reorganizes Board of Directors,” press release, Maine’s Own Organic Milk Co., May 28, 2013; www.moomilkco.com)

Nebraska farmer Prescott Frost is trying to breed a cow for the **grass-fed beef industry** that can thrive without chemical pesticides, antibiotics, hormones and grain, in an area that gets less than 20 inches of rain per year, and to market the artisanal meat. Frost is already marketing his and others’ organic, grass-fed ground beef, hot dogs and some steaks through an Internet club at PrescottFrost.com. Raising a cow on grass in Nebraska takes two or more years, while grain-fed cows are ready for slaughter at 14 to 18 months. (“Where Corn Is King, a New Regard for Grass-Fed Beef,” by Kathryn Shattuck, The New York Times, June 17, 2013; www.nytimes.com/2013/06/18/us/for-ranchers-an-uncommon-quest-for-grass-fed-beef.html?_r=0)

With help from a grant from the Waldo County Fund of the Maine Community Foundation (www.mainecef.org), the Volunteer Regional Food Pantry (VRFP) in Unity offered a **chicken husbandry class** in May. VRFP classes are coordinated with partners to build self-sufficiency, pride and homesteading skills (such as gardening, canning and seasonal cooking) among clients. The funds were used to provide a starter flock of 12 birds for each family/household. Graduates selected either meat birds or egg layers.

The VRFP is a 501(c)(3) community-operated food pantry providing emergency and supplementary food and services to those at risk of hunger in the Unity, Maine, area. The VRFP seeks to increase quality of life through a focus on food security.

(“Volunteer Regional Food Pantry Receives Grant for Chicken Class,” VRFP press release, June 20, 2013; www.vrfp.org)

Beansprouts Early Learning Childcare Center (beansproutsforme.com), a new **daycare** center in Freeport, will offer local, **organic foods** and will use natural cleaners and ecologically friendly furnishing and supplies as much as possible. (“Organic, chem-free day care sprouts in Freeport,” by Ben McCanna, The Forecaster, July 1, 2013;

www.theforecaster.net/news/print/2013/07/01/organic-chem-free-day-care-sprouts-freeport/164212)

This spring the **Maine Legislature** unanimously approved LD 902, which will **phase out toxic BPA in infant formula and baby food packaging**. The new rules in LD 902 were initiated through a petition signed by 800 Maine citizens concerned about the effects of BPA. The governor allowed the rules to go into effect without his signature. (www.mainelegislature.org/legis/bills/display_ps.asp?LD=902&snum=126)

Research from the School of Medicine at The University of Texas Health Science Center San Antonio indicates that **eating a modest amount of walnuts can protect against prostate cancer**. The study is described in the journal Cancer Investigation. Researchers at the UT Health Science Center injected immune-deficient mice with human prostate cancer cells. Three of 16 mice (18 percent) eating the walnut-enriched diet developed prostate tumors, compared with 14 of 32 mice (44 percent) on the non-walnut control diet. Also, the final average tumor size in walnut-fed animals was roughly one-fourth the average size of the prostate tumors in mice eating the control diet. The mice consumed a diet typically used in animal studies, except with the addition of a small amount of walnuts pulverized into a fine powder to prevent the rodents from eating only walnuts. The walnut portion was equal to a human eating about 2 ounces, or two handfuls, of walnuts daily. Study co-author W. Elaine Hardman, Ph.D., of the Joan C. Edwards School of Medicine at Marshall University, published a study in 2011 that showed fewer and smaller tumors among walnut-fed mice injected with human breast cancer cells. (“Prostate Cancers Are Fewer, Smaller On Walnut-Enriched Diet,”

The University of Texas Health Science Center San Antonio press release, July 17, 2013; The paper appears at <http://informahealthcare.com/doi/abs/10.3109/07357907.2013.800095>.)

On Oct. 17, 2013, from 8:30 to 4:30, the Sustainable Bioplastics Council of Maine will offer a forum entitled Annual Plants to Products Forum: **Growing Biobased Manufacturing Jobs in Rural Maine**. The forum, offered in collaboration with E2Tech, will highlight an innovative process and technology at Old Town Fuel & Fiber, a former paper mill now being used for high-tech manufacture of cellulosic sugars.

Maine is at the cutting edge of an emerging bio-based economy with the capacity to produce plastics, chemicals and fuels from wood chips and agricultural waste rather than petroleum. While biopolymers can be made from an almost unlimited range of natural materials, most bio-based plastic currently available is made from corn from the Midwest – a resource intensive crop, most of which is genetically engineered.

Maine potatoes and woody biomass have the potential to provide safe, sustainable plastics, says Maine’s Environmental Health Strategy Center. Potatoes and wood pulp have all the key properties needed to make bio-plastics and can be more sustainable raw materials than corn.

The Environmental Health Strategy Center (EHSC) is part of the Sustainable Bioplastics Council of Maine, a trade organization of Maine businesses and organizations working to develop a bioplastic manufacturing enterprise in Maine. The Council aims to ensure that the feedstock, manufacturing, marketing, working conditions and ownership of Maine’s biobased plastic businesses are economically, environmentally and socially sustainable.

The EHSC is working to ensure that the development of biobased products in Maine meets the highest standards of sustainability and green chemistry.

"Maine can create new jobs in the emerging biobased economy while helping to end the use of toxic petrochemicals," Mike Belliveau, executive director of the Environmental Health Strategy Center, told The MOF&G. "Industrial corn is a poor substitute for petroleum because of marginal reductions in fossil carbon and the chemical intensity of corn production. In Maine, we can avoid genetically engineered food crops and rely instead on certified sustainably harvested forest products and agricultural waste to replace oil and gas to make environmentally-friendlier biobased chemicals, plastics and fuels."

Belliveau warned, however, that biobased is not enough. "While it's true that renewable resources can help slash fossil carbon, toxic chemicals must be driven out of the market too, not simply made from biomass instead of oil and gas." (See Mike Belliveau, "Bio-based chemicals: When green is toxic," by Mike Belliveau, GreenBiz.com, Feb. 1, 2013; www.greenbiz.com/blog/2013/02/01/biobased-chemicals-when-green-toxic; An informational flyer on biobased materials, "From Plants to Products," is available from the EHSC at www.preventharm.org/Images/137/ehsc%20biomaterials%20factsheet%202012%20V.pdf; FMI: www.preventharm.org/Programs/Healthy-Economy/Sustainable-Bioplastics.php)

New Loan Program for Organic Farmers in Washington County

Beginning this fall, the Sunrise County Economic Council (SCEC) will offer loans from a new Agricultural Microloan Fund for the Washington County agriculture community. Loans for up to \$10,000 will be made to qualifying applicants. Made possible through a generous program-related investment (PRI – a type of low-cost loan) from a local family, microloan funds may be used for equipment, inventory, improvements; creation and/or expansion of value-added products or services; training and education, marketing assistance; energy efficiency improvements; and assistance with forming start-up capital. For more information regarding PRI opportunities or the SCEC AG Microloan Fund, please contact Harold Clossey at 207-255-0983 or hclossey@sunrisecounty.org.

Organic Issues

France wants to **double the area of farmland devoted to organic** agriculture by 2017 by increasing training and research and by encouraging institutional caterers to buy 20 percent of their food as organic. ("France aims to double organic farmland by 2017," By Gus Trompiz, Reuters, May 31, 2013; www.reuters.com/article/2013/05/31/france-organic-idUSL5N0EC33120130531)

The Organic Trade Association has launched the **Global Organic Trade Guide** (www.globalorganictrade.com), a website to help U.S. organic producers and handlers export organic products. It features a Market Data section and a map tool to communicate global

organic trade information in real time. (Press release, Organic Trade Assoc., June 18, 2013; www.ota.com)

Women in Farming

The share of **U.S. farms operated by women** nearly tripled over the past three decades, from 5 percent in 1978 to 14 percent by 2007, according to the USDA Economic Research Service. Although there have always been women farm operators, national-level statistics to track their numbers and examine their characteristics were not available until the Census of Agriculture began asking for principal farm operators' gender in 1978.

Using census data from 1978 through 2007, the report provides detailed information about women farmers and the types of farms they operate. The report defines “women-operated farms” as those whose principal operator – the individual most responsible for the day-to-day decisions of the farm (or ranch) – is a woman. Based on this definition, the analysis showed the following:

- Women-operated farms increased in all sales classes. Between 1982 and 2007, the number of women-operated farms grew from 121,600 to 306,200, with increases in all sales classes (measured in 2007 dollars). In contrast, the number of men-operated farms declined by 220,800, with only the largest and smallest sales classes (\$500,000 or more and less than \$1,000) experiencing growth. Some of the increase in the lower sales classes, however – for both women- and men-operated farms – was due to extensive methodological changes in the Census of Agriculture, introduced over time to include more small farms.
- Most women-operated farms are very small. Since 1982, a majority of women-operated farms have had annual sales of less than \$10,000. Most of the growth in the number of women-operated farms occurred in that sales class, increasing from three-fifths of all women-operated farms in 1982 to three-fourths by 2007. In both years, the share of women-operated farms with sales less than \$10,000 was about 20 percentage points more than the share of men-operated farms with sales that low.
- Five percent of women-operated farms (15,400 farms) had sales of \$100,000 or more in 2007. Most of these farms specialized in grains and oilseeds, specialty crops, poultry and eggs, beef cattle or dairy. The poultry and egg specialization alone accounted for roughly half of women-operated farms with sales of \$1 million or more.
- Nearly half of farms operated by women specialized in grazing livestock. In 2007, 45 percent of women-operated farms specialized in raising beef cattle other than in feedlots (23 percent), horses and other equines (17 percent), or sheep and goats (6 percent). Most of these farms, however, were very small, accounting for only 16 percent of sales by all women-operated farms.
- Women-operated farms specializing in poultry, specialty crops, grains or dairy had the most sales. Although these farms totaled only 21 percent of women-operated farms, they generated 72 percent of sales from all women's farms.

- Counting secondary operators increases the number of women farmers to 1 million. In addition to the principal operator, many farms have one or more secondary operators involved in daily decisions for the farm. When all women operators, principal and secondary, were tallied for the 2007 census, about 1 million were counted as farmers – up from the 306,200 principal operators and totaling 30 percent of all U.S. farmers. Most secondary women farm operators (96 percent) were on farms whose principal operator was a man, generally the woman’s husband.

(“Characteristics of Women Farm Operators and Their Farms,” by Robert A. Hoppe and Penni Korb, USDA Economic Research Service Economic Information Bulletin Number 111, April 2013; www.ers.usda.gov/media/1093198/eib111_summary.pdf)

Milk from organic farms has a lower concentration of elements such as zinc, iodine and selenium than milk produced by conventional farming methods. The discrepancy is due to the absence of mineral substances in the diets of the cows reared organically. According to researchers, animals on organic farms should have their diets supplemented with natural sources of iodine such as seaweed, because iodine is very important for children and pregnant women. (“Organic’ milk is poorer in iodine than conventional milk,” Medical Press, July 4, 2013; <http://medicalxpress.com/news/2013-07-poorer-iodine-conventional.html>; Original study: F. Rey-Crespo, M. Miranda, M. López-Alonso. "Essential trace and toxic element concentrations in organic and conventional milk in NW Spain". Food and Chemical Toxicology 55 (2013) 513–518; <http://medicalxpress.com/news/2013-07-poorer-iodine-conventional.html>)

Food Safety

On January 4, 2011, Congress passed the **Food Safety Modernization Act (FSMA)**, which, once in effect, should improve government regulation of imported and domestic food. But since its passage, FDA has failed to meet the mandatory implementation deadlines Congress required. On April 22, 2013, after a lawsuit by the Center for Food Safety (CFS), a Federal Court ruled that FDA had violated the law by missing FSMA deadlines and ordered FDA to propose new deadlines for completion. FDA still refused to develop a closed-ended timeline, so on June 21, the Court issued an injunction ordering that all FSMA regulations must be final by June 30, 2015, and that all draft regulations must be released to the public by November 30, 2013, for public comment. (Center for Food Safety press release, June 25, 2013; www.centerforfoodsafety.org)

Consumer Reports tested 257 samples of ground turkey products and found potential disease-causing organisms in most, many of which proved resistant to more than three antibiotic drug classes. “Our findings strongly suggest that there is a direct relationship between the routine use of antibiotics in animal production and increased **antibiotic resistance in bacteria on ground turkey**,” says Consumer Reports. “It’s very concerning that antibiotics fed to turkeys are creating resistance to antibiotics used in human medicine.” Consumer Reports tested the samples for five bacteria: Enterococcus, Escherichia coli (E. coli), Staphylococcus aureus, Salmonella and Campylobacter. Ninety percent of the samples had one or more of the five bacteria.

Bacteria on ground turkey products labeled “no antibiotics,” “organic” or “raised without antibiotics” were resistant to fewer antibiotics overall than bacteria found on conventional products. Bacteria related to fecal contamination were found on the majority of samples. Sixty-nine percent of ground-turkey samples harbored Enterococcus; 60 percent E. coli; 5 percent Salmonella; and three samples were contaminated with methicillin-resistant Staphylococcus aureus (MRSA). The government allows processing plants to have product contamination rates as high as 49.9 percent. The bacteria Consumer Reports found are killed by thorough cooking, but some can produce toxins that may not be destroyed by heat. Consumer Reports suggests buying turkey labeled “organic” or “no antibiotics,” especially if it also has a “USDA Process Verified” label, which means the agency has confirmed that the producer is doing what it says; considering other labels, such as “animal welfare approved” and “certified humane,” which mean that antibiotics were restricted to sick animals; being aware that “natural” meat is simply minimally processed, with no artificial ingredients or added color, but it can come from an animal that ate antibiotics daily. Furthermore, Consumer Reports says to buy meat just before checking out and place it in a plastic bag to prevent leaks; if cooking meat within a few days, store it at 40 F or below; otherwise, freeze it. (Note that freezing may not kill bacteria.) When cooking ground turkey, use a meat thermometer to ensure it reaches an internal temperature of at least 165 F to kill potentially harmful bacteria. Wash hands and all surfaces after handling ground turkey. Don’t return cooked meat to the plate that held it raw. Refrigerate or freeze any leftovers within two hours of cooking. Consumers Union, the policy and advocacy arm of Consumer Reports, has urged the FDA to restrict the use of antibiotics in food animals since the 1970s. It says the FDA should prohibit antibiotic use in livestock except for the treatment of veterinarian-diagnosed sick animals. (“Consumer Reports Tests: Bacteria on Turkey Raised Without Antibiotics Showed Significantly Less Antibiotic Resistance Than Bacteria on Conventional Turkey,” Consumer Reports press release, April 30, 2013; <http://pressroom.consumerreports.org/pressroom/2013/04/my-entry-6.html>)

Factory farms and industrial livestock producers routinely give healthy animals unnecessary antibiotics to get them to slaughter faster or prevent infection in crowded, stressful and often unsanitary living conditions, says the Environmental Working Group (EWG). In 2011, nearly 30 million pounds of antibiotics were sold for use in food animals – roughly four times the amount sold to treat people. This misuse of antibiotics on factory farms creates an ideal climate for breeding antibiotic-resistant bacteria. When the EWG analyzed U.S. government data for raw meat, it found **high levels of antibiotic-resistant bacteria** on 81 percent of ground turkey, 69 percent of pork, 55 percent of ground beef and 39 percent of chicken breasts, wings or thighs. To avoid some of these potentially deadly bacteria, the EWG suggests opting for organic and meat raised without unnecessary antibiotics when you can. (“Superbugs Invade American Supermarkets,” Environmental Working Group, www.ewg.org/meateatersguide/superbugs/)

Drug-resistant Staphylococcus aureus bacteria associated with livestock has been found in the noses of industrial livestock workers in North Carolina. Researchers

found that multidrug-resistant *S. aureus* was roughly twice as prevalent among individuals exposed to industrial than to antibiotic-free livestock operation environments, and *S. aureus* that were resistant to tetracycline – an antibiotic used in industrial livestock production since the 1950s – were 19 times as prevalent among industrial compared with antibiotic-free livestock operation workers. Previous studies have detected strains of drug-resistant *S. aureus* from livestock among farm workers and in hospital and community settings in Europe, and among industrial livestock operation workers in Iowa. Scientists are concerned that these bacteria could follow a similar trajectory into the community. North Carolina is a major U.S. livestock producer, ranking second behind Iowa in hog production. At industrial livestock operations, animals are grown in large confinement buildings using antibiotics. At antibiotic-free livestock operations, animals are grown without the use of antibiotics, typically outdoors on pasture. *S. aureus* in humans can cause minor to life-threatening skin, bloodstream, respiratory, urinary and surgical site infections. (“Workers at Industrial Farms Carry Drug-Resistant Bacteria Associated with Livestock,” Johns Hopkins Bloomberg School of Public Health press release, July 2, 2013; www.jhsph.edu/news/news-releases/2013/heaney-mrsa-farms.html; Original article: Livestock-Associated Methicillin and Multidrug Resistant Staphylococcus aureus Is Present among Industrial, Not Antibiotic-Free Livestock Operation Workers in North Carolina, By Jessica L. Rinsky et al., PLoS ONE, 2013; 8 (7). www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0067641)

Food Security/Biodiversity

Zakri Abdul Hamid, founding chair of the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), warned about the accelerating **loss of biodiversity on farms** and about corporations' phenomenal economic and political power, at the 7th Trondheim Conference in Norway on May 27.

Zakri said the declining plant and animal biodiversity in the wild is heading toward irreversible environmental tipping points that, “once passed, would reduce the ability of ecosystems to provide essential goods and services to humankind.”

Biodiversity loss on farms, said Zakri, threatens the world's supplies of livestock and crops. Twenty-two percent of domesticated breeds risk extinction, he said – due, in part, to incentives for more uniform breeds from industrialized countries. And crops have suffered a 75 percent loss of genetic diversity in the last century.

Christopher Cook, journalist and author of *Diet for a Dead Planet: Big Business and the Coming Food Crisis*, said, “In their relentless push for market control these corporations, Monsanto, Syngenta and others, often with help from governments, have monopolized and privatized our seed supply – and promoted monoculture farming that has destroyed soils and fed climate change and drought. Biodiversity and economic diversity are linked ...” (“UN: Accelerating Biodiversity Loss a 'Fundamental Threat' to the 'Survival of Humankind',” By Andrea Germanos, *Common Dreams*, May 28, 2013;

www.commondreams.org/headline/2013/05/28-6

In June the Maine Senate and House passed LD 1282, which would have legalized daily sales of less than 20 gallons of clearly labeled, **unlicensed, raw milk**, sold directly by the producer to the customer. On July 8, Gov. LePage vetoed the bill, objecting to sales of unlicensed raw milk products at farmers' markets, and the Maine Senate had insufficient votes on July 9 to overturn the veto. LePage spokeswoman Adrienne Bennett said the governor will propose an "on farm only" bill in the next legislative session.

The vote came after Hancock County Superior Court Judge Ann Murray's April decision that Dan Brown of Gravelwood Farm in Blue Hill was guilty in a summary judgment brought by the Maine Department of Agriculture, Forestry and Conservation for selling milk without a milk distributor's license, operating a food establishment without a license and selling milk that was not labeled on the package as being unpasteurized. He was ordered to stop selling the milk and, later, was ordered to pay \$1,000 in civil penalties and \$132 in court costs.

Brown had argued that a local ordinance allowed him to sell the product directly to consumers and that earlier the Agriculture Department had said he didn't need a license to sell a small amount of milk directly from his home farm stand.

Another bill, LD 1287, passed in both legislative bodies but was carried over to the next legislative session. It would permit "direct sales of farm products between Maine farmers and consumers" and homemade food at "certain events, without being licensed as food establishments."

The Maine House voted 93-49 against LD 475, which would have established the Maine Food Sovereignty Act of 2013. Proponents argued for more self-determination and for healthy, local options rather than food produced by multinational corporations. Opponents said that Maine's farm inspections and licensing help ensure safe food and that limiting Maine's oversight might bring more federal involvement in Maine's food production – something Hickman called "a fear-based argument" that "doesn't hold water." ("Raw milk bills pass House, Senate," by Anne Berleant, *The Weekly Packet*, June 13, 2013; <http://weeklypacket.com/news/2013/jun/13/raw-milk-bills-pass-house-senate/#.Ubry9mSG0wE>; "Maine Judge Sides with State in Raw Milk Sales Dispute," by Susan Sharon, *MPBN*, May 1, 2013; www.mpbn.net/News/MaineNewsArchive/tabid/181/ctl/ViewItem/mid/3475/ItemId/27754/Default.aspx; "Blue Hill farmer faces financial hardship after judges rule against selling unlabeled, unlicensed raw milk," by Mario Moretto, *Bangor Daily News*, May 2, 2013; <http://bangordailynews.com/2013/05/02/news/hancock/judge-rules-against-blue-hill-farmer-selling-unlabeled-unlicensed-raw-milk/>; "Maine House votes against creating food sovereignty act," by Robert Long, *Bangor Daily News*, May 15, 2013;

<http://bangordailynews.com/2013/05/15/politics/maine-house-votes-against-creating-food-sovereignty-act/>; “Blue Hill raw milk seller ordered to pay \$1,000 in fines, court fees,” by Mario Moretto, Bangor Daily News, June 18, 2013.

<http://bangordailynews.com/2013/06/18/news/hancock/blue-hill-raw-milk-seller-ordered-to-pay-1000-in-court-fines-fees/> “Judge fines Dan Brown \$1,000, judgment holds,” by Anne Berleant, The Weekly Packet, June 20, 2013; <http://weeklypacket.com/news/2013/jun/20/judge-fines-dan-brown-1000-judgment-holds/#.UcRL2WSG0wE>; “Raw milk deregulation bill dead after governor’s veto,” by Mario Moretto, Bangor Daily News, July 9, 2013; <http://bangordailynews.com/2013/07/09/politics/raw-milk-deregulation-bill-dead-after-governors-veto/?ref=relatedSidebar>

In May, Isle au Haut became Maine’s tenth town to adopt a **Local Food and Self-governance Ordinance**. (“Isle au Haut votes in favor of food self-governance ordinance,” by Anne Berleant, Island Ad-Vantages, June 6, 2013; <http://islandadvantages.com/news/2013/jun/6/isle-au-haut-votes-in-favor-of-food-self-governanc/#.UcWRUmSG0wF>)

Legislation to **incorporate edible plants into Augusta’s Capitol Park** landscape became law in Maine in May. The legislation was sponsored by Rep. Craig Hickman (D-Readfield and Winthrop), who is donating edible perennials from his farm, while Paris Farmers Union is donating seeds. (“Capitol Park edible landscaping bill becomes law with 2/3rd’s majority,” By Ramona Du Houx, Maine Insights, June 1, 2013; <http://maineinsights.com/perma/capitol-park-edible-landscaping-bill-becomes-law-with-23rds-majority#sthash.7exYKMcC.dpuf>; Capital idea sprouts at Maine State House, by Bill Nemitz, Morning Sentinel, May 10, 2013; www.onlinesentinel.com/politics/capital-idea-sprouts-at-state-house_2013-05-10.html?pagenum=2)

The **European Commission** is working on “simplifying” EU legislation regarding seed marketing through a “better regulation framework” that would **give large seed companies even more control over the commercial seed supply**. Currently, according to ETC Group, 10 companies control 64 percent of the global seed market, and four companies control 58 percent. The EU’s legal framework allows farming only with seed varieties that match the criteria of “distinctness, uniformity and stability,” favoring seeds used for industrial, monoculture operations. The proposed legislation could threaten the popular civil movement in Europe to use and promote old plant varieties with local significance. (“Closing in on our seeds,” Corporate Europe Observatory, June 5, 2013; <http://corporateeurope.org/print/news/closing-our-seeds>; “Who will control the Green Economy,” ETC Group, Dec. 2011; www.etcgroup.org/sites/www.etcgroup.org/files/publication/pdf_file/ETC_wwctge_4web_Dec2011.pdf)

Taxes

Sales tax rate increases passed by the Maine Legislature take effect on October 1, 2013.

Also, a new refund/exemption provision affecting businesses engaged in commercial wood harvesting, commercial nurseries and commercial greenhouses as well as retailers selling to these businesses took effect July 1, 2013, for qualifying purchases on or after that date. Sales tax law was expanded to provide a refund/exemption provision for sales of electricity and depreciable machinery/equipment to businesses engaged in commercial wood harvesting, and to commercial nurseries and commercial greenhouses. The definition of “commercial agricultural production” was expanded to include the commercial production of plants and trees. A definition of “commercial wood harvesting” was added and is defined to mean the commercial severance and yarding of trees for sale or for processing into logs, pulpwood, bolt wood, wood chips, stud wood, poles, pilings, biomass or fuel wood or other products commonly known as forest products.

Persons engaged in these types of businesses must apply to Maine Revenue Services for an exemption certificate. The application is at

<http://www.maine.gov/revenue/forms/sales/salesforms.htm>.

Nurseries and greenhouses should refer to instructional Bulletin 45 “Commercial Agriculture” and wood harvesters should refer to Instructional Bulletin 58 “Commercial Wood Harvesting” for additional information. Both are at

<http://www.maine.gov/revenue/salesuse/salestax/bulletinssales.htm>.

Retailers making tax-exempt sales to those engaged in these commercial activities must obtain a copy of the purchasers’ exemption certificate and an exemption affidavit (at www.maine.gov/revenue/forms/sales/salesforms.htm). The sales invoice must be clearly marked as tax exempt.

For additional tax assistance, contact Maine Revenue Services at (207) 624-9693.

Fertilizers

Babies whose mothers consume **nitrates in drinking water** were more likely to have **spina bifida, cleft palate and other birth defects**, says a recent study. Used as fertilizers on crops, nitrates are one of the most widespread chemical contaminants in aquifers around the world. This study compared 3,300 mothers in Iowa and Texas whose babies were born with neural tube defects, oral cleft, limb deficiency or congenital heart defects with 1,121 mothers in the study area whose babies had no major congenital malformations. Since nitrate contamination occurs in conjunction with other water contaminants, the researchers suggested that future studies look at prenatal exposure to mixtures of contaminants in drinking water. (“Nitrates in mom's drinking water linked to birth defects in kids,” Environmental Health News, June 27, 2013; www.environmentalhealthnews.org/ehs/newscience/2013/06/nitrate-in-moms-drinking-water/; Original paper: J. D. Brender et al., “Prenatal nitrate intake from drinking water and selected birth defects in offspring of participants in the National Birth Defects Prevention Study,” Environmental Health Perspectives; <http://dx.doi.org/10.1289/ehp.1206249>)

New research shows that **no-till may exacerbate phosphorus (P) pollution of surface waters**. In 2011, cyanobacteria (sometimes called blue-green algae) proliferated in an algal bloom in Lake Erie and in other waterways. Cyanobacteria can cause foul odors and kill fish, and two of the main species of cyanobacteria produce liver or neurotoxins. Algal blooms have been increasing since the mid-1990s, after several decades of reduction and coincident with increasing use of no-till in the Corn Belt. Without tillage, applied P fertilizer or P in manure concentrates in the surface layer of the soil. Even though no-till normally reduces soil runoff and erosion, heavy rains (predicted to increase with climate change) can carry that P bound to soil particles into waterways.

Occasional tillage may help alleviate this problem by burying the P, but it is unclear whether many forms of tillage, such as the use of cultivators or chisel plows that do not invert the soil, or methods such as rotational tillage or ridge till, will effectively address the problem.

No-till is valuable in some respects, but as used in industrial agriculture, it depends on heavy use of herbicides, which also harm agroecosystems. Agroecologically-based practices such as cover cropping can accomplish the benefits of no-till and much more; and organic no-till can be practiced without the use of herbicides. (“Toxic Algae and No-Till – The Environmental Darling of Industrial Agriculture and Genetic Engineering Looks Less Attractive,” by Doug Gurian-Sherman, Union of Concerned Scientists, May 2, 2013; http://blog.ucsus.org/toxic-algae-and-no-till-117?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+TheEquation+%28The+Equation+-+UCS+Blog%29; “Record-setting algal bloom in Lake Erie caused by agricultural and meteorological trends consistent with expected future conditions,” by Anna M. Michalak, PNAS, April 16, 2013; <http://www.indiaenvironmentportal.org.in/files/file/algal%20bloom%20in%20Lake%20Erie.pdf>)

Water

The World Resources Institute says that the 1.3 billion tons of **food wasted** annually worldwide **contains 45 trillion gallons of water** – 24 percent of all water used for agriculture. And agriculture accounts for 70 percent of worldwide water use. Most of the lost water is in produce. (“When You Waste Food, You’re Wasting Tons Of Water, Too,” by Eliza Barclay, NPR, June 6, 2013; www.npr.org/blogs/thesalt/2013/06/06/189192870/when-you-waste-food-youre-wasting-tons-of-water-too)

Lester Brown, head of the Earth Policy Institute, says **grain harvests are shrinking** as the United States, India and China come close to **“peak water”** and draw more water from aquifers than can be replaced. Brown says that 18 countries, with half the world's population, are over pumping water to the point where harvests are decreasing as a result.

'("Global threat to food supply as water wells dry up, warns top environment expert," by John Vidal, The Guardian, July 6, 2013;
www.guardian.co.uk/global-development/2013/jul/06/food-supply-threat-water-wells-dry-up)

Garden hoses and the water in them may contain phthalates, the toxic chemical BPA and other chemicals, according to the Ann Arbor-based Ecology Center. In a follow-up to a 2012 study that tested 90 garden water hoses, this year 21 hoses were tested for lead, cadmium, bromine (associated with brominated flame retardants); chlorine (indicating the presence of polyvinyl chloride, or PVC); phthalates and bisphenol A (BPA). These chemicals have been linked to birth defects, impaired learning, liver toxicity, premature births and early puberty in laboratory animals, among other serious health problems.

Of the 21 new garden hoses purchased from Lowes, Home Depot, Walmart, Target and Kmart, eight contained high levels of one or more chemicals of concern.

Water sampled from a hose left in the sun for two days had BPA levels of 0.34 - 0.91 ppm – three to nine times higher than the 0.100 ppm safe drinking water level – and levels of the phthalate DEHP of 0.017 - 0.011 ppm – twice the federal drinking water standards. EPA and FDA regulate DEHP in water from the tap at 0.006 ppm. Phthalates are industrial chemicals that add flexibility and resilience to many consumer products.

BPA is used as an antioxidant in polyvinyl chloride (PVC) plastics, as an inhibitor of end polymerization in PVC, and as a co-stabilizer for certain PVC plasticizers. An earlier study by scientists in Japan found BPA leaches from PVC pipes into water, and they concluded, "PVC hose might be a significant source of environmental BPA." Other studies have documented BPA in PVC gloves.

To avoid these chemicals, The Ecology Center suggests using polyurethane or natural rubber water hoses; avoiding hoses with a California Prop 65 warning that says "this product contains a chemical known to the State of California to cause cancer and birth defects and other reproductive harm"; buying hoses that are "drinking water safe" and "lead-free"; letting the water run for a few seconds before using it; storing your hose in the shade; and not drinking from hoses.

Says Mike Schade, markets campaign coordinator with the Center for Health, Environment & Justice, "We now know vinyl garden hoses may leach toxic phthalates and BPA into water. It's time for retailers like Home Depot and Wal-Mart to safeguard our children's health and phase out the use of these poison plastic vinyl hoses."

("Hazardous Chemicals Found in Gardening Water Hoses," press release, The Ecology Center, May 7, 2013;
www.healthystuff.org/release.050713.garden.php)

Nanomaterials

Nanomaterials added to soil via fertilizers and treated sewage waste could threaten soil health, says a report by the Institute for Agriculture and Trade Policy (IATP). Peer-reviewed

scientific research also indicates possible negative impacts of nano-fertilizers on public health and the food supply.

IATP's report "Nanomaterials in Soil: Our Future Food Chain?" says that experiments have indicated that sub-molecular nanoparticles could damage beneficial soil microbes and the digestive systems of earthworms.

Nanomaterials are advertised as increasing the effectiveness of fertilizers on the market by making them the same size as plant and root pores – but nanotechnology is unregulated globally, so no pre-market safety assessment is done. Several researchers assume that nanomaterials are increasingly present in biosolids (sewage sludge) used as fertilizer on about 60 percent of U.S. agricultural land.

IATP's Dr. Steve Suppan says the Obama administration should institute an immediate moratorium on fertilizing with biosolids from sewage treatment plants near nanomaterial fabrication facilities, giving researchers time to determine whether nanomaterials in soil can be made safe and to research alternatives to building soil health, rather than depending on fertilization with biosolids.

The report also details risks to farmers and farmworkers applying dried biosolids that incorporate nanomaterials, including inflammation of the lungs, fibrosis and other toxicological impacts. ("Nanomaterials in fertilizer products could threaten soil health, agriculture," By Andrew Ranallo, Institute for Agriculture and Trade Policy, April 24, 2013; www.iatp.org/documents/nanomaterials-in-fertilizer-products-could-threaten-soil-health-agriculture)

Genetic Engineering

In June, a three-judge panel at the Court of Appeals for the Federal Circuit ruled in the case **Organic Seed Growers and Trade Association et al. v. Monsanto** that the organic and otherwise non-GMO farmer and seed company plaintiffs, including MOFGA, are not entitled to bring a lawsuit to protect themselves from Monsanto's transgenic seed patents "because Monsanto has made binding assurances that it will not 'take legal action against growers whose crops might inadvertently contain traces of Monsanto biotech genes (because, for example, some transgenic seed or pollen blew onto the grower's land).'"

The Court of Appeals judges affirmed the Southern District of New York's previous decision that the plaintiffs did not present a sufficient controversy to warrant adjudication by the courts. However, they did so only because Monsanto repeatedly committed during the lawsuit to not sue farmers with "trace amounts" of contamination of crops containing its patented genes.

Plaintiffs' attorney Dan Ravicher of the Public Patent Foundation (PUBPAT) views the decision as a partial victory. "Before this suit, the Organic Seed plaintiffs were forced to take expensive precautions and avoid full use of their land in order to not be falsely accused of patent infringement by Monsanto," said Ravicher. "The decision today means that the farmers did have

the right to bring the suit to protect themselves, but now that Monsanto has bound itself to not suing the plaintiffs, the Court of Appeals believes the suit should not move forward.”

The court ruling stated: “Monsanto’s binding representations remove any risk of suit against the appellants as users or sellers of trace amounts (less than one percent) of modified seed.”

The plaintiff farmers and seed companies began their legal battle in March 2011, when they filed a complaint against Monsanto asking for a declaration that Monsanto's patents on GE seed were invalid or unenforceable. The plaintiffs filed the suit because Monsanto's patented seed can contaminate neighboring fields through wind, insects and other means, and the owners of those fields, such as plaintiffs, can then be sued by Monsanto for patent infringement.

The Organic Seed plaintiffs’ complaint alleged that Monsanto's abusive business and litigation tactics have put several farmers and independent seed companies out of business. They also detailed Monsanto’s history of ruthless patent enforcement, investigating as many as 500 farmers annually for patent infringement by trespassing onto their land. The plaintiffs detailed harms caused to society by Monsanto's GE seed, including proliferation of herbicide-resistant “superweeds” and environmental pollution. The plaintiffs alleged that the GE patents were legally deficient in several ways, including covering technology with no beneficial social use and extending Monsanto’s monopoly by issuing dozens of patents to the company.

“Even though we’re disappointed with the Court's ruling not to hear our case, we’re encouraged by the court’s determination that Monsanto does not have the right to sue farmers for trace contamination,” said Maine organic seed farmer Jim Gerritsen, president of lead plaintiff Organic Seed Growers and Trade Association. "However, the farmers went to court seeking justice not only about contamination, but also the larger question of the validity of Monsanto’s patents. Justice has not been served."

“Today’s ruling may give farmers a toehold in courts regarding the unwanted contamination of their crops, but it does not protect our food supply from the continued proliferation of Monsanto’s flawed technology,” said Dave Murphy, founder and executive director of Food Democracy Now!, a co-plaintiff in the lawsuit.

The plaintiffs still have the right to ask the Supreme Court to review the Court of Appeals decision and ultimately to reinstate the case. Ravicher said the Organic Seed plaintiffs are considering doing so. (“Appeals Court Binds Monsanto to Promise not to Sue Organic Farmers,” Public Patent Foundation, June 10, 2013;

www.pubpat.org/osgatavmonsantocafcddecision.htm; the court ruling appears at <http://www.cafc.uscourts.gov/images/stories/opinions-orders/12-1298.Opinion.6-6-2013.1.PDF>)

The Supreme Court recently upheld **Monsanto’s right to prohibit** farmer Vernon Bowman from **replanting patented seed**, saying that the doctrine of “patent exhaustion” “does not permit a farmer to reproduce patented seeds through planting and harvesting without the patent holder’s permission.” Bowman must pay Monsanto more than \$80,000.

Bowman argued that the patent exhaustion doctrine allowed him to plant soybean seeds bought from a grain elevator, even though they likely contained Monsanto's patented genetics.

Kristina Hubbard of the Organic Seed Alliance says the law needs to change – that developers of new seed varieties should earn returns on their investments, “[B]ut patents on self-replicating seed – and any living organism, for that matter – are unethical and dangerous.”

Hubbard quotes Justice Elena Kagan: “Our holding today is limited – addressing the situation before us, rather than every one involving a self-replicating product. We recognize that such inventions are becoming ever more prevalent, complex and diverse.”

Even non-GE seeds are now being patented, including Seminis' (owned by Monsanto) 'Big Beef' tomato.

The Independent Professional Seed Association estimates the United States has lost at least 200 independent seed companies in the last 15 years, says Hubbard, who adds that the Organic Seed Alliance and its partners are exploring “open source” patents for seeds. (“Monsanto's growing monopoly,” by Kristina Hubbard, Salon, May 30, 2013; www.salon.com/2013/05/30/monsantos_patent_lawyers_get_a_gift_from_the_supreme_court/)

Food & Water Watch is asking **McDonald's** to "publicly refuse to source the 'Innate'-brand **genetically engineered (GE) potato**, now up for USDA regulatory approval. The GE potato developer, J.R. Simplot, provides McDonald's with most of the potatoes for its french fries. (“Will McDonald's serve genetically modified fries?” By Monica Eng, Chicago Tribune, June 18, 2013; www.chicagotribune.com/features/food/stew/chi-food-policy-will-mcdonalds-serve-genetically-modified-fries-20130618,0,3561651.story)

Researchers evaluated the toxicity to mice of four Bt (*Bacillus thuringiensis*) spore-crystals that were genetically engineered to express either the Cry1Aa, Cry1Ab, Cry1Ac or Cry2A protein, alone or combined. Many crops are genetically engineered to express these **Bt toxins** in all their cells. In this study, the spore-crystal administrations, alone or combined, significantly **reduced bone marrow cell proliferation**, and the toxic effects of the proteins increased with long-term exposure. The Bt spore-crystals were particularly toxic to red blood cells.

“This finding corroborates literature that demonstrated that alkali-solubilized Bt spore-crystals caused in vitro hemolysis [rupture] in cell lines of rat, mouse, sheep, horse, and human erythrocytes [red blood cells] and suggested that the plasma membrane of susceptible cells (erythrocytes, in this case) may be the primary target for these toxins,” say the researchers. They conclude, “Taking into account the increased risk of human and animal exposures to significant levels of these toxins, especially through diet, our results suggest that further studies are required to clarify the mechanism involved in the hematotoxicity found in mice, and to establish the toxicological risks to non-target organisms, especially mammals, before concluding that these microbiological control agents are safe for mammals.” Current regulatory approval of GE crops containing these Bt toxins is based on their presumed nontoxicity to mammals. (“Bt toxins are toxic to the blood of mice,” GM Watch, May 2, 2013;

www.gmwatch.eu/index.php?option=com_content&view=article&id=14803%3Abt-toxins-are-toxic-to-the-blood-of-mice; (2013). Hematotoxicity of Bacillus thuringiensis as spore-crystal strains Cry1Aa, Cry1Ab, Cry1Ac, or Cry2Aa in Swiss albino mice, by Mezzomo, B. P., et al., J. Hematol Thromb Dis 1(1), 2013; <http://esciencecentral.org/journals/JHTD/JHTD-1-104.pdf>; Cytotoxicity on human cells of Cry1Ab and Cry1Ac Bt insecticidal toxins alone or with a glyphosate-based herbicide, Mesnage et al., 2012; J. Applied Toxicology; <http://onlinelibrary.wiley.com/doi/10.1002/jat.2712/abstract>)

A peer-reviewed study of 168 pigs found that the 84 **pigs fed GE corn and soy for 22.7 weeks had significant increases in severe stomach inflammation and thickening of the uterus** compared with the control group. For example, pigs on the GE diet were 2.6 times more likely to get severe stomach inflammation than control pigs. Consumers Union says the study results “are a red flag and deserve further study. We also believe this study underlines the need for labeling of GE food, since there is still much to learn about their health effects.”

Lead author Judy Carman said, “The GM diet contained three GM genes and therefore three GM proteins. One protein made the plant resistant to a herbicide and two proteins were insecticides. We chose a mixed diet instead of a single crop because this is usually what pigs and people eat. Regulators do not require animal feeding studies on mixtures of GM genes and their proteins, regardless of whether the genes are all ‘stacked’ into the one plant or spread across several plants that are eaten in the same meal. We chose pigs because they have a similar digestive system to humans, and because some of the investigators had been observing reproductive and digestive problems in pigs fed GM crops.”

The authors conclude: “The results indicate that it would be prudent for GM crops that are destined for human food and animal feed, including stacked GM crops, to undergo long-term animal feeding studies preferably before commercial planting, particularly for toxicological and reproductive effects.”

The new study reinforces concerns raised recently by Seralini et al., who found that rats fed GE food over two years had higher rates of certain tumors and of liver and kidney problems than rats fed a non-GE diet.

Carman, responding to unsubstantiated or erroneous criticism from Monsanto, from (currently) pro-GE activist Mark Lynas and from Andrew Kniss, said that her group used adequate sample sizes, valid experimental designs, appropriate statistical tests and generated reliable findings; and “that Monsanto are saying that the level of severe stomach inflammation seen in pigs fed the GM diet is normal in piggeries – ie that it [is] normal for a third of pigs to experience severe stomach inflammation in piggeries. This is a worrying animal welfare allegation about conditions in commercial piggeries and Monsanto needs to provide proof for their allegations.” She also responded to Lynas’ false accusations that the study authors are anti-GE activists and that the study was funded by anti-GE groups. (“A long-term toxicology study on pigs fed a combined genetically modified (GM) soy and GM corn maize diet,” by Dr. Judy Carman et al., Journal of Organic Systems, June 11, 2013; www.organic-systems.org/journal/81/8106.pdf; “A Long-term Toxicology Study On Pigs Fed a Mixed GM Diet – Adverse Effects of GM Crops Found,” Press Release, By Dr. Judy Carman, June 1, 2013; www.scoop.co.nz/stories/SC1306/S00035/a-long-

[term-toxicology-study-on-pigs-fed-a-mixed-gm-diet.htm](#); “Statement of Michael Hansen, PhD, Senior Scientist, Consumers Union on New Long Term Study of Feeding GE Grains to Pigs,” Consumers Union press release, June 11, 2013; <http://consumersunion.org/news/consumers-union-statement-on-new-long-term-study-of-feeding-ge-grains-to-pigs/>; “Critics answered” tab at <http://gmojudycarman.org>)

Maine writer and theater director Caitlin Shetterly suffered for years from headaches, nausea, rashes, fatigue and other ailments – until she visited allergist Paris Mansmann, M.D., of Yarmouth, who suggested she cut out consumption of all corn. Mansmann hypothesized that Shetterly had developed an **allergy to GE corn**. Shetterly describes eliminating corn – not an easy task, as corn is in so many products – and regaining her health, a process that sent her to Cincinnati to talk with other expert allergists about the possibility that GE corn can cause allergic reactions. She found no definitive answer, but a need for independent research into the question. (“The Bad Seed: The Health Risks of Genetically Modified Corn,” by Caitlin Shetterly, Elle, July 24, 2013;

www.elle.com/beauty/health-fitness/allergy-to-genetically-modified-corn)

U.S. and French researchers analyzed 77 studies from eight countries and found that of 13 major pest species, five were **resistant to GE Bt corn and cotton** by 2011, compared with one in 2005. Resistance began to evolve in just two years in one case, while in others, where growers planted large enough refuges of non-Bt crops, resistance hadn’t yet evolved after 15 years. The researchers say that all pests will eventually adapt. (“More pests ‘resistant to GM crops’: study,” Agence France-Presse, June 10, 2013;

www.google.com/hostednews/afp/article/ALeqM5gkQ3IN4hx0rS9dmxAQgaWzLWkaVg)

Increasing numbers of **prohibited GE crops are being released into the natural environment in South Korea** during crop importation and distribution, potentially threatening ecosystems if related species become contaminated, says the National Institute of Environmental Research. Of 626 samples collected from areas around ports, processing factories, livestock breeding areas and transportation routes, GE DNA occurred in 42, from 19 regions. (“More genetically modified crops found growing in South Korea,” by Kim Jeong-su, The Hankyoreh, June 5, 2013; http://english.hani.co.kr/arti/english_edition/e_business/590585.html)

This spring, an Oregon State University scientist notified USDA that tests of wheat samples from an Oregon farm indicated the possible presence of **GE glyphosate-resistant wheat**. (Glyphosate is the active ingredient in Monsanto’s Roundup herbicide.) USDA Animal and Plant Health Inspection Service (APHIS) confirmed the presence of the same GE glyphosate-resistant wheat variety that Monsanto field tested in 16 states from 1998 to 2005. The GE wheat, which was never approved for commercial production, was found in about 1 percent of the Oregon farmer’s 125-acre field.

APHIS is investigating the matter. If the situation resulted from a violation of the Plant Protection Act, APHIS can seek penalties of up to \$1,000,000 and can refer the matter for criminal prosecution.

Meanwhile, farmers in Idaho filed a federal lawsuit against Monsanto, saying the company's development of Roundup Ready wheat increased their production costs (by requiring testing for GE contamination) and lowered prices (due to lost markets – in Japan and South Korea, initially). The Idaho farmers are asking for class-action status for thousands of wheat farmers. Lawsuits have been filed in other U.S. courts, as well.

Monsanto said it did not find the GE trait in seeds it tested. The company's chief technology officer, Robb Fraley, said sabotage might be responsible.

Monsanto has been testing a different Roundup Ready GE wheat in North Dakota since 2011. ("USDA investigating detection of genetically engineered (GE) glyphosate-resistant wheat in Oregon," USDA press release, May 29, 2013; www.aphis.usda.gov/newsroom/2013/05/ge_wheat_detection.shtml; "Illegal genetically-engineered wheat has been discovered growing in an Eastern Oregon field, federal investigation underway," by Eric Mortenson, The Oregonian, May 29, 2013; www.oregonlive.com/business/index.ssf/2013/05/genetically_engineered_wheat_f.html#incart_river_default; "GMO Wheat Lawsuit: Idaho Farmers Sue Monsanto," by Rebecca Boone, Huffington Post, June 12, 2013; www.huffingtonpost.com/2013/06/12/gmo-wheat-lawsuit-idaho_n_3430961.html; "Scientists Unswayed by Monsanto Findings on Rogue Wheat," by Mark Drajem and Jack Kaskey, Bloomberg Businessweek, June 6, 2013; www.businessweek.com/news/2013-06-06/scientists-unswayed-by-monsanto-s-conclusions-on-rogue-wheat; "Monsanto testing new GM wheat after 8-year freeze," by Veronique Dupont, Agence France-Presse; www.google.com/hostednews/afp/article/ALeqM5j3qBhtmUDv5iLfjCrsCOVPCiYEQ)

In what the FBI called acts of "economic sabotage," **Syngenta's Roundup Ready GE beet crops were destroyed** on two nights in June in Oregon, just before they were ready to flower and produce seed. Syngenta had been growing the GE beets in Oregon for about a decade, with nearby organic seed growers unaware of that fact until recently. Sugar beets cross readily with table beets and chard, so the GE crop threatens the organic seed crop. At a meeting about the issue, Oregon State weed scientist Carol Mallory-Smith suggested mapping GE and organic fields in order to plan to avoid cross contamination, but Syngenta would not detail its plots and walked out of the meeting. Soon after, Syngenta's two fields were destroyed. Some organic seed growers in the area have destroyed their own crops after hearing that GE crops were growing nearby. A petition for a 2014 ballot measure to ban GE plants in Jackson County, Oregon, now has thousands of signatures. ("Tensions between Jackson County growers, GMO company peaked days before beet destruction," by Kimberly A.C. Wilson, The Oregonian, July 15, 2013; www.oregonlive.com/pacific-northwest-news/index.ssf/2013/07/tensions_between_jackson_count.html)

Researchers led by Professor Jack Heinemann of the University of Canterbury in the United Kingdom have found that North America's **GE staple crop production strategy limits yields and increases pesticide use** compared with Western Europe's non-GE farming. Also, use of GE crops and/or patenting of seeds has decreased the number of varieties of various U.S. crops, including fewer varieties of cabbage (by 95 percent), field corn (91 percent), peas (94 percent) and tomatoes (81 percent) cultivated in the last century. The researchers report, "The US (and

Canadian) yields are falling behind economically and technologically equivalent agroecosystems matched for latitude, season and crop type; pesticide (both herbicide and insecticide) use is higher in the United States than in comparator W. European countries; the industries of all types that are supplying inputs to the farmer are becoming more concentrated and monopolistic ... and these tendencies correlate with stagnation or declines in germplasm diversity.” They also note fewer but larger farms in North America, “concentrating and narrowing the farming skills.” And annual yield variations indicate low resilience of the agroecosystem and can fuel dramatic price changes in agricultural markets.

“[T]here is no evidence that GM biotechnology is superior to other biotechnologies ... in its potential to supply calories,” they add.

The genetic uniformity of North American staple crops makes them “impressively vulnerable” to pests and climate change, say the researchers. They recommend collecting data on on-farm agrobiodiversity “to create a landscape scale picture of performance and resilience”; encouraging on-farm diversity possibly by subsidizing farmers moving toward more resilient practices; and finding innovative ways to promote long-term sustainability and yields (e.g., a return to publically supported plant breeding). They cite a “viable roadmap for the future of agriculture” presented by the International Assessment of Agricultural Knowledge, Research and Development (IAASTD 2009) as leaving us “no excuses.” (“Sustainability and innovation in staple crop production in the US Midwest,” by Jack Heinemann et al., *International Journal of Agricultural Sustainability*, June 14, 2013; www.tandfonline.com/doi/full/10.1080/14735903.2013.806408#tabModule; “From Boardroom To Field: Manufacturing – The Global Food And Agriculture Crisis,” by Colin Todhunter, *Countercurrents*, July 6, 2013; www.countercurrents.org/todhunter060713.htm)

Monsanto said in May that it will stop producing GE corn varieties in Europe, except in Spain, Portugal and the Czech Republic. Investigative Reporting Denmark says that Brandon Mitchener, public affairs lead for Monsanto in Europe and the Middle East, said, “We will not spend any more money to convince people to plant them.” BASF and Syngenta stopped their biotech research in Europe earlier. Mitchener said, “We stopped most of the trials ... following a strategic decision in 2011 to focus our commercial activity in Europe on high-performance, conventional hybrid seeds. Monsanto has a thriving business in Europe with conventional seeds and crop protection products.” In July, Monsanto said it would withdraw all pending approval requests to grow new types of GE crops in the EU, except renewal of approval of its insect-resistant MON810 corn, and would concentrate on growing its conventional seed business there. (“GMO lose Europe – victory for environmental organisations,” by Nils Mulvad, *Investigative Reporting Denmark*, May 29, 2013; www.ir-d.dk/gmo-lose-europe-victory-for-environmental-organisations/; “Monsanto to withdraw EU approval requests for new GMO crops,” By Charlie Dunmore, *Reuters*, July 17, 2013; www.reuters.com/article/2013/07/17/us-eu-monsanto-gmos-idUSBRE96G16R20130717)

U.S. taxpayers are paying for overseas lobbying to promote GE crops developed by Monsanto and other seed makers and to counter GE opponents, according to review by Food & Water Watch of 926 diplomatic cables to and from the U.S. State Department and embassies in

more than 100 countries. The report “details how the U.S. State Department lobbies foreign governments to adopt pro-agricultural biotechnology policies and laws, operates a rigorous public relations campaign to improve the image of biotechnology and challenges commonsense biotechnology safeguards and rules — including opposing genetically engineered (GE) food labeling laws,” says Food & Water Watch. (“Biotech Ambassadors: Diplomacy or Marketing?” Food & Water Watch, May 14, 2013; www.foodandwaterwatch.org/pressreleases/biotech-ambassadors-diplomacy-or-marketing/; “U.S. tax dollars promote Monsanto's GMO crops overseas,” by Carey Gillam, Reuters, May 14, 2013; www.reuters.com/article/2013/05/14/us-usa-gmo-report-idUSBRE94D0IL20130514)

In May the USDA Animal and Plant Health Inspection Service (APHIS) announced plans to prepare environmental impact statements (EIS) for **GE corn and soy crops that resist the herbicides 2,4 dichlorophenoxyacetic acid (2,4-D) and Dicamba**. Dow expressed frustration, as it had planned to sell its Enlist corn, which tolerates Enlist herbicide (a combination of 2,4-D and glyphosate), by this year or next, followed by Enlist-resistant soy and cotton. These crops have been developed because several weeds have become resistant to glyphosate, the active ingredient in Roundup, used with GE Roundup Ready crops.

Likewise, Monsanto, in conjunction with BASF, wants regulatory approval for new GE soybeans and cotton that resist a new dicamba-based herbicide. The company said the decision to require an EIS was unexpected.

Concern exists about potential drift of 2,4-D and dicamba onto non-target crops; about potential for the GE crop genetics to contaminate non-GE crops; about the potential for development of yet more herbicide-resistant weeds; and about the health risks of the herbicides. Because APHIS found that these new herbicide-resistant plants may significantly affect the quality of the human environment, the agency determined it must prepare two Environmental Impact Statements. (“USDA Announces Intent to Prepare Environmental Impact Statements for Genetically Engineered Plants Under Review for Deregulation,” USDA, May 10, 2013; www.aphis.usda.gov/newsroom/2013/05/brs_24d_and_dicamba.shtml; “USDA says more review needed for new Monsanto, Dow GMO crops,” by Carey Gillam, Reuters, May 10, 2013; www.reuters.com/article/2013/05/10/us-usa-gmo-idUSBRE9490N220130510)

Kickstarter, a crowd-source funding website, may have become “the one-stop shop for risky biotech companies looking to execute an end run around regulation,” reports ETC Group.

Three California biohackers started a Kickstarter fundraising project that, in return for a \$40 donation, would give donors seeds of glow-in-the-dark plants made using **synthetic biology**. In synthetic biology, computer programs design artificial sequences of DNA, which are then created on a DNA synthesizer and engineered into a host organism.

More than 100 organizations are seeking a moratorium on synthetic biology due to potential risks related to safety, bioweapons and social impacts. More than 5,000 donors had sent the minimum \$40 to receive the synthesized seeds, reported ETC. The USDA says the technology falls outside

government regulation. (“Biohackers Are Kickstarting Some Unregulated Experiments,” by L. Jim Thomas, ETC Group, May 10, 2013; www.huffingtonpost.ca/l-jim-thomas/synthetic-biology-kickstarter_b_3247151.html#slide=1240968)

Claire Robinson and Jonathan Latham report on the **abuse of power that some journal editors exercise**. For example, in 2009, the scientific publisher Elsevier was found to have invented the Australasian Journal of Bone and Joint Medicine, and an editorial board, in order to publish papers provided by pharmaceutical manufacturer Merck to promote Merck’s products, say Robinson and Latham.

In 2012, when the scientific journal Food and Chemical Toxicology (FCT) published a study by Séralini et al. suggesting that Monsanto’s GE corn and the Roundup herbicide used with it were associated with severe organ damage and increased rates of tumors and premature death in rats, a campaign was orchestrated to discredit the study. Many who wrote letters to FCT (published by Elsevier) failed to disclose publicly their conflicts of interest with the GE industry and its lobby groups.

In 2013 FCT created a new position – associate editor for biotechnology – and hired Richard E. Goodman, professor at the Food Allergy Research and Resource Program, University of Nebraska, and former Monsanto employee. Of his fast-tracked appointment, Robinson and Latham ask if Monsanto now effectively decides which papers on biotechnology are published in FCT. They also question the need for a biotech editor when FCT’s senior editor, José L. Domingo, is a professor of toxicology and environmental health and author of two comprehensive reviews of GE food safety studies – both skeptical of GMO safety.

Robinson and Latham also note that after a campaign failed to get FCT to retract the Séralini study, the journal Transgenic Research published a heavy-handed critique of the study and of the researchers. The lead author of that critique (and editor of Transgenic Research), Paul Christou, previously attacked a 2001 report in Nature by Ignacio Chapela and David Quist of the University of California, Berkeley, saying that indigenous Mexican maize varieties had become contaminated with GE genes. Nature then retracted that paper, even though two of three reviewers in a second review supported its publication. Monsanto owns Agracetus, Christou’s former employer, and Monsanto holds patents on GE crops that Christou invented. Christou did not disclose either conflict of interest in his critique of the Séralini study.

In another case, in 2007, the journal Nature Biotechnology featured an attack on the work of Russian scientist Irina Ermakova, who had found decreased weight gain, increased mortality, and decreased fertility in rats fed GE Roundup-tolerant soy over several generations.

The editor of Nature Biotechnology, Andrew Marshall [not MOFGA’s wonderful educational programs director], offered Ermakova “an opportunity to present your own findings and conclusions in your own words, rather than a critique from one side”; she had presented such findings only at conferences. So Ermakova answered questions about her research sent by Marshall, and later received a proof of what she thought would be “her” article, with her byline.

However, the published article had Marshall's byline, and each of Ermakova's answers was followed by a lengthy critique by four pro-GE scientists – critiques that Ermakova hadn't seen before publication. Marshall also ran the critics' references but omitted Ermakova's, making her statements appear unsubstantiated.

Later Marshall revealed that he had not "solicited" comments from the critics; rather, the pro-GE scientists themselves had proposed their "critique," and even though none are toxicologists, Marshall had agreed. The critics judged Ermakova's research – which they had never seen in its complete form – "demonstrably flawed."

Nature Biotechnology also failed to fully disclose conflicts of interest of these critics, including their links to GE lobbying groups, to an industry consultant funded by Monsanto and to a developer of GE flax that contaminated non-GE flax in Canada.

Marshall remains editor of Nature Biotechnology.

The difficulty of getting funding for and publishing findings contradictory to industry viewpoints affects the quality of the science produced, say Robinson and Latham. A recent literature review found that most studies concluding that GE foods are as safe as non-GE counterparts were performed by the developer companies or their associates. Norway, a country without an agricultural industry lobby, hosts the only publicly funded institute in the world with a mission to research the environmental, health and social consequences of genetic engineering.

Robinson and Latham suggest that journal editors should adopt the Committee on Publication Ethics (COPE) guidelines and publish all conflicts of interest among staff and editors; select peer reviewers to avoid conflicts of interest or, if that is not possible, select a balanced panel representing a plurality of views.

Robinson and Latham say that in the field of evidence-based medicine, bodies such as the non-profit Cochrane Collaboration have systematic and transparent methodologies to review and evaluate data on the effectiveness of different medical interventions. The aim is to enable healthcare practitioners to make well-informed clinical decisions. The reviewing criteria are transparently set out in advance, so there is less scope for bias in evaluations of studies. When disagreements occur, the reason is easily pinpointed and the problem resolved. Cochrane also implements rules to prevent conflicts of interest among its reviewers and editorial board.

Robinson and Latham also say that public peer review, or "open-source science," could revitalize scientific publishing. ("The Goodman Affair: Monsanto Targets the Heart of Science," by Claire Robinson and Jonathan Latham, Ph.D., May 20, 2013, Independent Science News; <http://independentsciencenews.org/science-media/the-goodman-affair-monsanto-targets-the-heart-of-science/>)

Dr. Charles Benbrook says that compared to the first five years of commercial use (1996-2000), **today's U.S. GE corn and soy crops require about twice as much herbicide per acre**; and corn requires two to six Bt toxins to counter European corn borers and corn rootworms, systemic seed treatments using two fungicides and two or more insecticides, a soil insecticide, and

unprecedented increases in fungicides. The cumulative exposure to these engineered toxins and applied pesticides raises questions and risk assessment challenges, says Benbrook. He urges more funding for independent testing of GE crops and foods made from them. (“GE Crop Risk Assessment Challenges: An Overview,” By Dr. Charles Benbrook, Food Safety News, May 6, 2013;

www.foodsafetynews.com/2013/05/ge-crop-risk-assessment-challenges-an-overview/#.UcGsq2SG0wF)

In 2012, according to USDA, more than 93 percent of the U.S. soybean crop and 73 percent of the corn crop was genetically engineered to tolerate herbicides. Patent holders for these crops often tout them as reducing pesticide use, but Food & Water Watch, citing USDA and EPA data, says **herbicide use** decreased when GE crops were first introduced but then **increased** on corn, cotton and soy in the United States from 15 million pounds in 1996 to 159 million in 2012. At the same time, many herbicide-resistant weeds have evolved, so biotech companies are developing crops that tolerate different herbicides, putting farmers on yet another pesticide treadmill. “But this approach drives the rise of superweeds, poses risks to human health and threatens critical habitat for wildlife in the process,” says Food & Water Watch, which recommends that USDA devote more funds to sustainable weed management. (“Superweeds: How Biotech Crops Bolster the Pesticide Industry,” Food & Water Watch, July 1, 2013;

www.foodandwaterwatch.org/reports/superweeds/; ‘GMO Crops Mean More Herbicide, Not Less,’ Forbes, July 3, 2013;

www.forbes.com/sites/bethhoffman/2013/07/02/gmo-crops-mean-more-herbicide-notless/)

Most commercialized GE crops have been engineered with genes from unrelated organisms to make novel proteins. A newer technique changes the existing RNA within organisms in order to regulate (often by silencing) gene expression, because RNA, specifically **double-stranded RNA** (dsRNA), is now known to be an important regulator of gene expression, say Jack Heinemann and his co-authors. So dsRNA-mediated silencing is becoming the basis of novel traits in GE plants, such as biopesticides and altered nutritional characteristics, the authors continue. Such dsRNAs are “remarkably stable in the environment,” say the authors – surviving in the digestive tracts of worms and insects that consume them, for instance. They can then circulate through the animal’s body and change gene expression in the animal. Risks of dsRNA-altered plants are not always considered, so the authors propose five procedures for this purpose, including long-term testing on animals. (“A comparative evaluation of the regulation of GM crops or products containing dsRNA and suggested improvements to risk assessments,” Environment International, May 2013. By Jack A. Heinemann et al.

www.sciencedirect.com/science/article/pii/S0160412013000494)

Pesticides

BPC Adopts Rules to Allow for Widespread Pesticide Spraying

By Katy Green

At its May 2013 meeting, the Maine Board of Pesticides Control (BPC) adopted changes to its rules that allow for widespread pesticide spraying to control the threat of arboviral diseases in Maine. Arboviral diseases are those spread by arthropods. This change to BPC rules allows the

unauthorized spraying of pesticides to private property when the Maine Center for Disease Control deems it necessary to control arboviral diseases such as West Nile Virus (WNV) and Eastern Equine Encephalitis (EEE).

The new rules offer citizens the option to “opt out” of pesticide spraying when the method of spraying is ground-based. The board plans to adopt a policy about who can opt out of aerial spraying, but the policy is not expected to include protections for citizens to prevent their houses and yards from being sprayed.

MOFGA has been following these rules at the board level as they have unfolded over the past year. We, along with a large number of citizens, communicated to the BPC that spraying is not the answer. We’ll continue to engage with the board to look for alternatives and to protect Maine from widespread spray programs.

Product Registrations

Also at its May meeting, the BPC approved a Special Local Need 24(c) registration for Gowan Malathion 8 Flowable, an organophosphate insecticide, on blueberries and cane berries to control spotted wing drosophila – a new pest in Maine that can devastate berry crops. This request will allow non-organic growers to spray malathion four times per year rather than the three times previously allowed.

Consent Agreements

The board reached a consent agreement with TruGreen Lawncare of Westbrook for an unauthorized pesticide application to a property in Westbrook. In this case the caller had been a customer of TruGreen but canceled its services two years before this application. TruGreen bought another company in the area and incorrectly believed this resident was a customer of that company. TruGreen then applied Merit 0.2 Plus Fertilizer to the caller’s lawn, which triggered notification to the board.

Merit 0.2 Plus Fertilizer contains not just fertilizer (including 24 percent nitrogen) but also imidacloprid, a neonicotinoid insecticide. Neonicotinoid insecticides are systemic – i.e., they are taken up by and travel throughout the plant. They may be implicated in colony collapse disorder of honeybees.

Given prior violations by TruGreen, the board levied a \$2,000 fine.

[End of BPC news]

A review by Prof. Dave Goulson of Sussex University, published in the Journal of Applied Ecology, indicates that **neonicotinoid insecticides**, linked to the deaths of bees, **may also harm soil, water and grain-eating birds** such as partridge. These systemic insecticides are taken up by plants, so all plant parts are toxic, and they are commonly used to coat corn and soybean seeds. Goulson found that 90 percent of the active ingredients in neonicotinoids go into the soil and groundwater. They can accumulate in soil at concentrations higher than those that kill bees

and can persist there for up to 10 years. Birds that eat neonicotinoid-coated seeds can also be harmed; eating just a few treated seeds can kill some birds. Goulson argues for more research into effects of neonicotinoids on soils, water and organisms exposed to them.

Another recent study found that European streams highly contaminated with **pesticides** had up to 42 percent **less invertebrate biodiversity** than uncontaminated streams and that diversity decreased at pesticide concentrations that European regulations deem environmentally protective. Species that appeared especially susceptible to pesticides include representatives of the stoneflies, mayflies, caddisflies and dragonflies – important members of the food chain.

And a review study suggests that neonicotinoid insecticides accumulate in soil at levels that can kill soil invertebrates such as the earthworm *Eisenia foetida*. Neonicotinoids appear to have a half-life of one to four years, so if applied annually, they can accumulate, says the researcher.

Meanwhile, the **European Commission will ban three neonicotinoid insecticides** – imidacloprid, clothianidin and thiamethoxam – for two years beginning in December as they are suspected of killing bees. Also, the neonicotinoid fipronil will be banned from use on corn and sunflowers in Europe from the end of 2013 because of its “high acute risk” to honeybees. (“Pesticides spark broad biodiversity loss,” by Sharon Oosthoek, *Nature*, June 17, 2013; www.nature.com/news/pesticides-spark-broad-biodiversity-loss-1.13214; “Pesticides Significantly Reduce Biodiversity in Aquatic Environments,” *Science Daily*, June 17, 2013; <http://www.sciencedaily.com/releases/2013/06/130617160752.htm>; “EU Bans Three Pesticides Harmful to Bees,” *AFP*, May 24, 2013; <http://au.news.yahoo.com/latest/a/-/latest/17317666/eu-bans-three-pesticides-harmful-to-bees/>; Banned pesticides may be having wider environmental impacts,” by Matt McGrath, *BBC News*, June 13, 2013; www.bbc.co.uk/news/science-environment-22893619; “An overview of the environmental risks posed by neonicotinoid insecticides,” by Dave Goulson, *J. Applied Ecology*, June 13, 2013; <http://onlinelibrary.wiley.com/doi/10.1111/1365-2664.12111/full>; “EU to ban fipronil to protect honeybees,” by Damian Carrington, *The Guardian*, July 16, 2013; <http://www.guardian.co.uk/environment/2013/jul/16/eu-fipronil-ban-bees>)

Researchers hypothesize that **outbreaks of infectious diseases in honey bees, fish, amphibians, bats and birds** in the past two decades are **linked to increasing use of systemic insecticides**, notably the neonicotinoids and fipronil. The disease outbreaks started in countries and regions where the systemic insecticides were used for the first time and later they spread to other countries; and neonicotinoids have recently been shown to suppress the immune system in bees and fish – and may do the same in other wildlife. (“Immune Suppression by Neonicotinoid Insecticides at the Root of Global Wildlife Declines,” by Rosemary Mason et al., *Journal of Environmental Immunology and Toxicology* 2012 (in press); www.boerenlandvogels.nl/sites/default/files/JEIT-D-12-00001_3.pdf)

After some **50,000 bumblebees died** in a Wilsonville, Oregon, Target parking lot, the Oregon Department of Agriculture restricted use of **neonicotinoid insecticides** with the active ingredient dinotefuran. A landscaper had sprayed 55 flowering European linden trees there with Safari

insecticide on June 15 to combat aphids. The Portland-based Xerces Society says aphids can be controlled by spraying plants with soapy water.

After Oregon Department of Agriculture officials confirmed that Safari had killed the bees, the 55 trees were covered with netting to try to keep insects from feeding on the flowers. The EPA is reviewing effects of neonicotinoids on pollinators. (“Insecticide temporarily banned by Oregon Department of Agriculture after 50,000 bumblebees die in Wilsonville,” by Elizabeth Case, The Oregonian, June 18, 2013;

www.oregonlive.com/environment/index.ssf/2013/06/state_agency_temporarily_bans.html;

“Insecticide Safari confirmed in deaths of 25,000 bees in Wilsonville,” by Elizabeth Case, The Oregonian, June 21, 2013;

www.oregonlive.com/environment/index.ssf/2013/06/insecticide_safari_confirmed_i.html#/3;

“Bee deaths a result of pesticide Safari; count upped to 50,000 dead insects,” by Elizabeth Case, The Oregonian, June 21, 2013;

www.oregonlive.com/environment/index.ssf/2013/06/pesticide_confirmed_in_bee_dea.html#/0)

Just after corn was planted in Elmwood, Ontario, this spring, **one beekeeper lost 600 hives (37 million bees)**, while another lost eight of 10 hives. Regulators said that corn seeds treated with the **neonicotinoid** insecticides clothianidin or thiamethoxam “contributed to the majority of the bee mortalities.” (“Bees dying by the millions,” by Jon Radojkovic, The Post [Ontario], June 19, 2013; <http://www.thepost.on.ca/2013/06/19/bees-dying-by-the-millions>)

Christopher Connolly, a neuroscientist at the University of Dundee, U.K., exposed bee brains to pesticides that attack insects’ nervous system and to organo-based **pesticides** and found that exposed **bees’ nerves became hyperactive and then stopped working**. A combination of the two pesticide types had a greater effect. Connolly says many other studies are inadequate because they follow bees for only four days after exposure, but problems often become evident after longer times; and they don’t study interactions among pesticides. (“Bees survival: ban more pesticides?” by Anthony King, European Research Media Center, May 2, 2013;

www.youris.com/Environment/Bees/Bees_Survival_Ban_More_Pesticides.kl)

Honeybees that consume pollen that contains amounts of commonly used **fungicides** at levels too low to cause the bee's death still may leave them more **susceptible to infection** by a gut parasite, according to research by the USDA and University of Maryland, published in PLOS ONE. The researchers analyzed pollen collected from honeybees pollinating apples, watermelons, pumpkins, cucumbers, blueberries or cranberries.

In many cases, the pollen that bees brought back came primarily from plants other than the targeted crop. Some pollen samples contained very few pesticides, but the average number seen in a pollen sample was nine different pesticides, which could include insecticides, herbicides, miticides and, most frequently, fungicides. The most common was the fungicide chlorothalonil, widely used on apples and other crops. The most common miticide was fluvalinate, which beekeepers use to control Varroa mites. Neonicotinoid insecticides were only found in pollen from bees foraging on apples.

Honeybees that were fed pollen that contained the fungicide chlorothalonil and was collected at the hive entrance were almost three times more likely to become infected when exposed to the parasite Nosema, compared with control bees. The fungicide pyraclostrobin, found less

frequently in the pollen samples, also increased bees' susceptibility to Nosema infection. One unexpected finding was that honeybees collected relatively little pollen from blueberry and cranberry plants, even though researchers know that bees pollinate these plants. ("Bees Exposed to Fungicide More Vulnerable to Nosema Parasite," by Kim Kaplan, USDA Agricultural Research Service press release, July 24, 2013)

P-coumaric acid, found in the cell walls of pollen and in propolis, appears to activate genes in bees that help detoxify pesticides and other toxicants and strengthen bees' immune systems. When bees gather pollen, that p-coumaric acid gets mixed with honey. Compounds in poplar sap also activate bees' defenses, helping them metabolize toxicants. When bees are fed **high-fructose corn syrup** instead of their natural food, they may be more susceptible to **colony collapse disorder** – possibly due in part to the missing p-coumaric acid. A recent USDA and EPA report suggests that parasites, disease, genetics, poor nutrition, pesticide exposure and lack of bee forage may all be contributing to colony collapse disorder. ("Honey may hold the sticky solution to bee colony collapse," by Geoffrey Mohan, Los Angeles Times, April 29, 2013; www.latimes.com/news/science/sciencenow/la-sci-sn-bee-collapse-20130429,0,665794.story; "Honey constituents up-regulate detoxification and immunity genes in the western honey bee *Apis mellifera*," by Wenfu Mao et al., Proceedings of the National Academy of Sciences, May 21, 2013; www.pnas.org/content/early/2013/04/26/1303884110.abstract; "Study suggests honeybee collapse has many culprits," by Erika Bolstad, The Charlotte Observer, May 3, 2013; www.charlotteobserver.com/2013/05/02/4018617/study-suggests-honeybee-collapse.html#storylink=cpy)

When people who lived in cities in 18 European countries had their **urine** tested, 44 percent of samples **contained traces of the weed killer glyphosate**, according to tests commissioned by Friends of the Earth Europe. Use of glyphosate (the most widely used herbicide in the world and the active ingredient in Monsanto's Roundup) has increased with use of genetically engineered glyphosate-tolerant crops. Friends of the Earth Europe's spokesperson Adrian Bebb said, "These results suggest we are being exposed to glyphosate in our everyday lives, yet we don't know where it is coming from, how widespread it is in the environment, or what it is doing to our health."

Adding to concern is recent research showing that glyphosate, even in the parts per trillion concentration range, can drive estrogen receptor-mediated breast cancer cell proliferation. Researchers compared effects of glyphosate on hormone-dependent and hormone-independent **breast cancer** cell lines and found that glyphosate stimulates hormone-dependent cancer cell lines. Glyphosate-based herbicides are widely used to grow soybeans, and the researchers found an additive estrogenic effect between glyphosate and genistein, a phytoestrogen (plant-produced estrogen) in soybeans. The researchers conclude that the glyphosate-genistein interaction needs further animal study.

Meanwhile, the EPA is expected to **increase allowable residue levels of the herbicide glyphosate** on forage and hay teff, on oilseed crops, on root crops and on fruits from 200 ppb to 500 ppb. Recent research shows that glyphosate may harm humans by interfering with gut bacteria, thus potentially disrupting immunity and vitamin synthesis. The researchers called

glyphosate possibly “the most biologically disruptive chemical in our environment.” (“EPA to Raise Limits on Controversial Pesticide,” The Epoch Times, www.theepochtimes.com/n3/134178-epa-to-raise-limits-on-controversial-pesticide/; Weed killer found in human urine,” Friends of the Earth Europe, May 13, 2013. www.foeeurope.org/weed-killer-glyphosate-found-human-urine-across-Europe-130613; “Glyphosate induces human breast cancer cells growth via estrogen receptors,” by S. Thongprakaisang et al., Food Chem Toxicol., June 8, 2013; <https://www.ncbi.nlm.nih.gov/pubmed/23756170>; “Breaking: Glyphosate (Roundup) Carcinogenic in the Parts per Trillion Range,” by Sayer Ji, GreenMedInfo, June 13, 2013; <http://www.greenmedinfo.com/blog/breaking-glyphosate-roundup-carcinogenic-parts-trillion-range>)

Preschoolers in California are exposed to more food contaminants than are older children and adults, reports the first research to assess multiple contaminants, mostly pesticides and metals, in children's diets and to compare estimated exposures with EPA guidelines.

Survey participants were asked how much and how often they and their children ate 44 foods in the past year. Then national databases were used to estimate the amount of toxic chemicals they had eaten.

The researchers’ calculations showed that preschoolers and school-aged children ate contaminants at levels with known health effects, including cancer, liver toxicity and damage to neurological and reproductive systems. Preschoolers exceeded the cancer benchmarks for arsenic, dieldrin, DDE and PCDD/Fs (polychlorinated dibenzo-p-dioxin and polychlorinated dibenzofuran).

The primary sources of the exposures were processed foods – such as crackers, chips and french fries – for acrylamide; fish for arsenic and mercury; produce for pesticides; and dairy and meat products for other pesticides, such as chlordane, DDE and PCDD/Fs.

The researchers suggest avoiding or limiting consumption of highly processed foods; consuming organic produce and organic milk when possible; thoroughly washing non-organic produce; decreasing consumption of meat and dairy products; and choosing fish low in methyl mercury, such as catfish, salmon and scallops, rather than shark and swordfish. (“California's children face higher health risks from contaminants in food than adults,” by Jennifer Wolstenholme, Environmental Health News, May 30, 2013; www.environmentalhealthnews.org/ehs/newscience/2012/12/2013-0522-california-food-pesticides-kids-higher-adults/; Original study: R. Vogt et al., 2012. “Cancer and non-cancer health effects from food contaminant exposures for children and adults in California: a risk assessment,” Environmental Health, Nov. 9, 2012; <http://dx.doi.org/10.1186/1476-069X-11-83>)

Chickens raised with arsenic-based drugs likely result in chicken meat with more inorganic arsenic, a carcinogen, according to a study led by researchers at the Johns Hopkins Center for a Livable Future at the Bloomberg School of Public Health.

The researchers purchased conventional, antibiotic-free and USDA organic chicken from 10 U.S. metropolitan areas between December 2010 and June 2011, when the arsenic-based drug roxarsone, then manufactured by Pfizer, was readily available for poultry companies to add to feed.

Arsenical drugs are approved to make poultry grow faster, improve meat pigmentation, and to treat and prevent parasites. In 2010, industry representatives estimated that 88 percent of the roughly nine billion chickens raised for human consumption in the United States received roxarsone. In July 2011, Pfizer voluntarily removed roxarsone from the U.S. market but may sell the drug overseas and could resume marketing it in the United States at any time. Pfizer still domestically markets the arsenical drug nitarsone, which is chemically similar to roxarsone. No federal U.S. law prohibits the sale or use of arsenic-based drugs in poultry feed. (Maryland bans the use of most arsenicals in chicken feed.)

Chronic inorganic arsenic exposure can cause lung, bladder and skin cancers and has been associated heart disease, type 2 diabetes, cognitive deficits, adverse pregnancy outcomes and other conditions.

The FDA has not established safety standards for inorganic arsenic in foods; in 2011 it did suggest that concentrations should be well below 1 microgram per kilogram of meat. Levels in the meat where roxarsone was found in the Johns Hopkins study were two and three times greater than that. (“Poultry Drug Increases Levels of Toxic Arsenic in Chicken Meat,” Environmental Health Perspectives, May 11, 2013; “Roxarsone, Inorganic Arsenic, and Other Arsenic Species in Chicken: A U.S.-Based Market Basket Sample,” by Keeve E. Nachman et al., Environmental Health Perspectives, May 2013; www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/news_events/announcement/2013/toxic_arsenic_chicken_meat.html; http://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/research/clf_publications/pub_rep_desc/arsenic_chicken.html)

A National Research Council report says the **EPA must do more to ensure that pesticides do not harm threatened and endangered fish and wildlife**. “Assessing Risks to Endangered and Threatened Species from Pesticides” recommends that the EPA more broadly account for pesticides’ direct and indirect harm to wildlife – including harm that is not immediately lethal, and impacts to food supply and habitat – and better consider the combined effects of exposure to multiple pesticides. The National Marine Fisheries Service has found that 21 commonly used pesticides jeopardize already imperiled salmon and steelhead populations and that pesticides are an important factor in ongoing salmon declines in West Coast rivers. (“Pesticide Regulation Overhaul Needed to Protect Wildlife from Pesticides,” EarthJustice press release, May 1, 2013; <http://earthjustice.org/news/press/2013/pesticide-regulation-overhaul-needed-to-protect-wildlife-from-pesticides>)

In response to a lawsuit over its herbicide **atrazine**, Syngenta launched an aggressive multi-million dollar campaign that included hiring a detective agency to investigate scientists on a federal advisory panel, looking into the personal life of a judge and commissioning a psychological profile of Tyrone Hayes of the University of California, Berkeley, whose research

suggests that atrazine feminizes male frogs. Environmental Health News reports that Syngenta also routinely paid “third-party allies” to appear to be independent supporters, and kept a list of people and groups it could recruit as experts without disclosing ties to the company. Three-quarters of all U.S. corn is treated with atrazine; the herbicide is also used on some golf courses, Christmas tree plantings and public lands. It can run off fields and contaminate water supplies. It also drifts hundreds of miles by air. Research examining potential effects of atrazine in people is relatively sparse; it is reviewed in Environmental Health News. A few studies have found possible connections with birth defects and poor semen quality in men. Europe banned atrazine in 2003 because of its widespread discovery in water supplies. The U.S. EPA has concluded that water containing atrazine at 3 parts per billion is safe to drink – but the EPA has initiated another review of data related to atrazine and human and wildlife health. (“Special Report: Syngenta's campaign to protect atrazine, discredit critics,” by Clare Howard, Environmental Health News, June 17, 2013;

www.environmentalhealthnews.org/ehs/news/2013/atrazine; “Frogs feminized, but atrazine's effects on people uncertain,” by Brian Bienkowski and Marla Cone, Environmental Health News, June 17, 2013;

www.environmentalhealthnews.org/ehs/news/2013/atrazine-health)

The **Maine Legislature** defeated LD 961, a bill that would have restricted the application of **pesticides on playgrounds**. The Natural Resources Council of Maine says that “lawmakers continue to be reluctant to restrict pesticide use in Maine, even on playgrounds where children play.”

With passage of Maine’s LD 1531, An Act To Maintain Access to Safe **Medical Marijuana**, medical marijuana dispensaries may not use pesticides that require federal registration on medical marijuana but can use certain minimum risk pesticides that are exempt from federal regulation under the Federal Insecticide, Fungicide and Rodenticide Act, Section 25(b). Those pesticides are castor oil (U.S.P. or equivalent); linseed oil; cedar oil; malic acid; cinnamon and cinnamon oil; mint and mint oil; citric acid; peppermint and peppermint oil; citronella and citronella oil; 2-phenethyl propionate (2-phenylethyl propionate); cloves and clove oil; potassium sorbate; corn gluten meal; putrescent whole egg solids; corn oil; rosemary and rosemary oil; cottonseed oil; sesame (includes ground sesame plant) and sesame oil; dried blood; sodium chloride (common salt); eugenol; sodium lauryl sulfate; garlic and garlic oil; soybean oil; geraniol; thyme and thyme oil; geranium oil; white pepper; lauryl sulfate, zinc metal strips (consisting solely of zinc metal and impurities); and lemongrass oil. Also, LD 1062, An Act To Add Conditions That Qualify for Medical Marijuana Use, added post-traumatic stress disorder (PTSD), inflammatory bowel disease, dyskinetic and spastic movement disorders, and other diseases causing severe and persistent muscle spasms to the list of qualifying conditions for which a doctor can recommend medical use of marijuana. (MMCM Latest News – Medical Marijuana Bills, Medical Marijuana Caregivers of Maine, June 28, 2013;

<http://www.mmcmonline.org>)

Winter 2013-2014

The Good News

More than a third of Americans say organic is important, four out of five shoppers want to buy more local food, and 58 percent of consumers want to purchase natural food, according to a white paper entitled "A Fresh Look at Organic and Local" by Sullivan Higdon & Sink (SHS) FoodThink. The paper is based on research involving nearly 1,500 U.S. consumers from diverse demographic backgrounds. The three groups – organic, local and natural – “each have different drivers and deal breakers," says Erika Chance, senior FoodThink researcher, who adds that many consumers are confused by the different labels. Among those differences are these:

- Among organic consumers, 65 percent try to eat organic whenever possible.
- 53 percent of consumers are willing to pay more for local food.
- Three-fourths of natural food consumers claim to be good or excellent cooks.

The 16-page paper is available at shsfoodthink.com. (“Organic, Local and Natural Go Mainstream,” by Sullivan Higdon & Sink, PR Newswire, July 31, 2013; www.sacbee.com/2013/07/31/5611562/organic-local-and-natural-go-mainstream.html#storylink=cpy)

The State of Maine Cheese Company celebrated its 30th anniversary in August. The Route 1 store in Rockport sells cheeses and other Maine-made goods. When the company started, no one in Maine was making hard cheeses. Now Maine has 71 cheese makers who produce almost 1 million pounds of cheese. Maine Cheese Guild president Eric Rector told the Bangor Daily News that a University of Vermont study says Maine is the fastest growing artisan cheese producing state and is second only to New York state in the number of licensed artisan cheese makers. The State of Maine Cheese Company sells 75,000 pounds of cheese per year. (“Maine’s cheese making industry on the rise,” by Abigail Curtis, Bangor Daily News, Aug. 3, 2013; <http://bangordailynews.com/2013/08/02/business/maines-cheese-making-industry-on-the-rise/>)

The **Portland Food Co-op** launched a “Let’s Open the Doors” campaign in October to recruit the 1,000 new member-owners it needs **to open a new storefront**, community-owned market in Portland. The Co-op’s market will be member-owned but open to the public. Building on existing relationships with Maine producers, the co-op will carry local natural and organic products. As we went to press, the co-op was in lease negotiations for a possible location on the Portland Peninsula.

“The Portland Food Co-op came out of a community conversation in 2006 about the lack of locally owned grocery stores in Portland,” says startup project manager Rachelle Curran Apse. “In the years since then, we have built a co-op with just over 400 member-owners that has contributed to Portland’s local food scene not only by providing local food and products at a fair price, but also bringing together a community of people who care about what they buy and where it comes from.”

The co-op needs just over \$1 million to open a storefront. A major part of reaching that goal is increasing its member-ownership to 1,400. Member-owners make a one-time \$100 equity investment in the co-op. They can sign up at www.portlandfood.coop.

Currently member-owners order food online through the volunteer-run co-op operations, and all ordering member-owners have a work shift. The new storefront will be a full-service grocery,

open seven days a week. Member-owners will have special discounts, rebates when the co-op earns surplus income, and a voice in the co-op's decision making. Once the storefront is open, employees will staff it; member-owners will no longer be required to do a work shift.

A recent "Report of Michigan Fresh Unprocessed Whole Milk Workgroup" **encourages raw-milk consumption** as part of state economic development. The report says, "Milk is not inherently hazardous" and that responsibility for raw-milk safety rests with everyone who handles the product – farmers, handlers and consumers. It suggests that raw milk is more nutritious than pasteurized milk and can counter some chronic diseases. ("A Model for Reconciliation Over Raw Milk?" by David Gumpert, Modern Farmer, Aug. 1, 2013; <http://modernfarmer.com/2013/08/a-model-for-reconciliation-over-raw-milk/>; report at <http://cdn.modernfarmer.com/wp-content/uploads/2013/08/MI-FUWmilk.pdf>)

According to a Union of Concerned Scientists report, **increasing our consumption of fruits and vegetables could save more than 100,000 lives** and \$17 billion in health care costs from heart disease each year. And better farm policies, designed to encourage production of healthy food instead of processed junk foods, will help us reap those benefits. The report says that if Americans ate just one more serving of fruits or vegetables per day, this would save more than 30,000 lives and \$5 billion in medical costs each year. If Americans followed current USDA recommendations for daily consumption of fruits and vegetables, those numbers would go up to more than 127,000 lives and \$17 billion saved. According to methods commonly used by economists, the increased longevity that would result if Americans ate the recommended amount of fruits and vegetables is worth over \$11 trillion. The report recommends policy changes to increase produce growth and consumption. ("The \$11 Trillion Reward – How Simple Dietary Changes Can Save Lives and Money, and How We Get There," by Jeffrey K. O'Hara, Union of Concerned Scientists, August 2013; www.ucsusa.org/food_and_agriculture/solutions/expand-healthy-food-access/11-trillion-reward.html)

If farm policies helped Americans choose healthier foods, U.S. farmers would grow those foods, bringing a host of benefits to farm country, says a report by the Union of Concerned Scientists (UCS). "The Healthy Farmland Diet: How Growing Less Corn Would Improve Our Health and Help America's Heartland" uses economic modeling to estimate the impacts of dietary shifts on farm production.

"The reality of American agriculture is that we're not growing what we should be eating," said Kranti Mulik, senior economist with UCS. "Only about 2 percent of U.S. farmland is used to grow fruits and vegetables, while 59 percent is devoted to commodity crops. But this situation isn't just bad for our waistlines – it's also holding back farmers and rural economies, and hurting the quality of life in farm communities and beyond."

The report finds that if Americans ate fruits and vegetables at USDA-recommended levels – increasing consumption by 173 percent over current levels – U.S. farmers would grow 88 percent more of these foods. Conversely, if meat and dairy consumption fell to levels recommended by the Harvard University School of Public Health, farmers would grow 8 million fewer acres of corn and other grains used as livestock feed.

This in turn would drive changes in farming practices that would build healthier soil, improve air and water quality, and increase access to fresh, affordable, healthy foods in farm communities. It would also be good for farmers, as recent studies have shown that more diverse, local food systems create jobs and increase farm profits.

Outdated and expensive farm policies have incentivized monocultures of commodity crops such as corn and soybeans, which rely on heavy application of fertilizers and pesticides. These subsidy programs also have encouraged large-scale livestock production in CAFOs (confined animal feeding operations), which produce gross quantities of manure waste that cannot be cost-effectively used on faraway cropland. All these policy choices lead to poor soil quality, polluted air and water, and even reduced property values in some farm communities.

Even worse, some federal subsidy programs actually restrict farmers from growing fruits and vegetables, preventing these farmers from growing a diversified array of crops.

The UCS calls for Congress to invest in low-cost programs that can help align healthy eating with agricultural production, by funding and implementing, for example, such programs as the Farmers Market Promotion Program, and by reducing commodity subsidies and removing planting restrictions and other policy obstacles that prevent farmers from diversifying their production. (“Less Corn, More Fruits and Vegetables Would Benefit U.S. Farmers, Consumers and Rural Communities,” Union of Concerned Scientists, Oct. 23, 2013; www.ucsusa.org/news/press_release/less-corn-more-fruits-and-vegetables-0378.html)

The Center for Science in the Public Interest (CSPI) discusses four key areas in which **food system change** needs to begin: in food education, food and health, schools, and college campuses. The article talks about ways to use art to explore food system issues (mentioning Belfast’s Troy Howard Middle School seed packet prints as an example); how to increase the average four hours of food education that U.S. students receive yearly; ways that college students are changing food systems on campuses; and efforts to get more young people involved in farming, as The Greenhorns do. (“How Do We Change the Food System? Start Early!” Food Tank, Oct. 21, 2013; http://foodtank.org/news/2013/10/how-do-we-change-the-food-system-start-early?utm_source=Food+Tank%3A+The+Food+Think+Tank&utm_campaign=dc83d62360-FoodTankNewsletterUSFoodDay&utm_medium=email&utm_term=0_c6d5c4b977-dc83d62360-12621129)

Based on data from 56 certified organic farms, the Minnesota Department of Agriculture and the University of Minnesota's Center for Farm Financial Management show a **median net income of just over \$85,000** last year, more than double the \$38,000 organic farms earned the year before. Conventional farm average profit was nearly \$200,000 – largely because the conventional farms studied averaged 838 crop acres versus 322 for organic. Minnesota's organic corn producers averaged about 127 bushels per acre, compared with 165 for conventional corn – but organic corn brought nearly \$13 per bushel, almost double conventional. Organic milk earned \$30 per hundredweight, versus just over \$19 for conventional. (“Profits at Minnesota organic farms take big jump,” Wisconsin State Farmer, Sept. 19, 2013; <http://www.wisfarmer.com/features/profits->

at-minnesota-organic-farms-take-big-jump-----jcpjg-335250-224420781.html ; Organic Farm Performance in Minnesota 2012;

www.mda.state.mn.us/~media/Files/food/organicgrowing/2012orgfarmperf.ashx ;

“Organic Farm Profits Jump,” by Mark Steil, Minnesota Public Radio, 9/3/2013;

<http://blogs.mprnews.org/statewide/2013/09/organic-farm-profits-jump/>)

The 2013 **National Food Hub Survey**, conducted by the Michigan State University Center for Regional Food Systems and the Wallace Center at Winrock International, shows that, across the country, food hubs are growing to meet the need for local food distribution infrastructure. Food hubs are businesses or organizations that manage the aggregation, distribution and marketing of source-identified food products. Survey results from more than 100 food hubs demonstrate that U.S. hubs continue to develop as financially viable businesses providing locally produced food to restaurants, schools, grocery stores and other wholesale customers. Food hubs may also provide much needed size-appropriate infrastructure and marketing opportunities for local food produced by small and midsized farms and ranches.

Key findings from the survey indicate that food hubs are

- financially viable. Sixty-six percent of food hubs operate independently from outside funding sources.
- contributing significantly to the growth of their local economies. The average food hub’s sales in 2012 exceeded \$3.7 million.
- creating jobs. The average food hub houses 19 paid positions.
- supporting regional producers. The average food hub worked with 80 producers (i.e., farms and ranches), the majority of which are small or midsized.
- contributing to food access. Nearly half of all food hubs have operational commitments to equity, increasing food access and/or community development.

“Food hubs are pivotal for meeting the growing demand for regionally produced, healthy food because they offer farmers a profitable channel for reaching wholesale markets, provide valuable aggregation and distribution services otherwise often missing, and efficiently manage relationships and transactions with buyers,” said John Fisk, director of the Wallace Center at Winrock International. (“Food Hubs Seen as Profitable Businesses, National Survey Shows,” Michigan State Univ., Sept. 17, 2013; <http://foodsystems.msu.edu/news/stories/read/2013-food-hub-survey>; Full report at www.foodsystems.msu.edu/activities/food-hub-survey and at www.ngfn.org/2013foodhubsurvey.)

Chipotle Mexican Grill is the largest U.S. restaurant buyer of local produce, naturally raised pork and the largest restaurant seller of naturally raised meat. It supports organic foods and GE labeling and promotes “Food With Integrity.” Its short film “The Scarecrow,” viewed more than 7 million times and depicting industrial agriculture and then a sustainable farm, plus a linked video game, has drawn considerable attention – positive and, from the industrial food players, predictably negative.

(The Scarecrow, www.youtube.com/watch?v=IUtnas5ScSE ; “Chipotle Doubles Down on Organic,” by Jeremy Bowman, The Motley Fool, Daily Finance, Sept. 21, 2013;

www.dailyfinance.com/2013/09/21/chipotle-doubles-down-on-organic/)

A University of Vermont-Cornell study conducted over the last three years found that **growing shiitake mushrooms outdoors can be profitable** to farmers with at least 500 logs, grossing \$11,190 at \$16 a pound, and that demand is outstripping supply. The universities are working on a guide for producing shiitakes in the Northeast. Each 3-foot-long hardwood log produces about half a pound twice per season. (“Demand grows for shiitake mushrooms from Northeast,” by Lisa Rathke, Charlotte Observer, Sept. 22, 2013; www.charlotteobserver.com/2013/09/22/4333820/demand-grows-for-shiitake-mushrooms.html#storylink=cpy)

At the New England Plant, Soil, and Water Research Laboratory in Orono, Maine, plant pathologist Bob Larkin and his colleagues are studying **ways to reduce disease and increase yields of potatoes**. “In general, 3-year crop rotations, as opposed to the 2-year rotations typically used, help break the host-pathogen cycle,” says Larkin. “We found that 3-year rotations provide better disease control and higher crop yields. These rotations also help support beneficial soil microbes that improve soil quality by increasing soil organic matter or by inhibiting plant pathogens.”

In general, using mustard as a green manure reduced the incidence of powdery scab, common scab and Verticillium wilt most consistently. Brassica cover crops planted in the fall before spring potato planting reduced the incidence and severity of black scurf on tubers by 30 to 80 percent and reduced the incidence of common scab up to 50 percent. Rapeseed provided the highest reductions in black scurf.

“Given these results, we think that farmers can inhibit pathogens that cause soilborne potato diseases by planting a Brassica green manure crop like mustard or rapeseed,” Larkin says. “In Maine, this would be a late summer or early fall crop that is plowed under while it was still green, and then potatoes could be planted the following spring. A fall cover crop can also help conserve the soil.”

Larkin also observed that organic amendments, such as a compost blend, boosted yields almost as much as irrigation because the amendments improved retention of soil water that maturing potatoes could use.

Larkin concluded that using a combination of Brassica and sudangrass green manures, fall cover crops and crop rotations can reduce soilborne diseases by up to 58 percent – and adding compost to the mix increases tuber yields up to 42 percent.

“We also know it’s important to be able to offer different options to Maine farmers,” Larkin says. “Potato is the main cash crop, but farmers using a 3-year rotation need another cash crop as well—maybe corn or beans or canola. The second crop may not be as profitable as potato, but it does provide some income.”

Larkin’s data indicated that farmers are shifting to longer crop rotations that intersperse small grains with potato. This in turn can help restore soil quality, which has been decreasing over the years because of continuous potato production. (“Multiple Prospects for Maine’s Potato Producers,” by Ann Perry, Agricultural Research Magazine,

Sept. 2013; www.ars.usda.gov/is/AR/archive/sep13/potato0913.htm)

A report from the U.N. Conference on Trade and Development, “Wake up Before It Is Too Late,” calls for **greater sustainability in food and farming** to ensure food security in a changing climate. The report says that “feeding the world” requires not just growing more food but recognizing that hunger and malnutrition “are mainly related to lack of purchasing power and/or inability of rural poor to be self-sufficient.” In reviewing the report, Anna Lappé, author of *Diet for a Hot Planet*, quotes her mother, Frances Moore Lappé: “Hunger is not caused by a scarcity of food, but by a scarcity of democracy.”

The report calls for more ecologically intense food production by land stewards rather than input-intensive monocultures; and biodiverse, ecological agriculture that is more resilient during major climatic events. After Hurricane Mitch ravaged Central America, farmer research teams found that farms where sustainable agriculture practices had been used retained greater soil moisture and 20 to 40 percent more topsoil and experienced less economic loss than those not using sustainable practices.

The report also highlights how agribusiness and chemical corporations have slowed the spread of agroecology by influencing policy, regulation and research. (“Wake Up and Smell the Soil! Groundbreaking UN Report on the Paradigm Shift Needed to Feed the Future,” by Anna Lappé, *Civil Eats*, Sept. 18, 2013; <http://civileats.com/2013/09/18/wake-up-and-smell-the-soil-a-groundbreaking-unctad-report-on-the-paradigm-shift-needed-to-feed-the-future/#sthash.1KsqyzJ2.dpuf>)

Biochar is an end product of pyrolyzing organic matter (heating biomass at relatively low temperatures and low-oxygen conditions) to produce a charcoal-like substance. It is touted for its potential to sequester carbon, boost soil fertility, generate energy during its production and mitigate pollution. In her excellent review article, Nancy Maddox cites other potential benefits of biochar: suppressing nitrous oxide and other greenhouse gas emissions from soils; having a high cation exchange capacity and, for some unknown reason, adsorbing phosphate; increasing soil water-holding capacity; decreasing levels of bioavailable heavy metals; supporting soil microbial communities and more. She also discusses variations in biochar, depending on the feedstock and heating techniques; variable effects of biochar on crop yields; definition and product standardization programs; cost effectiveness under specific conditions; and the fact that biochar is not a silver bullet for solving soil fertility and greenhouse gas issues but may be a partial solution for various environmental issues. (“The promise [and uncertainties] of Biochar,” by Nancy Maddox, *Crops, Soils, Agronomy News Magazine*, Aug. 26, 2013; <https://www.agronomy.org/publications/csa/articles/58/9/4>)

The **Austin**, Texas-based Ground to Ground program, a nonprofit, volunteer-based program, **diverts more than 8 tons of spent coffee grounds from landfills each month** by making them available to the community for compost. The City of Austin is trying to eliminate waste entirely by 2040. (“Austin-based coffee recycling program keeps community well grounded,” by Paul Schattenberg, *AgriLife Today*, Oct. 22, 2013; <http://today.agrilife.org/2013/10/22/austinground2ground/>)

Five innovative grassroots groups working for democratic access to land, seeds, water and food have been honored with the **2013 Food Sovereignty Prize**, says the U.S.

Food Sovereignty Alliance. Winners were chosen from among more than 40 inspiring projects creating on-the-ground solutions to hunger and poverty, said the alliance, a network of food justice, anti-hunger, labor, environmental, faith-based and food producer advocacy organizations. Top honors went to the Haitian Group of 4 (G4) and the South American Dessalines Brigade, an international peasant-to-peasant collaboration working to rebuild Haiti's seed, soil and agricultural systems. Honorable mentions were garnered by Tamil Nadu Women's Collective of India; National Coordination of Peasant Organizations of Mali; and Basque Country Farmer's Union of the Basque Country in Europe.

"The Food Sovereignty Prize symbolizes the fight for safe and healthy food for all peoples of the earth," said Chavannes Jean-Baptiste, G4 Executive Committee member. "It's a fight that must be waged both locally and globally, and requires deep solidarity among all organizations fighting for food sovereignty."

Flavio Barbosa, of the South American Dessalines Brigade, added: "Receiving this prize for the partnership between the Group of 4 and the Dessalines Brigade is an incentive for others to participate in long exchanges such as the one we are experiencing in Haiti. And it charges us with even greater responsibility to continue our defense of peasant agriculture and agroecology as a way to produce sustainable, healthy chemical-free foods accessible for all." ("Food Sovereignty Prize Honors Grassroots Initiatives in Haiti, Brazil, Basque Country, Mali and India," Aug. 13, 2013; <http://foodsovereigntyprize.org/wp-content/uploads/2013/08/Food-Sov-Prize-Honorees-2013-Press-Release-8-13.pdf>)

In California's **strawberry**-growing region, carbon compounds, such as rice bran or molasses, are mixed with the soil; the soil is then irrigated and covered with a plastic tarp. The resulting anaerobic conditions deprive soilborne pests of oxygen. This could be one **alternative to use of toxic fumigants**. ("Results point to safer pest control," by D. L. Taylor, The Californian, Sept. 19, 2013; www.thecalifornian.com/article/20130919/BUSINESS/309190016/Results-point-safer-pest-control?nclick_check=1)

California's Urban Agriculture Incentive Zones Act (AB 551) allows cities and counties to designate "incentive zones" in urban areas (250,000+ people) where landowners can get a substantial property tax break in exchange for dedicating their vacant land to commercial or noncommercial agricultural use for at least five years. ("New Law Breaks Ground for Urban Ag," Cultivating a Healthy Food System, Oct. 4, 2013; www.cuesa.org/article/new-law-breaks-ground-urban-ag)

The FDA has responded to a nearly four-year-old petition calling for the **immediate withdrawal of the vast majority of arsenic-containing compounds used as feed additives** for chickens, turkeys and hogs. A lawsuit filed by the Center for Food Safety (CFS) on behalf of CFS, the Institute for Agriculture and Trade Policy (IATP), and seven other U.S. food safety, agriculture, public health and environmental groups compelled the FDA to respond. The FDA will withdraw three of four arsenicals and all drug approvals associated with them; so of 101 approvals for arsenic-based animal drugs, 98 will be withdrawn. Arsenic is added to poultry feed to induce

faster weight gain on less feed and to create the perceived appearance of a healthy color in meat from chickens, turkeys and hogs, says CFS. A 2006 IATP report estimated that more than 70 percent of U.S. chickens raised for meat are fed arsenic, and testing of supermarket-bought and fast-food chicken found that much of it contained some level of arsenic. (“FDA to Withdraw Approvals of Arsenic in Animal Feed,” Center for Food Safety, Oct. 1, 2013; www.centerforfoodsafety.org/press-releases/2620/fda-to-withdraw-approvals-of-arsenic-in-animal-feed#)

Prenatal exposure to polycyclic aromatic hydrocarbons (PAHs), formed when fossil fuels, tobacco, foods and other organic materials are incompletely combusted, has been associated with higher incidence of depression, anxiety and attention problems among highly exposed children, and epidemiological studies have associated PAH exposure with adverse effects on fetal growth. Now a study has found that some European mothers’ **fruit and vegetable intake during pregnancy can offer some protection against the reduced birth weight effects associated prenatal PAH exposure.** (“Prenatal Protection: Maternal Diet May Modify Impact of PAHs,” by Julia R. Barrett, Environmental Health Perspectives, Oct. 1, 2013; <http://ehp.niehs.nih.gov/121-a311/>)

To promote workplace safety, the Maine AgrAbility Program of the University of Maine Cooperative Extension, in partnership with Goodwill Industries of Northern New England and Alpha One, developed a brightly colored decal to be applied to tractor fenders, dashboards and windshields. The **decal reminds operators to work safely.** UMaine Cooperative Extension’s AgrAbility Program will give as many as five free safety stickers to each farm in Maine. To order, contact Maine AgrAbility coordinator Lani Carlson at maine.agrability@maine.edu or 207.944.1533.

Biodiversity and Food Security

In “Putting the Cartel before the Horse ... and Farm, Seeds, Soil, Peasants, etc. – **Who Will Control Agricultural Inputs**, 2013?” the ETC Group identifies the major corporate players that control industrial farm inputs. Together with a companion poster, “**Who will feed us?** The industrial food chain or the peasant food web?” ETC Group aims to de-construct the myths surrounding the effectiveness of the industrial food system. The report notes, for example, that

- the world’s top three corporations control 53 percent of the world’s commercial seed market, and the top 10 control 76 percent;
- six firms hold 76 percent of the global agrochemical market, and the top 10 pesticide companies control almost 95 percent of the global market;
- the top 10 firms control 41 percent of the global fertilizer market;
- three companies account for 46 percent of the global animal pharmaceutical market, and the top seven firms – all subsidiaries of multinational drug companies – control 72 percent of the market;
- four global firms account for 97 percent of poultry genetics R&D, and four companies account for two-thirds of industry R&D of swine genetics worldwide.

In “Who Will Feed Us?” ETC Group says that the industrial food chain uses 70 percent of the world’s agricultural resources to produce just 30 percent of our global food supply, while the

peasant food web provides 70 percent of the global food supply while using only 30 percent of agricultural resources. ETC Group defines peasants as “all those who produce food mostly for themselves and their communities, whether they are rural, urban, or peri-urban farmers, ocean or freshwater fishers, pastoralists, or hunters and gatherers.” (“Putting the Cartel before the Horse...and Farm, Seeds, Soil, Peasants, etc. – Who Will Control Agricultural Inputs, 2013?” ETC Group, Sept. 2013.

<http://www.etcgroup.org/sites/www.etcgroup.org/files/CartelBeforeHorse11Sep2013.pdf>;

“With Climate Change, Who Will Feed Us?” ETC Group, Sept. 2013;

http://www.etcgroup.org/sites/www.etcgroup.org/files/Food%20Poster_Design-Sept042013.pdf

Animal Welfare

On February 8, Amy Meyer, standing on public property, filmed cows being slaughtered at the Dale T. Smith and Sons Meat Packing Company in Draper, Utah. Meyer was later charged with “agricultural operation interference,” becoming the **agricultural industry’s first “Ag Gag” criminal** – a victim of industrial agriculture’s response to other videos depicting inhumane treatment of livestock. Ag Gag laws, based on the American Legislative Exchange Council’s (ALEC) draft legislation called The Animal and Ecological Terrorism Act, have passed in Iowa, Utah, Missouri, Arkansas and South Carolina. In his Nation article, Leighton Akio Woodhouse describes how such laws can extend to prohibiting filming of unsafe or illegal working conditions, human trafficking and exposure of other illegalities by whistleblowers. After journalist Will Potter publicized Meyer’s experience, the charges were dropped – and Meyer, Potter and others sued, challenging the constitutionality of Utah’s Ag Gag law. (“Charged With the Crime of Filming a Slaughterhouse,” by Leighton Akio Woodhouse, The Nation, July 31, 2013.

<http://www.thenation.com/article/175506/charged-crime-filming-slaughterhouse#>)

Five years after the Pew Commission on Industrial Farm Animal Production (PCIFAP) released its landmark recommendations to remedy the public health, environment, animal welfare and rural community problems caused by industrial food animal production, a new analysis by Johns Hopkins University Center for a Livable Future (CLF) finds that the Administration and Congress have acted “regressively” in policymaking on industrial food animal system issues. The original 2008 report, “**Putting Meat on the Table: Industrial Farm Animal Production in America,**” detailed myriad problems caused by the present industrial food animal production model. CLF began its analysis, “Industrial Food Animal Production in America: Examining the Impact of the Pew Commission’s Priority Recommendations,” late last year.

The Commission’s key recommendations were:

1. Ban non-therapeutic use of antimicrobials in food animal production to reduce the risk of antimicrobial resistance to medically important antibiotics and other antimicrobials.
2. Define non-therapeutic use of antimicrobials as any use in food animals in the absence of microbial disease or documented microbial disease exposure.
3. Treat industrial farm animal production (IFAP) as an industrial operation and implement a new system to deal with farm waste, especially liquid waste systems, to replace the existing inflexible and broken system and to require permitting of more operations.

4. Phase out the most intensive and inhumane production practices within a decade to reduce the risk of IFAP to public health and improve animal wellbeing (i.e., gestation crates, restrictive veal crates and battery cages).
5. Aggressively enforce the existing anti-trust laws applicable to food animal production and, where needed, pass additional laws to provide a level playing field for producers.
6. Increase funding for, expand and reform animal agriculture research.

(“Analysis of Impact of Pew Commission on Industrial Farm Animal Production Finds Administration and Congress Have Exacerbated Problems in the Food System,”

Johns Hopkins Bloomberg School of Public Health, Oct. 22, 2013;

www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/news_events/announcement/2013/pew_2013.html)

Food Safety

At least 2 million Americans fall ill from **antibiotic-resistant bacteria** every year and at least 23,000 die from those infections, according to the Centers for Disease Control and Prevention. The CDC did not count, among those 23,000, those who had a drug-resistant infection but apparently died from a different cause; so, the number is lower than that of previous reports, and the CDC admits it is an underestimate. More than 70 percent of U.S. antibiotic use is for animals, the government estimates; antibiotics are used in animal agriculture to fight infection under crowded conditions and to speed growth. Another report says that MRSA (methicillin-resistant *Staphylococcus aureus*) infections in hospitals decreased by more than half between 2005 and 2011 but remained little changed in other settings. Yet another recent study by Johns Hopkins Bloomberg School of Public Health researchers found that patients living near intensive hog farms and near fields where those hogs’ manure was spread were 38 percent more likely to get MRSA. Shortly after these reports came out, many people affected by a salmonella outbreak traced to three Foster Farms chicken plants in California were found to have a form of the disease that resists multiple antibiotics. Also in California in October, Costco recalled 40,000 pounds of rotisserie chicken due to salmonella contamination. (“Antibiotic-Resistant Infections Lead to 23,000 Deaths a Year, C.D.C. Finds,” by Sabrina Tavernise, The New York Times, Sept. 16, 2013;

www.nytimes.com/2013/09/17/health/cdc-report-finds-23000-deaths-a-year-from-antibiotic-resistant-infections.html?_r=1&

<http://www.cdc.gov/drugresistance/threat-report-2013/>; “Living near hog waste linked to drug-resistant infections,” by Tim Wheeler, The Baltimore Sun, Sept. 16, 2013;

www.baltimoresun.com/features/green/blog/bal-bmg-living-near-hog-waste-linked-to-drugresistant-infections-20130916,0,6730313.story#ixzz2fAdLQzLf; “Warnings as salmonella

strains resist antibiotics,” by Carolyn Lochhead,

San Francisco Chronicle, Oct. 15, 2013; www.sfgate.com/wine/article/Warnings-as-salmonella-strain-resists-antibiotics-4898712.php)

The USDA found that of more than 20,000 food import shipments, nearly 7 percent of **spice lots were contaminated with salmonella** – including 15 percent of coriander, 12 percent of oregano and basil, and 4 percent of black pepper. Sesame seeds, curry powder and cumin also had high levels of contamination. Salmonella can cause diarrhea, fever, abdominal cramps and even death.

About 14 percent of spices sampled from Mexico and 9 percent from India were contaminated. (“Salmonella in Spices Prompts Changes in Farming,” by Gardiner Harris, The New York Times, Aug. 27, 2013; www.nytimes.com/2013/08/28/world/asia/farmers-change-over-spices-link-to-food-ills.html?_r=0)

In 2011, **cantaloupes** shipped from a Colorado farm and **contaminated with listeria** bacteria killed 33 people and hospitalized 147. The farmers, Eric and Ryan Jensen, have been accused of not properly cleaning the cantaloupe. Their case goes to trial on December 2. The Jensens have pleaded not guilty. (“Cantaloupe Farmers Arrested – Will There Be Others?” Las Vegas Guardian Express – 9/27/2013. By Lisa Nance; <http://guardianlv.com/2013/09/cantaloupe-farmers-arrested-will-there-be-others/>)

Prions — the infectious, deformed proteins that cause chronic wasting disease in deer — **can be taken up by plants** such as alfalfa, corn and tomatoes, according to research from the National Wildlife Health Center in Madison, Wisc.; and stems and leaves from those plants caused infections when injected into lab mice. Exposure via plants was previously unknown, although animal-to-animal and soil-to-animal transmission was known. Chronic wasting disease in deer has been identified in 17 states. Prion diseases are not thought to spread from deer (or cows, as in mad cow disease; or sheep or goats, as in scrapie) to humans, although some research suggests otherwise. (“Prions in plants? New concern for chronic wasting disease,” by Ron Seely, Wisconsin Center for Investigative Journalism, www.wisconsinwatch.org/2013/09/27/prions-in-plants-new-concern-for-chronic-wasting-disease/)

Food Additives

Food manufacturers are allowed to determine themselves whether **additives** they use are “generally recognized as safe” (GRAS) according to FDA guidelines and can then use the GRAS additive(s) with or without notifying the FDA – much like the system for genetically engineered crops. Researchers who looked at 451 GRAS notifications to the FDA found that “**financial conflicts of interest** were ubiquitous” among those who determined that the additives were GRAS. Manufacturers’ employees did 22.4 percent of the safety assessments, employees of a consulting firm chosen by the manufacturer did 13.3 percent, and a panel chosen by the manufacturer or the consulting firm did 64.3 percent. In no case was an independent review done. (“Conflicts of Interest in Approvals of Additives to Food Determined to Be Generally Recognized as Safe,” by Thomas G. Neltner, J.D., et al., JAMA Intern Med., Aug. 7, 2013; <https://archinte.jamanetwork.com/article.aspx?articleid=1725123>).

The USDA has changed the process for **exempting otherwise prohibited substances** (such as synthetics) **in food that carries the “organic” or “made with organic” label**.

Under the federal organic law and before the September 13 announcement, a controlled process allowed use of substances not normally permitted in organic production because of extenuating circumstances – e.g., they were not available in organic form. These exemptions were supposed to last for five years, in order to encourage development of natural or organic alternatives. The exemptions were required by law to expire unless they were reinstated by a two-thirds majority vote of the National Organic Standards Board (NOSB) and had a public review. Now an exempt

material could be permitted indefinitely unless a two-thirds majority of the NOSB votes to remove it from the list rather than reinstate it. The new policy allows USDA to relist exemptions for synthetic materials without NOSB recommendation or public view. Consumer groups are campaigning to have USDA reverse this change. (“U.S. Department of Agriculture Guts National Organic Law; Circumvents Public Process,” joint statement from Consumers Union, Food & Water Watch, Beyond Pesticides and the Center for Food Safety, Sept. 17, 2013; www.foodandwaterwatch.org/pressreleases/u-s-department-of-agriculture-guts-national-organic-law-circumvents-public-process/)

Pesticides

BPC Visits MOFGA

By Katy Green

Maine’s Board of Pesticides Control (BPC) held its July meeting at MOFGA’s Common Ground Education Center in Unity, a first. The board conducted its regular business in the morning and then, in the afternoon, toured MOFGA’s grounds and MOFGA certified organic Village Farm in Freedom. We received some positive feedback from the board in our effort to reach common ground at the education center, and we had a delicious lunch.

The discussion at that July meeting, and at others recently, addressed the threat of arboviral diseases. After months of discussions with the BPC about its rulemaking to allow for widespread pesticide spraying in the event of a public health emergency, we believed that MOFGA had gained some traction regarding exclusion zones. MOFGA’s position is that anybody should be able to “opt out” of having his or her property sprayed for any reason, should the Maine Center for Disease Control and Prevention (CDC) feel a need exists to spray pesticides to control the spread of such diseases as West Nile Virus (WNV) and Eastern Equine Encephalitis (EEE). During initial board discussions, MOFGA believed that certified organic farms would be exempted from being sprayed without landowner permission – in addition to such areas as public water supplies, fish hatcheries and endangered species habitat. But the board backtracked on this commitment in September and added a caveat that towns need not adhere to the exemptions if the “Maine CDC and/or the Department determine that exclusion of certain areas would unreasonably reduce the efficacy of the control program, creating a risk to human life.” This phrase allows for spraying regardless of exemptions and is particularly troublesome for farmers near urban areas.

In an effort to maintain protections for organic farms, Dave Colson, MOFGA’s agricultural services director, asked the BPC to work with farmers to develop best management practices that could be used on farm property to control mosquitoes, which are the vectors of the diseases of concern. If farmers could document that they’ve done what they can to control mosquitoes on their property, then the property could be exempted from government-sponsored spray programs. The board thought this was not reasonable and reiterated its position that spraying will occur only when the threat level is high, and in that case all options should be on the table. Despite several mosquito pools and some animals testing positive for EEE and WNV this year, Maine had no confirmed human cases of these diseases when we went to press – and human cases would be the trigger for spraying.

Variance Requests

The board granted Boyle Associates of Gorham a variance request to control Phragmites at Jordan Park Marsh in Old Orchard Beach. Phragmites is an invasive plant that can quickly create a monoculture and decrease local biodiversity. In this case a variance was necessary because the applicator plans to use pesticides within 25 feet of standing water. The active ingredients of the pesticides to be used in this control are glyphosate and imazapyr, both broad-spectrum products.

Consent Agreements

At its July meeting the board unanimously approved a consent agreement and \$500 fine with Sea Urchin Cottage of York. When guests of this rental cottage discovered bed bugs during their stay, they notified the manager, who then asked the guests to leave for a period of time and sprayed the beds, walls and floors of the cottage with a pesticide, and deployed a fogger to fumigate the entire area. The manager invited the guests to return to the cottage that same day. The customers found that bed bugs were still present and departed for good. The manager had no commercial applicator license, and the board was unclear whether pesticide labels were followed.

The Board reached a \$15,000 consent agreement with Northeast Agricultural Sales Inc. of Detroit, Maine, for violations during the 2012 growing season. Northeast Agricultural Sales was found to be operating a pesticide storage facility in Connor Township, in Aroostook County, that did not meet required standards of storage facilities. Businesses that operate pesticide storage facilities must meet various building requirements, many dealing with safety, including signage, emergency preparedness, and setbacks from residential areas, among others. Northeast Agricultural Sales violated several such requirements. The company does operate two facilities that are in compliance with board rules, but was found to have operated an out-of-compliance facility in the past, which factored into the board's decision regarding the amount of the fine.

In September the board accepted a consent agreement with Wellness Connection of Maine of Augusta for several violations related to cultivating medical marijuana at sites in Auburn and Thomaston. The board documented numerous violations of state law regarding pesticide applications to the plants. Some pesticides used were not registered for use in Maine, and none listed marijuana on the label – a requirement to use a pesticide on a crop. To date no federally registered pesticides include marijuana on the label. Also, existing state law required that no pesticides be used on medical marijuana plants. Given the number of violations in this case, an \$18,000 fine was levied. The board discussed lowering the fine, with two members ultimately voting against the high amount.

To address the issue that no pesticides could be used on medical marijuana in Maine, Senator Tom Saviello (R-Wilton) sponsored “An Act to Maintain Access to Safe Medical Marijuana,” which became law in June 2013. This act directs the BPC to list minimum risk pesticides that are exempt from FIFRA (Federal Insecticide, Fungicide and Rodenticide Act) regulation that can be used on medical marijuana in the state. Wellness Connection of Maine has begun to work with the board on this issue.

[End of BPC news]

Maine writer Jennifer Lunden writes eloquently and in depth about **links between pesticides** (including the increased use of Roundup since the introduction of genetically engineered crops), radiation (including from mammograms), toxic chemicals in makeup (including that sold by companies funding pink-ribbon campaigns) **and breast cancer**. A sidebar recommends ways to reduce the risk of breast cancer through exercise and diet (promoting organic foods) and ways to stay truly informed – rather than simply pink-ribbon-aware. We’re already aware, argues Lunden. (“Exposed – The mammogram myth and the pinkwashing of America,” Orion Magazine, Sept./Oct. 2013; www.orionmagazine.org/index.php/articles/article/7693)

A review study has found that **90 percent of neonicotinoid insecticides persist in soils**, where they accumulate and leach into waterways. Highly neurotoxic to most insects, neonicotinoids are among the most commonly used insecticides in the world. Residue levels often found in soils and waterways are high enough to be lethal to most insects, including beneficial organisms such as pollinators. Neonicotinoid-treated seeds may also be toxic when consumed by birds and mammals. Some neonicotinoids were banned by the European Commission because of fears that they are killing bees, birds, mammals and soil organisms, but they are still commonly used in the United States. (“The environmental risks of neonicotinoid insecticides,” The Organic Center, Sept. 25, 2013; <http://organic-center.org/hot-science/the-environmental-risks-of-neonicotinoid-insecticides/> ; REVIEW: An overview of the environmental risks posed by neonicotinoid insecticides, by Dave Goulson, Journal of Applied Ecology, 50(4) 977-987, August 2013; <http://onlinelibrary.wiley.com/doi/10.1111/1365-2664.12111/abstract>)

This summer Health Canada’s Pest Management Regulatory Agency found **neonicotinoid insecticides in 75 percent of 102 dead bees**. This is the second year in a row that neonicotinoids, used to coat corn and soy seeds, have been found in large numbers of dead bees in Canada. The seed coating releases neonicotinoid-contaminated dust during planting. Health Canada has “concluded that current agricultural practices related to the use of neonicotinoid treated corn and soybean seed are not sustainable ... For the 2014 planting season, we intend to implement additional protective measures for corn and soybean production, including:

- Requiring the use of safer dust-reducing seed flow lubricants;
- Requiring adherence to safer seed planting practices;
- Requiring new pesticide and seed package labels with enhanced warnings; and,
- Requiring updated value information be provided to support the continued need for neonicotinoid treatment on up to 100% of the corn seed and 50% of the soybean seed.”

(“Notice of Intent, NOI2013-01, Action to Protect Bees from Exposure to Neonicotinoid Pesticides,” Health Canada Pest Management Regulatory Agency, 9/13/2013;

www.hc-sc.gc.ca/cps-spc/pest/part/consultations/_noi2013-01/noi2013-01-eng.php)

When researchers in New Zealand exposed invading Argentine ants to sublethal doses of **neonicotinoid insecticides**, the ants’ brood size was cut in half. The exposed Argentine ants did not display any behavioral changes until they encountered the native southern ant. Then **the Argentine ants became much more aggressive** and the southern ants became less aggressive. When neonicotinoid-exposed Argentine ants encountered unexposed southern ants, the Argentine

ants became so aggressive that they risked their lives to attack the latter, so the unexposed native ants were able to eradicate the exposed Argentines. (“Pesticide makes invading ants suicidally aggressive,” by Brian Owens, Nature, Oct. 23, 2013; www.nature.com/news/pesticide-makes-invading-ants-suicidally-aggressive-1.14003)

Monarch butterflies normally begin migrating in spring from remote mountains in Mexico to the United States and Canada. Adults leave Mexico, reproduce and die along the way, so three or more generations are required to reach northern areas. The return trip is made by the final generation that came north. While their populations have been harmed in the past by illegal logging in Mexico and more recently by habitat destruction in the North (including use of genetically engineered, herbicide-resistant crops grown in systems that eliminate the milkweed that monarch larvae need to survive), they have faced even worse conditions the past two years due to extreme weather in the United States and Canada. **Last year, fewer monarchs returned to Mexico than ever before.** (“The monarchs were missing this summer ... and we and weather were to blame,” by Dave Sherwood, PRI’s The World, Sept. 30, 2013; www.pri.org/stories/2013-09-30/monarchs-were-missing-summer-and-we-and-weather-were-blame)

University of S. Florida researchers exposed Cuban tree frogs in the tadpole stage and after metamorphosis to the herbicide atrazine at typical environmental concentrations. Exposure early in life did not significantly affect survival of the frogs – unless they were also exposed to the chytrid fungus linked to amphibian deaths worldwide. **Frogs never recovered from early exposure to atrazine,** and their tolerance to infection was halved. (“Common herbicide raises frogs' risk of fungal disease, study finds,” by Louis Sahagun, Los Angeles Times, Oct. 25, 2013; www.latimes.com/science/sciencenow/la-sci-sn-frog-herbicide-20131025,0,3823014.story#axzz2ivRs8hLv)

Exposure to the pesticide **DDT** could play a role in **high rates of obesity three generations later.** Washington State University researchers injected pregnant rats with DDT. The first generation offspring had no change in levels of obesity, but more than half the third-generation rats had dramatically higher levels of fat and weight gain, even though they were never exposed to DDT themselves. Many chemicals can turn genes on or off, and the on or off status can be passed to descendants. (“Ancestors' exposure to DDT may contribute to obesity, study says,” by Tony Barboza, Los Angeles Times, Oct. 23, 2013; www.latimes.com/science/sciencenow/la-sci-sn-obesity-ddt-ancestors-pesticides-20131023,0,6712051.story#axzz2icQGw2IX)

Food and Climate

A meta-analysis of 19 studies by researchers at FiBL (Research Institute of Organic Agriculture based in Switzerland) and the University of Hohenheim and published in Science of the Total Environment shows that **organically farmed lands emit less nitrous oxide and take up more atmospheric methane** than conventional farmlands, helping combat climate change. (“Organic farming contributes to climate change mitigation,” FarmingUK, Oct. 7, 2013;

www.farminguk.com/News/Organic-farming-contributes-to-climate-change-mitigation_26569.html)

From 2001 to 2010, the **Federal Crop Insurance Program (FCIP)** paid an average of \$4.1 billion per year to cover crop losses; in 2012, it paid \$17.3 billion, and 80 percent of this was for **losses due to drought, heat and hot wind**. These losses **could have been prevented by building soil health and improving water management**, says the Natural Resources Defense Council in its report, “Soil Matters: How the Federal Crop Insurance Program should be reformed” (www.nrdc.org/water/soil-matters/). NRDC says a pilot program could offer reduced crop insurance premium rates to farmers who manage their soil to sustain yields, absorb water and reduce runoff and flooding. Management techniques could include cover cropping (which resulted in greater average yields for farmers who used them in 2012), conservation tillage and improved irrigation scheduling.

In 2012, irrigation supply failures accounted for more than \$14.7 million in indemnity payments, says NRDC. Over 282 million acres of cropland – at least 70 percent of the nation’s total cropland – are insured under the public-private partnership Federal Crop Insurance Program – the most expensive farm subsidy program and the primary risk management tool for farmers to prepare for potential crop loss. (“Record-Breaking \$17.3 Billion in Crop Losses Last Year; Significant Portion Potentially Avoidable,” Natural Resources Defense Council, Aug. 27, 2013; www.nrdc.org/media/2013/130827.asp)

About one-third of all food for human consumption is wasted every year, as is the energy, water and chemicals used to produce and dispose of that food, according to a U.N. Food and Agriculture Organization report, “The Food Waste Footprint.” If world food waste were a country, it would be responsible for more greenhouse gas emissions (3.3 billion metric tons of carbon dioxide annually) than any country except the United States and China – so minimizing food waste can help cut greenhouse gas emissions while helping feed more people. Food waste occurs when consumers throw out excess food that they bought (in industrialized countries) and when inefficient farming methods and improper storage are used (more common in developing countries). The report offers ideas for reducing food waste, including serving smaller portions and using leftovers, giving excess food to charities, and not taking organic waste to landfills. It notes that the cost of wasted food (other than fish and seafood) amounts to about \$750 billion per year.

Another recent report says that U.S. consumers and businesses needlessly trash billions of pounds of food every year due to nonstandard and unclear food expiration date labeling practices. “The Dating Game: How Confusing Food Date Labels Lead to Food Waste in America” (www.nrdc.org/food/expiration-dates.asp) was co-authored by the Natural Resources Defense Council and Harvard Law School’s Food Law and Policy Clinic. The NRDC’s 2012 report, “Wasted” (www.nrdc.org/food/wasted-food.asp), revealed that Americans trash up to 40 percent of our food supply every year, equivalent to \$165 billion.

“Phrases like ‘sell by,’ ‘use by’ and ‘best before’ are poorly regulated, misinterpreted and leading to a false confidence in food safety,” says Dana Gunders, NRDC staff scientist.

For most food products, manufacturers can determine a shelf life date according to their own methods. The poorly regulated and inconsistent labels undermine the intent of the labeling. For example, 91 percent of consumers occasionally throw food away based on the “sell by” date out of a mistaken concern for food safety even though none of the date labels actually indicate food is unsafe to eat; some \$900 million worth of expired food is removed from the supply chain every year; and some 160 billion pounds of food are trashed in the United States every year, making food waste the single largest contributor of solid waste in U.S. landfills.

Manufacturers use two types of labels – one to communicate with businesses and one with consumers. They are not easily distinguished, and neither indicates food safety. “Sell by” dates, a tool for stock control, suggest when the grocer should no longer sell products in order to ensure the products still have shelf life after consumers purchase them. They do not indicate the food is bad on that date. “Best before” and “use by” dates, intended for consumers, are often manufacturers’ estimates of a date after which food will no longer be at peak quality; they do not indicate that food is unsafe.

The review recommends making “sell by” dates invisible to consumers; establishing a more uniform, easily understandable date label system that communicates clearly with consumers by differentiating between safety- and quality-based dates; and increasing the use of safe handling instructions and “smart labels” that use technology to provide additional information on product safety. (“Global Food Waste Accounts For More Emissions Than Any Country Except U.S. And China, UN Reveals,” by Catherine Hornby, Reuters, Huffington Post, Sept. 11, 2013; www.huffingtonpost.com/2013/09/11/global-food-waste-emissions_n_3904687.html; “New Report: Food Expiration Date Confusion Causing up to 90% of Americans to Waste Food,” Sept. 18, 2013; www.nrdc.org/media/2013/130918.asp)

Another Big Bad Trade Agreement Looms

The **Trans-Pacific Partnership Agreement** ("TPP") is a free trade agreement being negotiated by the United States, Australia, Brunei, Chile, Canada, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam. The largest free trade agreement ever, it would create new guidelines for food safety, fracking, drug prices, patents and copyrights, rules, government procurement, telecommunications and more. Jim Hightower says the TPP would, for example, “transform Internet service providers into a private, Big Brother police force, empowered to monitor our ‘user activity’ and arbitrarily take down our content and cut off our access to the Internet.” It would also, says Hightower, eliminate the right to promote local, green or other labeled products to be purchased with tax dollars; would ban food labeling for organic, GE-free and other standards if they are stricter than international standards; and would require that regulations on pesticide residues, microbial contamination and other food safety standards not be more stringent than certain international standards.

The TPP has been criticized also for its secret negotiations – from the public and the U.S. Congress, which has seen no drafts of the agreement. Big industry, however – Monsanto, Dupont, Cargill, Syngenta, Halliburton, Chevron and some 600 others – have been party to the agreement. The White House wants fast track approval by Congress within 90 days after President Obama signs the TPP, and without amendments. Flush the TPP! has action tools to fight this proposed trade agreement. (“Jim Hightower: The Trans-Pacific Partnership Is a Corporate Coup in Disguise,” by Jim Hightower, TruthOut, Oct. 2, 2013; www.truth-out.org/buzzflash/commentary/item/18231-jim-hightower-the-trans-pacific-partnership-is-a-corporate-coup-in-disguise; “Obama Secretly Signing Away U.S. Sovereignty,” by Aaron

Klein, WND news, Oct. 15, 2013; www.wnd.com/2013/10/obama-secretly-signing-away-u-s-sovereignty/#ibzp6AYqTvHmx5KZ.99; “What You Need To Know About The Biggest Free Trade Agreement Ever And How It Affects Climate Change,” by Air Phillips, Think Progress, Oct. 3, 2013; <http://thinkprogress.org/climate/2013/10/03/2712961/biggest-free-trade-agreement-climate/>; Flush the TPP! (www.flushthetpp.org/)

Genetic Engineering (GE)

MOFGA is part of a group of 73 American organic and conventional family farmers, seed businesses and public advocacy groups that **asked the U.S. Supreme Court on Sept. 5, 2013, to hear its case against Monsanto**, challenging the corporation’s patents on GE seed.

In *Organic Seed Growers and Trade Association (OSGATA) et al. v. Monsanto*, the plaintiffs have been forced to preemptively to protect themselves from being accused of patent infringement should their fields ever become contaminated by Monsanto’s GE seed.

“MOFGA is proud to be part of this effort to bring justice to farmers who struggle to protect the integrity of the land and to save their own seeds,” said Heather Spalding, MOFGA’s interim executive director at the time (now deputy director). “With genetically engineered seed, industry has unleashed on agriculture worldwide a dangerous technology that knows no bounds. Corporations must not poison, corrupt and claim for themselves through patents what farmers have been cultivating for more than 14,000 years.”

In a June 10, 2013, ruling, a three-judge panel at the Court of Appeals for the Federal Circuit ruled that a group of organic and otherwise non-GE farmer and seed company plaintiffs are not entitled to bring a lawsuit to protect themselves from Monsanto's transgenic seed patents "because Monsanto has made binding assurances that it will not take legal action against growers whose crops might inadvertently contain traces of Monsanto biotech genes (but for example, some transgenic seed or pollen blew onto the grower's land)."

"While the Court of Appeals correctly found that the farmers and seed sellers had standing to challenge Monsanto's invalid patents, it incorrectly found that statements made by Monsanto's lawyers during the lawsuit mooted the case," said Daniel Ravicher, executive director of the Public Patent Foundation (PUBPAT) and lead counsel to the plaintiffs in *OSGATA et al. v. Monsanto*. "As a result, we have asked the Supreme Court to take the case and reinstate the right of the plaintiffs to seek full protection from Monsanto's invalid transgenic seed patents."

“We have been farming for almost 40 years and we have never wanted anything to do with Monsanto,” said Jim Gerritsen, an organic seed farmer in Maine and president of lead plaintiff OSGATA. “We believe we have the right to farm and grow good food the way we choose. We don’t think it’s fair that Monsanto can trespass onto our farm, contaminate and ruin our crops and then sue us for infringing on their patent rights. We don’t want one penny from Monsanto. American farmers deserve their day in Court so we can prove to the world Monsanto’s genetically engineered patents are invalid and that farmers deserve protection from Monsanto’s abuse.”

The plaintiffs are asking the courts to declare that if Monsanto’s GE seed ever contaminates organic farms, farmers need not fear being accused of patent infringement. One reason justifying this result is that Monsanto's patents on GE seed are invalid because they don't meet the “usefulness” requirement of patent law, says Ravicher. Evidence cited in the plaintiffs' court filings proves that GE seed has negative economic and health effects, while the promised benefits of GE seed – increased production and decreased herbicide use – are false.

As Supreme Court Justice Joseph Story wrote in 1817, to be patentable, an invention must not be “injurious to the public health, good policy, or sound morals of society,” and “a new invention to poison people ... is not a patentable invention.” Because transgenic seed, and in particular Monsanto's transgenic seed, is “injurious to the well-being of the public health, good policy, or sound morals of society” and threatens to “poison people,” Monsanto's transgenic seed patents are all invalid according to the Public Patent Foundation.

With the rapid adoption of Monsanto's GE seed technology, America's farmers have faced a rampant rise in superweeds, with more than 49 percent of U.S. farmers reporting glyphosate-resistant weeds on their farms in 2012, up from 34 percent reported in 2011. In addition, scientists report the growing failures of Monsanto's GE insecticide-resistant corn, with insects in the Midwestern corn belt becoming resistant to the GE Bt toxin, leaving crops vulnerable to the corn rootworm. (“American Farmers Appeal to U.S. Supreme Court to Seek Protection from GM Contamination and Invalidate Monsanto's Patents on Genetically Engineered Crops,” Public Patent Foundation, 5, 2013; www.pubpat.org/osgatasctpetition.htm)

More than 90 scientists, academics and physicians have signed a statement saying that **no scientific consensus exists on the safety of GE foods and crops**. The statement counters claims by the GE industry and others that these foods and crops are safe. Says Dr. Angelika Hilbeck, chairperson of the European Network of Scientists for Social and Environmental Responsibility and one of the signatories, “The statement draws attention to the diversity of opinion over GMOs in the scientific community and the often contradictory or inconclusive findings of studies on GMOs. These include toxic effects on laboratory animals fed GM foods, increased pesticide use from GM crop cultivation, and the unexpected impacts of Bt insecticidal crops on beneficial and non-target organisms.” (“Global Scientists Issue Stunning GMO Safety Warning – Breaking News,” Sustainable Pulse, Oct. 21, 2013; <http://sustainablepulse.com/2013/10/21/global-scientists-issue-gmo-safety-warning-breaking-news/#.UmXSL2>)

According to La Coperacha, a federal judge has ordered that **Mexican agricultural and environmental officials immediately suspend new plantings of transgenic corn** in the country to allow for resolution of several pending lawsuits involving the crops. Since 2001, studies have shown that GE corn has contaminated Mexico's native corn varieties. (“Judge rules that GMOs are imminent threat” and “GEO Watch: Mexican judge suspends transgenic plantings,” Environment and Food Justice, by Devon G. Peña, Oct. 11, 2013, with update on Oct. 17, 2013; <http://ejfood.blogspot.com/2013/10/geo-watch-mexico-bans-transgenic-corn.html>)

“**Africa is a high value target for the biotech industry**,” reports Jonathan Matthews, adding that USDA and USAID are backing “the latest wave of corporate colonialism in Africa.” GE proponent Mark Lynas has been speaking widely about the alleged value of GE crops there and elsewhere, says Matthews, but without revealing his sources of funding. Matthews critiques Lynas' statements about GE crops. (“Biotech ambassadors in Africa,” by Jonathan Matthews, Spinwatch, Aug. 6, 2013; <http://spinwatch.org/index.php/issues/science/item/5522-biotech-ambassadors-in-africa>)

In August, **Oregon Gov. John Kitzhaber signed into law HB 2427, banning commercial production of canola (rapeseed) until 2019** inside the 3 million-acre Willamette Valley Protected District, one of the world's pre-eminent vegetable seed producing regions. The Center for Food Safety (CFS) had sued the Oregon Department of Agriculture after seed and organic vegetable farmers objected to a controversial decision to permit canola production in the Willamette Valley. CFS argued that canola readily cross-pollinates with brassica specialty seed

crops such as broccoli, kale and cabbage; spreads plant diseases and pests to brassica vegetable and seed crops; and can contaminate pure lots of vegetable and clover seed, rendering them unsalable in international and local markets. The vast majority of canola is genetically engineered, which contaminates organic and conventional varieties, and cross-pollinates with weeds, creating new invasive species problems, as herbicide-resistant traits spread to native weed populations. The new law overturns an unlawful rule adopted by the Oregon Department of Agriculture (ODA) in February 2013 that would have allowed thousands of acres of industrial canola to be planted over the next decade in a region where production of the plant for its seed has long been banned. The ODA attempted in August 2012 to open the valley to widespread canola planting despite overwhelming public opposition. Friends of Family Farmers and CFS, on behalf of individual growers, challenged ODA's original temporary rule, which would have allowed canola planting in the fall of 2012. The Oregon Court of appeals halted that rule-making as unlawful. Because of this successful challenge, no planting of canola has been allowed in the Willamette Valley. But ODA again proposed planting in spring 2013, so on April 25, 2013, CFS filed another lawsuit to halt ODA's rule to allow canola in the Willamette Valley on behalf of Friends of Family Farmers, CFS, Universal Seed and Wild Garden Seed. ("Victory for Willamette Valley Farmers and Public as Oregon Governor Signs Moratorium on Canola Production," Center for Food Safety, Aug. 15, 2013; www.centerforfoodsafety.org/press-releases/2446/victory-for-willamette-valley-farmers-and-public-as-oregon-governor-signs-moratorium-on-canola-production)

In October, **Oregon** passed a state budget that included an **amendment that prevents local communities from making decisions about food and agriculture**, such as regulating GE crops. The budget bill, SB 863, was pushed by out-of-state chemical companies and is a model bill from the right-wing American Legislative Exchange Council (ALEC), previously introduced in other states. George Kimbrell of the Center for Food Safety says the Center is exploring legal options to restore local rights. "This is about protecting all farmers' fundamental right to choose what they grow, free from transgenic contamination, and about ensuring that valuable conventional and organic crops are not threatened," says Kimbrell. After the vote, Gov. John Kitzhaber said he has asked state officials to map locations of GE crops and he pledged to introduce legislation in 2015 to address GE agriculture and labeling requirements. ("Local Food and Agriculture Rights Stifled by Oregon Dirty Politics," Center for Food Safety, Oct. 3, 2013; www.centerforfoodsafety.org/press-releases/2626/local-food-and-agriculture-rights-stifled-by-oregon-dirty-politics#; "Gov. John Kitzhaber requests mapping of GMO crops, pledges to bring legislation in 2015," by Yuxing Zheng, Oregon Live, Oct. 3, 2013; www.oregonlive.com/politics/index.ssf/2013/10/john_kitzhaber_requests_mappin.html)

A **GE technique** used to make rice resistant to the herbicide glyphosate (the active ingredient in Roundup) also **benefitted a wild form of rice**, even in the absence of the herbicide, when the GE and wild rice were crossed. Scientists from Ohio State and Fudan University, Shanghai, attached a promoter gene to a native gene in rice so that the plant produced an extra copy of one of its own genes and so that the gene was active continuously. That rice was crossed with a weedy rice relative, and those progeny were crossed with one another to produce the next generation. Those weedy hybrid rice plants containing the engineered genes produced more of the amino acid tryptophan, had higher rates of photosynthesis, grew more shoots and flowers and produced more seeds than non-GE hybrids. Glyphosate kills plants by blocking the enzyme

EPSP synthase, interfering partially with plant production of certain amino acids and other molecules. Glyphosate-resistant plants usually are engineered to overexpress EPSP synthase, making the plants strong enough to resist glyphosate applications – and in this case, to grow and reproduce more. (“Genetically modified crops pass benefits to weeds,” by Jane Qui, Nature, Aug. 16, 2013; www.nature.com/news/genetically-modified-crops-pass-benefits-to-weeds-1.13517; Wang, W. et al., New Phytol. <http://dx.doi.org/10.1111/nph.12428> (2013); (“Rice research sheds new light on GM traits in 'superweeds',” Farming Online, Sept. 24, 2013; www.farming.co.uk/news/article/8944)

In Livingston and Kankakee counties in Illinois, **Western corn rootworms** appear to be **increasingly resistant to control** by crop rotation with soy and use of Monsanto’s corn engineered to express the toxic Bt protein Cry3Bb1, according to University of Illinois research. The GE corn has been grown in the Midwest since 2003. (“GMO corn failing to protect fields from pests: report,” by Carey Gillam, Reuters, Aug. 28 2013; www.theglobeandmail.com/report-on-business/gmo-corn-failing-to-protect-fields-from-pests-report/article14006937/; “Monsanto-developed corn foiled by pests,” by Georgina Gustin, St. Louis Post-Dispatch, Aug. 28, 2013; www.stltoday.com/business/local/monsanto-developed-corn-foiled-by-pests/article_5243e458-5c97-56fb-80e3-0c7f12a8c98a.html)

A **GE corn** variety from Syngenta, Enogen, is engineered with high levels of an enzyme that converts starches to sugars for easier ethanol production. If the trait contaminated corn grown for food, the **milling and baking qualities of food corn could be ruined**. The European Union rejected Syngenta’s application to market Enogen corn there, but it is being grown in the United States. (“Is ethanol GM corn a disaster waiting to happen?,” by Ken Roseboro, The Organic & Non-GMO Report, Oct. 3, 2013; <http://nongmoreport.com/articles/october2013/ethanol-gm-corn-disaster.php#sthash.7sCfNEH2.dpuf>)

Environmental groups have sued to force the U.S. Fish and Wildlife Service to **stop planting GE crops in wildlife refuges** in Illinois, Iowa, Minnesota and Missouri, alleging that the Fish and Wildlife Service unlawfully entered into farming contracts on the refuges and used blanket pesticide applications without a federally required environmental analysis. (“Groups sue to stop use of GMO crops in wildlife refuges,” Globe Gazette, Aug. 27, 2013; http://globegazette.com/news/iowa/groups-sue-to-stop-use-of-gmo-crops-in-wildlife/article_21c23c24-0f68-11e3-a69f-001a4bcf887a.html)

Scientists generally believe that large macromolecules that we eat with our food cannot pass directly to our circulatory system – that digestion breaks down proteins and DNA into smaller amino acids and nucleic acids, and these are then circulated throughout the body. But researchers analyzing more than 1,000 human plasma samples found that fragments of DNA that came from consumed meals were large enough to carry complete genes that were not degraded and that entered the human circulation system. One blood sample had a greater relative concentration of plant DNA than human DNA. The analysis shows that **the presence of foreign DNA in human plasma is not unusual**, say the researchers. The highest concentration occurred in patients with the inflammatory diseases, Kawasaki disease and inflammatory bowel disease. The researchers note that foreign DNA fragments have been detected in the digestive tract and leukocytes of

rainbow trout, pigs, goats and mice fed GE grains. (“Complete Genes May Pass from Food to Human Blood,” by Sa’ndor Spisa’k et al., PLoS ONE 8(7): e69805, July 30, 2013; http://gmoevidence.com/wp-content/uploads/2013/08/journal.pone_.0069805.pdf)

An article in The New York Times this summer claimed that finding resistance to citrus greening disease, which is threatening the U.S. citrus industry, would be a good use of genetic engineering, since genes are not available within citrus to use traditional crop breeding for resistance. Other reports have claimed the same regarding papaya ringspot virus resistance.

Agricultural scientist Doug Gurian-Sherman of the Union of Concerned Scientists argues otherwise, saying “breeders have found promising genes that may turn out to be as (or more) effective than the engineered gene used in Hawaii to combat papaya ringspot virus. Even the possibility of breeding for resistance to citrus greening (or, at least the insect that transmits it) has recently been demonstrated.” However, **lack of public research funding for traditional crop breeding** limits such efforts.

Gurian-Sherman uses the example of the soybean aphid to show the value of breeding combined with agroecological principles, such as diverse landscapes that support aphid enemies, but notes that “the big ag companies are sabotaging this kind of smart, scientifically sophisticated agriculture ... where farms are situated near uncultivated areas, natural enemies that consume soybean aphids, like ladybird beetles ... reduce the need for insecticides by about 25 to 43 percent, based on 2005 and 2006 data, compared to areas where monoculture is extensive and uncultivated areas scarce.”

Cover crops, long rotations and reduced pesticide use can also support this ecological system. Instead, “the big seed and pesticide companies like Monsanto, DuPont, Bayer and Syngenta make matters worse by supporting the current industrial monoculture system, which reduces the number of natural pest enemies” and coats most corn and soy seed with pesticides that harm natural enemies of aphids.

We need public policies, says Gurian-Sherman, that encourage agroecology and public sector crop breeding. “The USDA’s National Institute for Food and Agriculture (NIFA) provides agriculture research grants, and needs to put in place a dedicated program to develop public crop varieties to complement agroecologically-sound farming systems.” We also need a Farm Bill that builds the Conservation Stewardship Program and other programs that support agroecological practices by partnering with farmers, he says.

(“Small Insect’s Big Lessons for the Farm Bill: Agroecology and Breeding Top Monsanto’s Industrial Agriculture,” by Doug Gurian-Sherman, Union of Concerned Scientists, Aug. 26, 2013; <http://blog.ucsusa.org/small-insects-big-lessons-for-the-farm-bill-agroecology-and-breeding-tops-monsantos-industrial-agriculture-218>)

Agriculture officials in Washington state tested **alfalfa** seed and plants from a farm owned by Joseph and Michelle Peila after Joseph said his hay was rejected for export because it tested **positive for a Monsanto GE Roundup resistance trait**. Joseph reported that he did not intend to grow a GE variety. GE alfalfa is approved for commercial growing in the United States, but many buyers do not want it. USDA officials said the small amount of GE material detected in

Peila's non-GE crop constitutes a "commercial issue" only and does not warrant government action. The Center for Food Safety (CFS) has filed a formal legal petition demanding action from USDA on behalf of Washington State farmers and CFS members. Washington State University is now warning farmers to test every bag of alfalfa seed before planting. A December 2011 report by USDA geneticist Stephanie Greene said that after Roundup Ready alfalfa was deregulated in 2005, industry testing found contamination as high as 2 percent in conventional seed lots. ("Genetically modified alfalfa confirmed in Washington test sample," Oregon Live, AP, Sept. 13, 2013; www.oregonlive.com/business/index.ssf/2013/09/genetically_modified_alfalfa_c.html ; "USDA weighing what to do in case of GMO alfalfa contamination," by Carey Gillam, Reuters, Sept. 16, 2013; <http://uk.reuters.com/article/2013/09/16/us-usa-alfalfa-gmo-idUKBRE98F0GE20130916> ; "USDA will not take action in case of GMO alfalfa contamination," by Carey Gillam, Reuters, Sept. 17, 2013; www.reuters.com/article/2013/09/17/usa-alfalfa-gmo-idUSL2N0HD1SQ20130917 ; "USDA Refuses to Investigate Illegal GMO Contamination," Center for Food Safety, Sept. 27, 2013; www.centerforfoodsafety.org/press-releases/2608/usda-refuses-to-investigate-illegal-gmo-contamination#)

Researchers have found that **pigs fed GE corn and soy had a higher rate of severe stomach inflammation** than pigs fed non-GE diets. The study, led by Dr. Judy Carman, showed that GE-fed female pigs also had on average a 25 percent heavier uterus than non-GE-fed females – a possible indicator of disease. Carmen and her colleagues were examining health effects of GE crops, because many GE crops are released into the food supply with multiple GE genes. For example, some crops commonly contain both the GE Bt proteins that are toxic to insects and GE herbicide tolerant (Ht) genes. Most food regulators do not require studies showing the health effects of these "stacked" genes, even though more than 37 percent of GE corn varieties currently planted in the United States have stacked Ht and Bt genes. The study concludes that GE crop safety is uncertain; that the use of stacked genes in GE crops may have unintended health consequences; and because pigs and people have similar digestive systems, studies should investigate whether people are also getting digestive problems from eating GE crops. ("Genetically Modified feed has negative effects on pig health," The Organic Center, Sept. 22, 2013; <http://organic-center.org/hot-science/genetically-modified-feed-has-negative-effects-on-pig-health/> ; "A long-term toxicology study on pigs fed a combined genetically modified (GM) soy and GM maize diet," by Judy A. Carman et al., Journal of Organic Systems, 8(1)2013; www.organic-systems.org/journal/81/8106.pdf)

The EPA says it needs to better understand risk assessment for new RNAi (RNA interference, or post-transcriptional gene silencing) technologies – even though the agency has reportedly already approved two RNAi products, virus-resistant plums and potatoes. In the RNAi process, RNA molecules inhibit gene expression, usually by destroying specific messenger RNA molecules. Monsanto wants to add RNA molecules to its Roundup herbicide to kill weeds that have become Roundup-resistant. RNAi technology is also being considered to kill larvae and other insects that are resistant to the Bt toxin in GE corn. Scientists don't know how long RNAi pesticides would persist in the environment or what their other impacts might be. ("Safety of New Pesticide Technology Is Under Review," by Philip Brashe, Roll Call, Sept. 27, 2013; www.rollcall.com/news/safety_of_new_pesticide_technology_is_under_review-227953-1.html?pg=2)

The **World Food Prize**, according to itself (<http://www.worldfoodprize.org>), “is the foremost international award recognizing – without regard to race, religion, nationality, or political beliefs – the achievements of individuals who have advanced human development by improving the quality, quantity or availability of food in the world.” This year the prize went to two people enmeshed in the crop biotechnology industry – Dr. Mary-Dell Chilton of **Syngenta** and Dr. Robert Fraley of **Monsanto**; and to Dr. Marc Van Montagu of Ghent University in Belgium, a GE researcher. The choices may not be surprising, as, according to Mother Jones, “many of the World Food Prize's major donors are among the biggest names in agribusiness today” including ADM, Cargill, Monsanto and General Mills. Others include policy-driven charities, such as the Gates Foundation and the Rockefeller Foundation; and the U.S. government has hosted the World Food Prize announcements for the past 10 years – as it has promoted industrial farming worldwide. (“The World Food Prize, Brought to You by Monsanto,” by Alex Park, Mother Jones, June 19, 2013; www.motherjones.com/blue-marble/2013/06/why-did-john-kerry-announce-world-food-prize)

The Hawaiian Kauai County Council has passed a bill that could lead to prison time or fines for employees of agricultural companies if they don't divulge specifics about pesticide use, abide by strict setback rules for spraying chemicals or disclose when they grow GE crops. (“Kauai County Crosses the Rubicon, Council Passes Pesticide and GMO Bill,” by Sophie Cocke, Honolulu Civil Beat, Oct. 16, 2013; www.civilbeat.com/articles/2013/10/16/20164-kauai-county-crosses-the-rubicon-council-passes-pesticide-and-gmo-bill/)

Washington State Attorney General Bob Ferguson in October filed a **lawsuit against the Grocery Manufacturers Association (GMA)**, alleging it illegally collected from its members and spent more than \$7 million to oppose Initiative 522, which would require labeling of GE foods. The association illegally concealed the donors' identities, claims the suit. Shortly after, GMA yielded to the lawsuit and listed donors, including Pepsico, Coca-Cola and NestleUSA, each of which spent more than \$1 million to defeat the right-to-know initiative. (“Attorney General sues grocery association, alleging campaign-finance violations,” by Jim Brunner, The Seattle Times, Oct. 16, 2013; <http://blogs.seattletimes.com/politicsnorthwest/2013/10/16/attorney-general-sues-grocery-association-alleging-campaign-finance-violations/>; “Pepsi, Coke, Nestle top multi-million-dollar campaign against I-522,” by Joel Connelly. Seattle Post Intelligencer, Oct. 18, 2013; <http://blog.seattlepi.com/seattlepolitics/2013/10/18/pepsi-coke-nestle-top-multi-million-dollar-campaign-against-i-522/>)

Spring 2014

The Good News

On Jan. 9, 2014, **Governor LePage signed LD 718 – An Act To Protect Maine Food Consumers' Right To Know about Genetically Engineered Food**. The news came soon after MOFGA delivered to the governor hundreds of postcards encouraging the prompt signing of the bill requiring labeling of genetically engineered (GE) foods, which passed both chambers of the

Legislature last year with overwhelming bipartisan support. Time ran out in the 2013 legislative session, but Governor LePage pledged to sign the bill upon reconvening in January.

"We are thrilled that Governor LePage has signed the GMO labeling bill," said MOFGA Executive Director Ted Quaday. "MOFGA supporters have worked tirelessly, organizing five different legislative campaigns on this issue since the early 1990s. The time was right for a diverse and collaborative effort to take hold and move the discussion forward. People want and have the right to know what's in their food."

With the governor's signature, Maine became the second state in the country to adopt labeling requirements for foods derived from GE crops and animals. Connecticut Governor Dannel Malloy signed the nation's first comprehensive GE food labeling law on June 25, 2013. Connecticut and Maine's legislation both require four neighboring states to pass similar legislation before the laws take effect. LePage asserted that it was in Maine's best interests to let Connecticut pass the first law.

Right to Know legislative campaigns are active in New Hampshire, Vermont and Massachusetts. MOFGA is working with its sister organization, the Northeast Organic Farming Association-New Hampshire, to pass parallel legislation there, a requirement for Maine's law to go into effect. A survey by The Mellman Group on behalf of Food Democracy Now! found that 90 percent of registered N.H. voters want the right to know whether their food has been made with GE ingredients. In November 2013, New Hampshire's HB 660, the bill to require labeling of GE food, passed the House subcommittee that had been studying it exhaustively since mid-August but came up short when the Environment and Agriculture Committee voted after only a single session of consideration, with 12 voting against, 8 for. Then, on Jan. 22, the popular amended labeling bill was narrowly defeated in the N.H. House of Representatives by 185-162 votes after a massive campaign of misinformation and fear-mongering by out-of-state biotech corporations, the Grocery Manufacturers Association, and their trade industry allies. Supporters of this bill consider the close vote to be a major milestone in the face of such concerted opposition. As we went to press, the New Hampshire Senate was to take up the issue.

Regarding Maine's bill, "We could never have come this far without the engagement of scientists, constitutional law experts, medical professionals, farmers, restaurateurs, natural foods retailers and other business owners, students, ecologists, people of faith, parents and members of all political parties," said Heather Spalding, MOFGA's deputy director. "And we owe a special thanks to the leadership of Representative Lance Harvell and Senator Chris Johnson who worked tirelessly to educate policy makers and ensure unanimous legislative support for labeling of GMO foods."

Maine's legislative rules do not allow LD 718 to go into effect until the Legislature adjourns later this year. (MOFGA press release, Jan. 9, 2014; "New Hampshire Voters Want GMOs Labeled; <http://nofanh.org/farming/policy/gmolabeling/gmo-labeling-press/#sthash.sNVI0sX5.dpuf>; https://s3.amazonaws.com/media.fooddemocracynow.org/images/Food_Democracy_Now_Mellman_Group_NH_GMO_poll.pdf; "NH Committee Sends GMO Labeling Bill to Floor for Action," NOFA-NH press release, Nov. 8, 2013; <http://nofanh.org/farming/policy/gmolabeling/>;

“HB660, New Hampshire’s Bill to Label GMOs, Voted Down by Razor Thin Margin,” NOFA-NH, Jan. 22, 2014; <http://nofanh.org/farming/policy/gmolabeling/hb660housevote/>)

The Healthy Hunger-Free Kids Act of 2010 authorized and funded USDA to establish a Farm to School Program to help eligible entities, through grants and technical assistance, implement farm to school programs that improve access to local foods in eligible schools.

Healthy Communities of the Capital Area in Gardiner, Maine, a 2014 grantee, received \$100,000 for its “K-12 Eating Local Foods” program, which is developing systems to better link local farms to schools. (The USDA Farm to School FY 2014 Grant Awards; www.fns.usda.gov/sites/default/files/FY_2014_Grant_Award_Summaries.pdf)

The Portland Food Co-op (PFC) is leasing space at 290 Congress Street for its storefront location, scheduled to open this September. In October 2013, PFC launched the Let’s Open the Doors campaign to sign up 1,000 new member-owners needed to help open the community-owned market. The full-service grocery store will be member-owned and open to the public. Member-owners buy one share in the cooperative business – a one-time \$100 equity investment. The market will ultimately create an estimated 20 new jobs.

"As a proud member-owner of the Portland Food Co-op, I am part of a community committed to the re-localization of a healthy food system and the revitalization of our local economy. By building a store, the Portland Food Co-op and its member-owners will build a cooperative business that hundreds of us, and soon to be thousands of us, own together," says Sam May, MOFGA board member and steering committee member of Slow Money Maine. PFC is dedicated to supporting local farmers and producers, serving the community and building the local economy. (Portland Food Co-op press release; www.portlandfood.coop)

The first large-scale, nationwide study of **fatty acids in U.S. organic and conventional milk** showed that, averaged over 12 months, organic milk contained 25 percent less omega-6 fatty acids and 62 percent more omega-3 fatty acids than conventional milk, yielding a 2.5-fold higher omega-6/omega-3 ratio in conventional compared to organic milk (5.77 vs. 2.28). An optimal ratio of omega-6/omega-3 is thought to be near 2.3, but Western diets over the last century have shifted the ratio to 10 to 15 – thought to contribute to developmental and chronic health problems, including cardiovascular disease, metabolic syndrome and diabetes, overweight, and to violent behavior. Dietary factors involved in that shift include increased consumption of major vegetable oils (especially soy oil) and generally low consumption of oily fish, vegetables, fruits and beans. The authors of this study say that if adult women chose diets high in organic dairy and reduced in typical omega-6 consumption, they could achieve the target ratio of 2.3 – that “full-fat organic dairy products offer clear advantages for individuals striving to reduce their overall dietary ω -6/ ω -3 ratio.” The differences in fatty acid compositions are believed to be due to the increased access that cows raised organically have to pasture and to conserved, forage-based feeds, while cows raised conventionally are fed more corn. The study, funded in part by CROPP Cooperative, included 14 commercial milk processors, from seven U.S. regions, that receive and process organic milk for Organic Valley. Most of the conventional milk samples came from the same farms. Samples were taken monthly for 18 months. A Washington Post critique of the research says that some health experts question the importance of the omega-

6/omega-3 ratio and that other foods, such as walnuts and high-omega-3 eggs, consumed in smaller quantities supply more omega-3s. (“Organic Production Enhances Milk Nutritional Quality by Shifting Fatty Acid Composition: A United States–Wide, 18-Month Study,” by Charles Benbrook et al., PLOS One, Dec. 9, 2013; www.plosone.org/article/info:doi/10.1371/journal.pone.0082429; “A paper touting the benefits of organic milk for heart health may be overselling the drink,” by Tamar Haspel, The Washington Post, Jan. 27, 2014; www.washingtonpost.com/national/health-science/a-paper-touting-the-benefits-of-organic-milk-for-heart-health-may-be-overselling-the-drink/2014/01/27/d0090dae-7a06-11e3-b1c5-739e63e9c9a7_story.html)

When researchers followed 451,151 study participants from 10 European countries for more than 10 years, they found that **daily consumption of produce can delay mortality** by 1.12 years. Cardiovascular disease was especially decreased by eating produce, and participants who smoked or had high alcohol consumption benefited more from healthy diets. A stronger correlation existed between longevity and eating fresh produce than cooked produce. (“Fruit and vegetable consumption and mortality: European prospective investigation into cancer and nutrition,” by M. Leenders et al., American Journal of Epidemiology, Aug. 15, 2013; www.ncbi.nlm.nih.gov/pubmed/23599238)

The **2014 International Year of Family Farming (IYFF)** aims to raise the profile of family and smallholder farming by focusing world attention on its significant role in alleviating hunger and poverty, providing food security and nutrition, improving livelihoods, managing natural resources, protecting the environment, and achieving sustainable development, particularly in rural areas. The goal of the 2014 IYFF is to reposition family farming at the center of agricultural, environmental and social policies in national agendas by identifying gaps and opportunities to promote a shift toward more equal and balanced development.

According to the Food and Agriculture Organization (FAO), in many regions family farmers are the main producers of the foods consumed every day. More than 70 percent of the food insecure population lives in rural areas of Africa, Asia, Latin America and the Near East. Many are family farmers, especially smallholders, with poor access to natural resources, policies and technologies. Evidence shows that poor family farmers can quickly deploy their productivity potential when appropriate policies are in place. Facilitating access to land, water and other natural resources and implementing specific public policies for family farmers (credit, technical assistance, insurance, market access, public purchases, appropriate technologies) are key components for increasing agricultural productivity, eradicating poverty and achieving world food security.

(The International Year of Family Farming, FAO; www.fao.org/family-farming-2014/home/en/)

U.S. consumer demand for organically produced goods has grown continuously since 2002, when USDA established national standards for organic production and processing. And, while Americans economized on food purchases during the 2007-09 recession, including purchases of organic products, growth in demand for organic products rebounded quickly following the recession. Industry analysts estimate that **U.S. organic food sales were about \$28 billion in 2012 (over 4 percent of total at-home food sales), up 10.2 percent from 2011**, while conventional food sales grew by 3.7 percent.

USDA has begun organic regulation of nonfood agricultural products, such as laundry detergent with organic coconut oil, aloe vera and other ingredients, which accounted for another \$2.2 billion in organic sales in 2011, according to the Organic Trade Association (OTA). Produce accounts for 43 percent and dairy for 15 percent of U.S. organic food sales. The USDA Economic Research Service shows a 209 percent increase in certified organic acres of vegetables, fruits and tree nuts from 1997 to 2011. In 2011, the United States had an estimated 3.1 million acres of certified organic cropland and 2.3 million acres of certified organic pasture and rangeland. The U.S. Families' Organic Attitudes and Beliefs 2013 Tracking Study from OTA says consumers and retailers must be educated continually in order to maintain growth in the organic market. The study found that 41 percent of all families say they first bought organic products within the past two years. ("Organic Fruit, Vegetable Growth Continues," by Tom Burfield, *The Packer*, Jan. 14, 2014; www.thepacker.com/fruit-vegetable-news/marketing-profiles/Organic-fruit-vegetable-growth-continues-240162591.html?ref=591; "Growth Patterns in the U.S. Organic Industry," USDA Economic Research Service, by Catherine Greene, Oct. 2013; www.ers.usda.gov/amber-waves/2013-october/growth-patterns-in-the-us-organic-industry.aspx#_UoP7m6JDuQz; "Organic study calls for continual education," *The Packer*, by Tom Burfield, Jan. 14, 2014; www.thepacker.com/fruit-vegetable-news/marketing-profiles/Organic-study-calls-for-continuing-education-240158941.html?ref=941)

Canada's organic market is the fourth largest in the world, valued at over \$3.5 billion per year. The Canadian organic food and beverage market alone is worth \$3 billion per year and has grown dramatically since 2009, when the Canadian government put in place mandatory organic standards, import restrictions and labeling requirements. So says the report "Canada's Organic Market: Growth, Trends and Opportunities," published by the Canada Organic Trade Association (COTA). The report also notes that Canadians in all income brackets choose organic equally. The study found that

- 40 percent of organic sales in mainstream retail are in fresh produce
- 40 percent of all salad mixes bought by Canadians are organic
- among consumers in British Columbia, 66 percent buy some organic products weekly
- Ontario's organic food market is worth \$1 billion a year
- 98% of organic buyers planned to increase or maintain their purchases of organic food in 2013

("New study details dramatic growth of Canada's organic market," *Fresh Plaza*, Nov. 22, 2013; www.freshplaza.com/article/115428/New-study-details-dramatic-growth-of-Canadas-organic-market; full report available for purchase from www.ota-canada.ca)

The Pennsylvania Association for Sustainable Agriculture (PASA) and Future Harvest – Chesapeake Alliance for Sustainable Agriculture (FH-CASA) are merging in order to launch a comprehensive educational initiative to address the needs of the sustainable farming community throughout Pennsylvania, Delaware, Maryland, West Virginia, Virginia and the Metro D.C. area. "Together we believe we can develop a much more consistent and effective approach to provide faster and more lasting results for a critical geographical region that serves some of our nation's most important – and delicate – watersheds, and most significant and influential metropolitan centers," say board members. ("Major Opportunity for PASA & Future

Harvest-CASA,” Jan. 14, 2014; <http://www.pasafarming.org/blog/major-opportunity-for-pasa-future-harvest-casa>)

Mycelium of the Garden Giant mushroom, *Stropharia rugosoannulata*, may help filter harmful pollutants from stormwater runoff. Paul Stamets of Olympia, Washington-based Fungi Perfecti first tried the technology to control fecal coliform running off his own farm, due to a faulty septic system and a few animals, just after he bought it. He filled a 200-foot swale with Garden Giant mycelium and wood chips, leading to a 99 percent reduction in fecal coliform within a year, despite increasing the number of farm animals. Stamets and others from his research lab, and the Civil and Environmental Engineering Department at Washington State University, tested the technology further and found that the Garden Giant was the most effective of species tested at removing *E. coli*. The mycelium can convert some other harmful pollutants into carbohydrates and plant nutrients and may be an alternative to using ozone and chlorine to treat water. (“Can Mushrooms Help Fight Stormwater Pollution?” by Sarah Strunin, Earthfix, Nov. 13, 2013; <http://earthfix.opb.org/water/article/could-mushrooms-be-the-answer-to-stormwater-pollut/>)

Meats must have Country of Origin Labeling (COOL) as of Nov. 23, 2013 – 11 years after Congress approved such labeling. Meat processors such as Tyson and Cargill opposed the labeling, as did Mexico and Canada. (“Food Labeling Laws: It’s a Matter of ‘When’ Not ‘If’,” by Morgan Korn Daily Ticker, Nov. 22, 2013. <http://finance.yahoo.com/blogs/daily-ticker/food-labeling-laws-matter-not-142514754.html#more-id>)

Researchers at Texas A&M University found that, overall, **crop yields per acre increased in organic intercropping systems compared with organic mono-crops.** In this study, okra served as a pollinator attractant, peanuts and cowpea as nitrogen fixers, watermelon as a weed suppressor and hot pepper for its allelopathic benefits. Five treatments of intercropped plants, where each plant was incrementally added to the system, were compared with five mono-crop treatments over two years. Overall, crop yields increased on a per acre basis in the intercropping systems compared with the mono-crop treatments, with the most noticeable increases in per plant production in the watermelon-okra-peanut intercropping system. The functional diversity of the crops – for weed suppression, shade tolerance, insect suppression, for example – may benefit the community as a whole. (“Plant Biodiversity Increases Yields in Organic Intercropping System, Study Finds,” by Candace Pollock, Southern Sustainable Agriculture Research & Education, Dec. 6, 2013; www.southernsare.org/News-and-Media/Press-Releases/Plant-Biodiversity-Increases-Yields-in-Organic-Intercropping-System-Study-Finds)

Lettuce growers in California's central coast **plant alyssum to attract adult hoverflies** that feed on the flower's pollen and nectar. After eggs laid by the well-fed females hatch, the voracious larvae prey on currant lettuce aphids – an important primary insect pest of lettuce in the region. The aphids are particularly difficult to control because they colonize interior leaves of the lettuce plant. Eric Brennan, a USDA researcher, found that in beds where alyssum had been planted in addition to a full complement of organic romaine lettuce, the alyssum produced more blossoms per gram of alyssum dry matter – indicating that the alyssum and lettuce planted in this pattern may have been in stronger competition for nutrients needed to support biomass

production. But the resulting boost in blossoms increased alyssum's value as an insectary plant. Brennan also concluded that randomly interspersing alyssum plants throughout all the lettuce rows could minimize competition between lettuce and alyssum and encourage adult hoverflies to forage for pollen and nectar more evenly throughout the field. He is continuing his research to determine the most cost-effective way to interplant alyssum and lettuce. (“Flower Power Protects Organic Lettuce Fields, by Ann Perry, Agricultural Research, Jan. 2014; <http://www.ars.usda.gov/is/AR/archive/jan14/lettuce0114.htm>)

University of Idaho civil engineering professor Erik Coats has developed a method for **turning dairy manure into plastic**. Dairy manure, with its high content of carbon and electrons, is easier to use than other organic materials, he says. Municipal waste is the most difficult because of its many constituents and because its composition may change daily. (“Manure transformed into biodegradable plastic,” by Ron Lysent, The Western Producer, Dec. 19, 2013; www.producer.com/2013/12/manure-transformed-into-biodegradable-plastic/)

The USDA now has a centralized web resource for organic agriculture programs, services and data at www.usda.gov/wps/portal/usda/usdahome?contentidonly=true&contentid=organic-agriculture.html. Here, the 17,000 certified organic U.S. businesses (and those considering transitioning to organic) can learn about improved organic crop and livestock insurance; view local and national organic commodity price reports and other economic data; identify additional export markets for their products; and access credit and cost-sharing assistance through traditional farm loans, more flexible microloans, and conservation programs that reimburse farmers for implementing environmentally-friendly practices. (“A One-Stop Shop for Organics, with Lots in Store,” by Mark Lipson, USDA, Dec. 18, 2013; <http://blogs.usda.gov/2013/12/18/a-one-stop-shop-for-organics-with-lots-in-store/>)

While the number of **dairy farms in Vermont** has dropped from 1,000 three years ago to 900, the number of organic dairies there (now 210, or 23 percent of dairies) has remained steady, says Dr. Robert Parsons, a University of Vermont Extension agricultural economist. These certified organic farms produce 8 percent of Vermont’s milk, contribute \$76 million annually to the state’s economy and support more than 1,000 jobs. They average 140 cows each, but most have fewer than 70; and those cows produce an average of 10,000 to 13,000 pounds of milk, with a range of 7,633 to 19,752. Organic farms received \$33.39 per hundredweight for their milk in 2012. Expenses per cow have been rising while net farm revenue has been declining. Return on assets averaged less than 2 percent in 2012. Feed accounts for 36 percent of the farms’ expenses. Net revenue for the lowest profit group was \$6,500; for the middle group, \$43,100; and for the highest profit group, \$90,300. Greater profit is associated with more cows, higher production, a higher milk price, and having expenses under control. (“The economics of organic dairy farming,” Wisconsin Farmer, Dec. 26, 2013; www.wisfarmer.com/leadstories/237314301.html)

Antibiotics

In December 2013, the FDA implemented a plan to **phase out**, over the next three years, **indiscriminate use of antibiotics** in cows, pigs and chickens raised for meat. Also, to prevent

diseases, producers will need a prescription from a veterinarian to use the antibiotics – currently available over the counter.

Antibiotics have long been used in healthy farm animals for nontherapeutic purposes – to enhance growth or improve feed efficiency, for example. Their unnecessary overuse is believed to endanger human health by promoting antibiotic-resistant bacteria, making drugs used to treat infections ineffective.

Regarding the new plan, some worry that producers will simply say they are using low doses of antibiotics to keep animals healthy – not to promote growth. Skeptics cited in The New York Times say they would have preferred banning antibiotics for preventing disease and allowing them only to treat specific illnesses diagnosed by a vet; or limiting total use and issuing fines for overuse.

“It’s a good first step down the path towards ending antibiotic overuse in animal agriculture and more than any administration has done in 37 years, but much more needs to be done to address disease prevention, track and report on antibiotic use,” said Jean Halloran, director of food policy initiatives for Consumers Union. Consumers Union also urges Congress to pass the Preservation of Antibiotics for Medical Treatment Act, which would stop the overuse of antibiotics on food animals. (“F.D.A. Restricts Antibiotics Use for Livestock,” by Sabrina Tavernise, The New York Times, Dec. 11, 2013; http://www.nytimes.com/2013/12/12/health/fda-to-phase-out-use-of-some-antibiotics-in-animals-raised-for-meat.html?pagewanted=all&_r=0; “Consumers Union Calls FDA Action on Antibiotics Important First Step, But More Action Needed,” Consumers Union press release, Dec. 11, 2013; http://notinmyfood.org/press_release/fda-action-on-antibiotics-an-important-first-step-but-more-action-needed)

Bees

Researchers have found that the rapidly mutating **tobacco ringspot virus has moved from plant pollen to honeybees**, where it can replicate and may contribute to Colony Collapse Disorder by reducing overwintering survival. Mites can also transfer the virus to bees, although the mites themselves are not infected. This is one of the few viruses shown to move from plants to insects. (“New virus linked to bee colony collapse disorder,” by Geoffrey Mohan, Los Angeles Times, Jan. 21, 2014; www.latimes.com/science/sciencenow/la-sci-sn-virus-bee-colony-collapse-20140120,0,3775756.story#axzz2r8bK4LMR)

Climate Change

World Bank Vice President for Climate Change Rachel Kyte says **climate change is already playing havoc with farming**. “It isn’t a benign and slightly warmer world. It will be a volatile warming of the planet, with unpredictable impact,” she was quoted in Bloomberg News. Some crops will still be able to be produced in some locations with minor adaptations, such as moving coffee trees to higher elevations; some will produce less in certain locations; while some locations will experience “a wholesale change of what can be grown where.” Wheat, corn and rice all have “profound problems” in a world that is 3 or 4 degrees C warmer, says Kyte. Farmers may have to grow a few different crops for security, rather than a single crop. Reducing food

waste is also important, as is research into effects of climate change on food crops. (“Climate Proofing of Farms Seen Too Slow as Industry Faces Havoc,” by Rudy Ruitenberg, Bloomberg, Jan. 20, 2014;

www.bloomberg.com/news/2014-01-20/climate-proofing-of-farms-seen-too-slow-as-industry-faces-havoc.html)

Farmers’ Income

The Sustainable Farming Association, with support from Renewing the Countryside and The University of Minnesota, released preliminary data from the Adjust 2015 Project, funded by the USDA Sustainable Agriculture Research and Education program.

Initial survey results from more than 125 Upper Midwest farmers indicate significant **differences between the livelihoods people expect from their farming and what it actually provides**, emphasizing the importance of flexibility and foresight in farm planning.

- About 71 percent of respondents intended their farm business to provide a full-time income.
- 54 percent make less than 25 percent of their net income from farming.
- 33 percent make less than 10 percent of their net income from farming.
- About 69 percent are not satisfied with their farming income.
- About 62 percent cannot pay salary or wages to themselves and family members working on the farm.
- About 75 percent have changed their goals since they started farming.
- 63 percent did not have a formal business plan when they started.
- About 75 percent said their original business plan did not accurately predict their farming experience, while 18 percent called their plan “not accurate at all.”

Survey participants revealed a wide range of training backgrounds – with a recurring emphasis on the difficulty of becoming adequately prepared for the challenges of farming.

- 34 percent indicated they had no formal training before farming.
- 20 percent educated themselves by reading agricultural literature and attending conferences and workshops.
- 51 percent grew up on a farm.
- Of those who pursued post-high school education, about 34 percent majored in an agriculture-related program.

Most respondents consider themselves not very successful at being profitable, managing costs and expenses, and adequately insuring their farm and farm business. Most also believe they are not adequately prepared to farm and are dissatisfied with their financing arrangement.

Most said the process of transferring the farm from or to someone else is a significant challenge, and they have experienced at least one significant setback that was particularly challenging.

Surprises encountered in their first three to five years of farming related to the influence of the land, climate and market on what farmers could do; the amount of time needed for certain tasks,

such as pest control; the lack of time for other pursuits, such as travel; how complicated, stressful or physically demanding farming is; and how slowly they were moving toward goals.

A recurring theme was how difficult it is to make a profit on a small scale, given the costs and expenses involved, the likelihood of lower production than expected, and greater labor and equipment needs than expected.

Other issues included the challenge of marketing, lower consumer demand than expected, social isolation and factors out of one's control.

Despite these challenges, a handful of farmers were surprised that they are doing better than they had expected.

The survey results confirmed for authors Valentine Cadieux and Jan Joannides the need for curriculum modules to help people interested in farming successfully navigate these challenges. The Sustainable Farming Association is continuing the survey. ("SFA Adjust 2015 Preliminary Findings," Sustainable Farming Assoc.; www.sfa-mn.org/sfa-adjust-2015-preliminary-findings/)

Food Safety

The FDA will seek additional public comment, likely by early summer, on revised portions of its **rules for implementing the Food Safety Modernization Act (FSMA)**. Michael Taylor, FDA's deputy commissioner for foods and veterinary medicine, said the volume of feedback from concerned farmers, researchers and consumers influenced FDA's conclusion that the rules needed major changes.

FDA said it will revise parts of rules dealing with water quality standards and testing, standards for using raw manure and compost, provisions affecting "mixed-use facilities" (farms that engage in value-added processing), due process considerations for farms that are eligible for qualified exemptions from the new regulations, and possibly other issues.

"This is a major victory for farmers in Maine and across the country," said Congresswoman Chellie Pingree. "The one-size-fits-all approach the FDA was pursuing was overkill for thousands of small farmers and would have put many of them out of business. The size of the regulation just didn't match the size of the risk." ("FDA Announces Plan to Revise Food Safety Rules," National Sustainable Agriculture Coalition, Dec. 20, 2013; http://sustainableagriculture.net/blog/food-safety-rule-revision-plan/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29; "Federal regulators agree to request from Congresswoman Chellie Pingree to revise important food safety rules," Congresswoman Chellie Pingree, Dec. 19, 2013; <http://pingree.house.gov/press-releases/federal-regulators-agree-to-request-from-congresswoman-chellie-pingree-to-revise-important-food-safety-rules/>)

More than half of U.S. **foodborne illness outbreaks are associated with restaurants, delis, banquet facilities, schools and other institutions**, according to the Centers for Disease Control

(CDC) Surveillance for Foodborne Disease Outbreaks – United States, 1998-2008. The CDC has four new publications on restaurant food handling practices that have been linked with foodborne illness outbreaks in restaurant settings. These publications cover ground beef handling; leafy greens handling; chicken cross-contamination; and sick food workers.

The CDC found that many restaurants prepared ground beef in ways that could lead to cross contamination or undercooking. For example, in 62 percent of restaurants where workers used bare hands to handle raw ground beef, workers did not wash their hands after handling it. And about 80 percent of managers said they did not always use a thermometer to make sure hamburgers were cooked to the right temperature.

Most restaurants did not meet FDA guidelines for refrigerating cut leafy greens at 41°F or below.

In preparing and cooking chicken, 40 percent of restaurant managers said they do not always designate specific cutting boards for use only with raw chicken. More than half the managers said thermometers were not used to check the final cook temperature of chicken.

Twenty percent of workers said they had worked a shift in the past year when sick with vomiting or diarrhea – symptoms of foodborne illness. (“CDC Offers New Environmental Health Findings and Tools to Improve Food Safety in Restaurants,” Centers for Disease Control and Prevention, Dec. 18, 2013; <http://www.cdc.gov/nceh/ehs/News/Features/2013/JFP-articles.html>)

Two **salmonella outbreaks** that sickened at least 523 people in 2012 and 2013 and sent dozens to the hospital, and possibly affected up to 15,000, underscore “serious weaknesses” in USDA’s oversight of **poultry plants**, says a study by the Pew Charitable Trusts. Those outbreaks were linked to Foster Farms in California. The Pew study said USDA’s Food Safety Inspection Service did not ask Foster Farms to recall or stop shipping potentially contaminated chicken, and it did not warn consumers about the first outbreak. The Pew report says Congress should give USDA mandatory recall authority; and USDA should focus on preventing such outbreaks and should have unannounced inspections of processing facilities. (“Reports hit Agriculture Dept. for ‘serious weaknesses’ in food inspection measures,” by Kimberly Kindy and Brady Dennis, The Washington Post, Dec. 18, 2013; http://www.washingtonpost.com/politics/reports-hit-agriculture-dept-for-serious-weaknesses-in-bacteria-safety-measures/2013/12/18/04daef0a-6811-11e3-ae56-22de072140a2_story.html)

In its most comprehensive tests of meat and poultry to date, Consumer Reports found **bacteria that could make consumers sick on nearly all of the 316 raw chicken breasts** purchased at retail nationwide. The report, “The High Cost of Cheap Chicken,” funded by the Pew Charitable Trusts, was featured in the February 2014 issue of Consumer Reports and at www.ConsumerReports.org.

Consumer Reports looked at contamination rates for six bacteria – enterococcus (79.8 percent), E.coli (65.2 percent), campylobacter (43 percent), klebsiella pneumonia (13.6 percent), salmonella (10.8 percent) and staphylococcus aureus (9.2 percent). It also evaluated every bacterium for antibiotic resistance and found that about half the chicken samples harbored at least one multidrug-resistant bacteria. Chicken breasts labeled “organic” or “no antibiotics” had

slightly fewer multi-drug resistant bacteria. (On farms, antibiotic-resistant strains are much less common in organic facilities than in conventional. The reason they are more common in meat sold at the retail level is unknown, so far.)

“Our tests show consumers who buy chicken breast at their local grocery stores are very likely to get a sample that is contaminated and likely to get a bug that is multidrug resistant. When people get sick from resistant bacteria, treatment may be getting harder to find,” said Dr. Urvashi Rangan, a toxicologist and executive director of the Consumer Reports Food Safety and Sustainability Center.

Consumer Reports says 48 million people fall sick and 3,000 die in the United States each year from eating tainted food, with more deaths attributed to poultry than any other commodity, according to the Centers for Disease Control and Prevention.

Other findings include these:

- The majority of samples tested positive for one of the common measures of fecal contamination – Enterococcus and E.coli – and 17.5 percent of the E.coli are the type (known as ExPEC) with genes that make these bacteria more likely to cause urinary tract infections.
- About half of chicken samples contained at least one bacterium resistant to three or more antibiotics, commonly referred to as multidrug-resistant bacteria or “superbugs.” Slightly more than 11 percent contained two or more multidrug-resistant bacteria.
- Bacteria were more resistant to antibiotics approved for use in chicken production for growth promotion and disease prevention than those not approved for those uses.
- One sample, a Foster Farms chicken breast from a plant associated with a recent outbreak, contained a Salmonella Heidelberg matching one of the outbreak strains. Consumer Reports released its results about this sample in October 2013 immediately after it was confirmed. Since 1998, Consumer Reports’ tests of chicken have shown salmonella rates have not changed much, ranging between 11 and 16 percent. “We know especially for salmonella, other countries have reduced their rates. In fact, systemic solutions were implemented throughout the European Union. Government data show that in 2010, 22 countries met the European target for less than or equal to 1 percent contamination of two important types of salmonella in their broiler flocks. There is no reason why the United States can’t do the same,” concludes Rangan.

Rangan said, “We need to attack the root causes of the problems. Without a government focus on effective solutions, meat safety will continue to be compromised.”

Consumers Union, the policy and advocacy arm of Consumer Reports, calls for several government actions.

- Congress should give USDA authority to mandate a recall of meat and poultry products, especially when product from a plant matches that of a human outbreak strain. Currently, it cannot mandate any recall.
- The FDA should prohibit antibiotic use in food animals except for treating sick ones.
- The USDA should classify strains of salmonella bacteria that are resistant to multiple antibiotics and known to have caused disease as “adulterants” so that inspectors look for those strains routinely and, when found, the products cannot be sold.

- The USDA should quickly set strict levels for allowable salmonella and campylobacter in chicken parts. As part of this process, USDA should publish a list of meat products such as chicken parts for which it has no performance standards and indicate a timetable for establishing them.
- The USDA should drop its proposed rule to increase maximum line speeds and reduce the number of USDA inspectors at slaughter plants.
- The National Organic Program should eliminate the loophole allowing antibiotic use in chicken eggs up until the first day of life in organic chicken broilers.
- USDA should ban use of the “natural” claim, which is not a meaningful label, and require claims on meat to be certified and inspected.

Consumer Reports advises consumers to follow these tips when cooking chicken:

- Wash hands when handling any type of meat or poultry – frozen or fresh – before touching anything else and wash them for at least 20 seconds with hot soapy water – even if it means multiple washings.
- Use a cutting board designated strictly for raw meat and poultry. When done, place it in the dishwasher directly from the counter or wash it with hot soapy water.
- Don’t run chicken under the faucet before cooking.
- When cooking, use a meat thermometer and always cook chicken to 165°F.
- When shopping, buy meat last; keeping chicken cold delays bacteria overgrowth. Place chicken in a plastic bag to prevent contaminating other items.
- Buy chicken raised without antibiotics to help preserve the effectiveness of these drugs; avoid meaningless labels like “natural” and “free range.” (“Consumer Reports: Potentially Harmful Bacteria Found on 97 Percent of Chicken Breasts Tested,” Consumer Reports press release, Dec. 19, 2013; <http://pressroom.consumerreports.org/pressroom/2013/12/consumer-reports-potentially-harmful-bacteria-found-on-97-percent-of-chicken-breasts-tested.html>; “Organic Chicken Carries Just As Many Superbugs As Conventional,” by Tom Philpott, Mother Jones, Jan. 8, 2014; <http://www.motherjones.com/tom-philpott/2014/01/organic-chicken-carries-just-many-superbugs-regular>)

The American Academy of Pediatrics warned in December that pregnant women and children should not drink **raw milk** and said it supports a nationwide ban on the sale of raw milk and raw milk products because of the danger of bacterial illnesses. The pediatricians estimate that 1 to 3 percent of dairy products consumed in the United States are not pasteurized and that from 1998 to 2009, that led to 1,837 illnesses, two resulting in death.

Thirty states allow raw milk sales, but the FDA prohibits its interstate shipment for human consumption.

Proponents say raw milk can protect against asthma and lactose intolerance; tastes good; and with properly raised animals and properly treated milk, presents little danger to human health. The pediatricians say no scientific evidence exists to show health benefits of raw milk.

After studying 10 years’ worth of data on sporadic bacterial infections (rather than outbreaks) and raw milk consumption among those infected (based on their recall of consumption over the seven or 14 days before becoming ill), Minnesota officials warned against drinking raw milk. In

this study of 14,339 cases infected with either Campylobacter, Cryptosporidium or Salmonella species, 3.7 percent recalled consuming raw milk within 7 or 14 days of becoming ill. The researchers estimate that raw milk could have sickened more than 17 percent of the state's residents who drank it during the 10 years of the study. ("Pediatricians advise pregnant women, children against drinking raw milk," by Mary MacVean, Los Angeles Times, Dec. 16, 2013; <http://www.latimes.com/science/sciencenow/la-sn-pediatricians-raw-milk-20131211,0,2627218.story#axzz2nk6rC5wR>; "Raw Milk Consumption among Patients with Non-Outbreak-related Enteric Infections, Minnesota, USA, 2001–2010," by Trisha J. Robinson et al., Emerging Infectious Diseases, Jan. 2014; www.foodsafetynews.com/files/2013/12/MDH-rawmilk-final.pdf; And a good review of the opposite point of view: <http://www.realmilk.com/wp-content/uploads/2012/11/RebuttaltoFDARawMilkArticle-MAR2012.pdf>)

Pesticides

New Rules, Policy Changes and Warnings from BPC

By Katy Green

The long and arduous task of Maine Board of Pesticides Control (BPC) rulemaking to allow for widespread government-sponsored spray programs during a public health emergency culminated this winter. The board undertook rulemaking to allow for relaxed pesticide application requirements in the event of West Nile Virus (WNV) and/or Eastern Equine Encephalitis (EEE) outbreaks in the state. The final outcome of the rulemaking process allows for widespread spraying if the Centers for Disease Control (CDC) recommend it. The board created a policy for exclusion zones – areas that shouldn't be sprayed – but included language that allows the spraying entity to opt out of exclusions. In other words, inclusion in the policy is not a guarantee against being sprayed. Homeowners can opt out of being sprayed in the event of a ground-based spray program.

These were major substantive rule changes, so they had to be heard by the Legislature. In January the Joint Committee on Agriculture, Conservation and Forestry approved the rule changes, with all but two members (Rep. Craig Hickman, D-Winthrop, and Rep. Brian Jones, D-Freedom) accepting the changes to allow for spraying. Representative Hickman summed up his feelings in a manner consistent with several Maine citizens who provided comments to the board by simply saying, "This makes me uncomfortable." MOFGA provided comments at every step and found common ground with those pushing for rule changes in a few instances, including the tremendous need for more monitoring of mosquito pools in the state. Maine is clearly inadequately funded for monitoring, and MOFGA will continue to push for more monitoring so that adequate data are collected before spaying.

Changes

Over the fall and winter the board evaluated its granting of variance requests. These arise when a pesticide applicator who wishes to use a pesticide in a manner inconsistent with board rules approaches the board with an application explaining the special circumstance. Applications generally are approved with no changes. This process can delay the applicator's spraying but

allows the board to evaluate the circumstances surrounding the application. Recent variance requests have dealt with pesticide applications within 25 feet of water bodies (generally involving invasive species control) and along power lines and other rights of way where applicators have a hard time mapping and identifying sensitive areas within 500 feet.

The board thought it was holding commercial applicators to a higher standard than homeowners, since most homeowners likely are unaware of and often violate these rules. To correct this disparity the board decided to allow the staff to approve variance requests for linear projects (along roads, pipelines and transmission lines) for up to three years where the sensitive area mapping is not required. During that time the board will need to be notified only if a significant change in management, such as chemicals used, occurs. The board also approved a new policy regarding variance requests for invasive plant control near water bodies, where the staff (rather than the board) can approve the request if certain criteria are met.

Warning!

A reminder to farmers and gardeners: Ask about the origin of off-farm hay, manure and compost products. In the spring and summer of 2013, stories emerged of vegetable growers whose plants were damaged after they applied compost to their soils. The BPC investigations found that in at least one case a pesticide applicator had applied a persistent herbicide containing aminopyralid to a landowner's hayfield. The landowner then contracted with someone else to harvest the hay, without telling the harvester about the pesticide application. Several products, most often used to control bedstraw, contain aminopyralid. The label requires that the hay and/or manure should not be moved off site. The EPA ("Aminopyralid in Manure and Compost," U.S. EPA, Office of Pesticide Programs, Nov. 18, 2011) offers these tips for avoiding contaminated products:

- Ask suppliers to confirm that the herbicide aminopyralid has not been used to produce feed for their animals.
- Ask suppliers if they have had any reports of plant damage from use of their compost or farm manure, and if so, find another source.
- Ask if suppliers have performed bioassays to ensure that their compost does not contain damaging levels of herbicides. (Bioassays are tests conducted to measure the effects of a substance on a living organism.)

More information about this topic and instructions for bioassay testing for residues of aminopyralid and related herbicides are posted at www.the-compost-gardener.com/picloram.html. Note that straw, hay and grass clippings used as mulch can also be sources of aminopyralid residues.

Product Registrations

The board re-authorized a Special Local Need [24(c)] Registration for Express® Herbicide with TotalSol for control of bunchberry in lowbush blueberries. This product is used as a spot treatment to control weeds in non-organic blueberry fields. Its use was first approved in 2008 and renewed in 2009. At the time concern existed about the potential for this product to move into groundwater. To date no evidence has shown such movement in samples taken.

Consent Agreements

The board approved a consent agreement with Lucas Tree Experts Company of Portland for a violation related to the pesticide notification registry. Lucas Tree applied pesticides within 250 feet of a pesticide notification registrant. In 2013, the notification list had 28 registrants. Lucas Tree has had similar notification violations in past years. The board asked that Lucas Tree provide a plan to eliminate similar violations in the future and agreed to a \$1,000 fine. Deven Morrill, a BPC member and a staff member of Lucas Tree, recused himself from the discussion.

During the December 2013 meeting, the board unanimously approved a consent agreement with Barry Churchill of Fort Fairfield for a pesticide application made to turf at Hillside IGA in Fort Fairfield. Churchill applied Sta-Green Weed and Feed to a public area without a commercial pesticide applicator's license. The board levied a \$250 fine.

[End of BPC news]

By November 2013, **fewer than 3 million monarch butterflies** had arrived in central Mexico – dwarfing the startlingly low count of 60 million in 2012. Some fear that the migration could be near collapse, due in large part to loss of habitat in the United States. Much of that habitat loss is due to expanded growing of corn, as its use for biofuels increased demand and price. Growing GE corn with Roundup herbicide destroys more habitat, as the herbicide kills native plants, including milkweed, which monarch larvae need. Roads, roadsides, parking lots, lawns and non-native ornamental plants have further replaced wildlife habitat, limiting native plants that provide habitat, pollen, nectar and medicinal compounds to insects and other animals. Replacing lawns and roadside grasses with wildflower meadows can help reverse this troubling trend. (“The Year the Monarch Didn’t Appear,” by Jim Robbins, The New York Times, Nov. 22, 2013; www.nytimes.com/2013/11/24/sunday-review/the-year-the-monarch-didnt-appear.html?emc=edit_tnt_20131122&tntemail0=y&_r=2&)

Insecticides commonly used in households may be associated with kids' behavior problems, say researchers who studied the urine of 779 Canadians ages 6 to 11. Pyrethroids are used in more than 3,500 commercial products, including flea bombs, roach sprays, mosquito control products and farm insecticides. They interfere with insects' nervous systems and have been used increasingly in recent years to replace organophosphate pesticides. Of the 779 subjects' urine samples, 97 percent had traces of pyrethroid metabolites and 91 percent of organophosphates. A 10-fold increase in levels of the pyrethroid metabolite cis-DCCA was associated with a doubling of the chance that the child scored high for behavioral problems, based on parents' reports – although only 69 (6.8 percent) of the children scored high for behavioral problems. Previous studies have linked prenatal exposure to organophosphates to neurodevelopment delays, lower IQ scores and attention problems. (“Common insecticides may be linked to kids' behavior problems,” synopsis by Lindsey Konkel, Environmental Health News, Oct. 31, 2013. <http://www.environmentalhealthnews.org/ehs/newscience/2013/10/insecticides-kids-behavior/>;
Original report: Urinary metabolites of organophosphate and pyrethroid pesticides and behavioral problems in Canadian children. Y. Oulhote and M.F. Bouchard. 2013. Environmental Health Perspectives. <http://dx.doi.org/10.1289/ehp.1306667>)

Italian scientists believe they have found the molecular mechanism through which **neonicotinoid pesticides harm the immune system of honeybees**. Their experiments suggest that exposure to neonicotinoids results in increased levels of a particular protein in bees that inhibits a key molecule involved in the immune response, making the insects more susceptible to attack by harmful viruses. (“Scientists Discover Key Molecule Linking Neonicotinoids to Honey Bee Viruses,” Beyond Pesticides, Oct. 24, 2013; www.beyondpesticides.org/dailynewsblog/?p=12123)

Low and environmentally relevant concentrations of **glyphosate**, the active ingredient in Roundup and some other herbicides, possessed **estrogenic activity** in a study of breast cancer cells. The researchers call for further animal studies on the combined estrogenic effects of glyphosate and genistein, a phytoestrogen (plant estrogen) in soybeans – a crop usually grown with glyphosate herbicides. Meanwhile, Indian researchers found that Roundup at extremely low concentrations had carcinogenic potential on human skin cells. (“Glyphosate induces human breast cancer cells growth via estrogen receptors,” by S. Thongprakaisang et al., Food Chem Toxicol., Sept. 2013; www.ncbi.nlm.nih.gov/pubmed/23756170; “How Roundup Weedkiller Can Promote Cancer, New Study Reveals,” by Sayer Ji, GreenMedInfo, Nov. 11, 2013; www.greenmedinfo.com/blog/how-roundup-weedkiller-can-promote-cancer-new-study-reveals-1; Original study: Emptying of Intracellular Calcium Pool and Oxidative Stress Imbalance Are Associated with the Glyphosate-Induced Proliferation in Human Skin Keratinocytes HaCaT Cells, Jasmine George and Yogeshwer Shukla, ISRN Dermatology Vol. 2013; www.hindawi.com/isrn/dermatology/2013/825180/)

Five out of five samples of Jordans **cereal bars** and 34 of 40 samples of Warburtons **bread**, both sold in the United Kingdom, had **traces of glyphosate**, the active ingredient in Roundup herbicide. The samples were taken in 2012 but results were just published. Although residue levels were below maximum levels set by European authorities, Jordans said it would review the data and crop management protocols. Warburtons did not respond to inquiries from The Ecologist. (“‘Harmful’ weedkiller in your bread and cereal bars,” by Andrew Wasley, The Ecologist, Dec. 31, 2013; www.theecologist.org/News/news_analysis/2217533/harmful_weedkiller_in_your_bread_and_real_bars.html)

The European Commission, which has already temporarily banned some neonicotinoid insecticides on some crops because they may be toxic to bees, now questions the **effects of neonicotinoids on children’s developing nervous systems** as well. The European Food Safety Authority is recommending that all neonicotinoids be evaluated for their toxicological profiles and that the European Commission further restrict their use. (“European Agency Warns of Risk to Humans in Pesticides Tied to Bee Deaths,” By Danny Hakim, The New York Times, Dec. 17, 2013; www.nytimes.com/2013/12/18/business/international/europe-warns-of-human-risk-from-insecticides.html?ref=world&_r=0)

University of Saskatchewan biologist Christy Morrissey says many **wetlands across the Prairies are being contaminated by neonicotinoid insecticides** used on crops, potentially affecting insects and birds that rely on the wetlands. Morrissey estimates that 44 percent of

Prairie cropland – more than tens of millions of acres – has been treated with neonicotinoids, and the insecticides are now concentrating in wetlands at rates three to four times greater – sometimes 100 times greater – than those thought to be safe for insects. Most wetlands she has sampled are contaminated. Morrissey has found reduced mosquito and midge populations in these wetlands, which can affect birds.

(“Pesticide 'contaminating' Prairie wetlands: scientist,” by Geoff Leo
CBC News, Jan. 6, 2014;

www.cbc.ca/news/canada/saskatchewan/pesticide-contaminating-prairie-wetlands-scientist-1.2482082)

As much as **8 percent of organic produce tested by Canadian inspectors has so much pesticide residue** (more than 5 percent of Health Canada’s allowed maximum) that experts say there is a strong indication synthetic pesticides were used deliberately, rather than drifting from nearby farms, according to CBC News. CBC based its investigation on two years of testing by the Canadian Food Inspection Agency (CFIA). In the United States, USDA regulations prohibit produce with pesticide residues exceeding 5 percent from being sold with an organic label, and 5 percent of U.S. organic operations undergo routine pesticide residue testing annually. The CFIA told CBC that when residues are found that are above 5 percent of the maximum limit, the agency informs the certification body, which must contact the operator or producer to determine the source of contamination. That can lead to suspension or cancellation of an operator’s license. (“Pesticide levels on some organic produce indicate use was deliberate,” by Joanne Levasseur, Vera-Lynn Kubinec and Holly Moore, CBC News, Jan. 10, 2014;

www.cbc.ca/news/canada/manitoba/pesticide-levels-on-some-organic-produce-indicate-use-was-deliberate-1.2491167)

Tiny particles of silver – more than 1,000 times smaller than the width of a human hair - in a **new pesticide called Nanosilva could soon be in children’s toys and clothing**, used to fight stains and odors (by killing bacteria) and to make products last longer. The health and environmental effects of Nanosilva are unknown, but EPA regulators have proposed, through conditional registration, allowing the pesticide on the market for up to four years before the manufacturer has to submit studies on its dangers. According to The Center for Investigative Reporting, animal studies show that nanosilver can move into cells and accumulate in the brain, heart and other organs. No valid studies have been done to show whether nanosilver causes reproductive harm or cancer. Its toxicity to fish and to food chains is also unknown. In November 2013, a federal appeals court overturned approval of two other nanosilver products, ruling that the EPA had incorrectly found they posed no risks to toddlers. (“EPA’s fast-track approval process for pesticides raises health concerns,” by Katia Savchuk, The Center for Investigative Reporting, Jan. 15, 2014; <http://cironline.org/reports/epa%E2%80%99s-fast-track-approval-process-pesticides-raises-health-concerns-5762>)

In December 2013, the Center for Food Safety filed a legal brief supporting a **lawsuit** filed in March that **invokes the Endangered Species Act to defend bees**. Major U.S. beekeeping associations filed the March suit against the EPA over its decision to register another neonicotinoid insecticide, sulfoxaflor. Neonicotinoids are thought to be involved in Colony Collapse Disorder – mass die-offs of bees. Aljazeera America reports that neonicotinoids are used on approximately 75 percent of all U.S. acres planted with food crops and on 95 percent of

U.S. corn acreage. (“Bee decline overshadows Endangered Species Act's 40th anniversary,” by Renee Lewis, Aljazeera America, Dec. 29, 2013; <http://america.aljazeera.com/articles/2013/12/28/bees-in-trouble-on40thanniversaryoftheendangeredspeciesact.html>)

Genetic Engineering (GE, or GMO – Genetically Modified Organisms)

UK Secretary of State for the Environment and Rural Affairs Owen Paterson has called **opponents of GE Golden Rice “wicked.”** Colin Tudge has written a masterful essay proving Paterson wrong.

Golden Rice has been engineered to produce carotene, the precursor of vitamin A, and has been touted as a remedy for some 5 million preschool-aged children and 10 million pregnant women who suffer vitamin A deficiency sufficient to cause night blindness. Yet, says Tudge, “the case for Golden Rice is pure hype. For Golden Rice is not particularly rich in carotene and in any case, rice is not, and never will be, the best way to deliver it. Carotene is one of the commonest organic molecules in nature. It is the yellow pigment that accompanies chlorophyll in all dark green leaves (the many different kinds known as “spinach” are a great source) and is clearly on show in yellow roots such as carrots and some varieties of cassava, and in fruits like papaya and mangoes that in the tropics can grow like weeds.

“So the best way by far to supply carotene (and thus vitamin A) is by horticulture – which traditionally was at the core of all agriculture.” But horticulture, says Tudge, has been squeezed out by large-scale monocultures and by urbanization that leaves no room for gardens – while well-planned cities could always be self-sufficient in produce.

Given the lackluster performance of GE crops, Tudge says, “Overall, after 30 years of concerted endeavor, ultimately at our expense and with the neglect of matters far more pressing, no GMO food crop has ever solved a problem that really needs solving that could not have been solved by conventional means in the same time and at less cost.

“The real point behind GMOs is to achieve corporate/big government control of all agriculture, the biggest by far of all human endeavours. And this agriculture will be geared not to general wellbeing but to the maximization of wealth.”

Regarding the oft-repeated claim that we need 50 or 100 percent more food to feed the 9.5 billion population expected by 2050, Tudge cites Professor Hans Herren, president of the Millennium Institute in Washington, who says that the world already produces enough staple food to support 14 billion. However, “A billion starve because the wrong food is produced in the wrong places by the wrong means by the wrong people – and once the food is produced ... half of it is wasted ... The task, then, is not to increase output, but to produce what we do produce (or even less) by means that are kinder to people, livestock, and wildlife; more sustainable; and more resilient.”

Tudge has more to say in this excellent essay. (“The Founding Fables of Industrialised Agriculture,” by Colin Tudge, Independent Science News, Oct. 30, 2013;

<http://www.independentsciencenews.org/un-sustainable-farming/the-founding-fables-of-industrialised-agriculture/>)

I-522, a Washington state ballot initiative to label GE foods, was defeated by a 51-49 percent vote in November 2013 after chemical companies and big food manufacturers, many represented by the Grocery Manufacturers Association (GMA), spent \$22 million to defeat it, falsely claiming the initiative would put a financial burden on consumers and farmers.

The initiative had 66 percent support in September 2013. "The industrial food industry outspent consumer advocates nearly three to one and barely won ... This will be a short-lived victory. People are paying attention, asking what these companies are hiding behind tens of millions of dollars in misleading ads. California and Washington State have spurred a national movement to label GE foods," said Andrew Kimbrell, executive director of Center for Food Safety.

Previously industrial food manufactures and chemical companies spent \$45 million to defeat a GE labeling bill in California.

As we went to press, the GMA and the biotech industry were pushing federal legislation that would override state GE food labels – and was trying to get the FDA to define the “natural” label to include GE products. (“Agribusiness Spends \$22 Million, \$25 per Vote, to Keep Consumers in the Dark,”

Nov. 14, 2013; www.centerforfoodsafety.org/press-releases/2711/agribusiness-spends-22-million-25-per-vote-to-keep-consumers-in-the-dark#; “Leaked Document Reveals Big Food Lobby's Plans to Preempt State GMO Labeling,” Center for Food Safety, Jan. 7, 2014; www.centerforfoodsafety.org/press-releases/2820/leaked-document-reveals-big-food-lobbys-plans-to-preempt-state-gmo-labeling; “U.S. food makers to seek single federal standard for GMO labeling,” by Carey Gillam, Reuters, Jan. 13, 2014; www.reuters.com/article/2014/01/13/us-usa-gmo-labeling-idUSBREA0C1MX20140113)

On January 13, 2014, the U.S. **Supreme Court** issued a decision in the federal lawsuit **Organic Seed Growers and Trade Association et al. v. Monsanto**. Farmers were **denied the right to argue their case** in court and gain protection from potential abuse by agrichemical and GE giant, Monsanto. Additionally, the high court decision dashes the hopes of family farmers who sought the opportunity to prove in court that Monsanto’s GE seed patents are invalid.

"While the Supreme Court's decision to not give organic and other non-GMO farmers the right to seek preemptive protection from Monsanto's patents at this time is disappointing, it should not be misinterpreted as meaning that Monsanto has the right to bring such suits," said Daniel Ravicher, executive director of the Public Patent Foundation (PUBPAT) and lead counsel to the plaintiffs. "Indeed, in light of the Court of Appeals decision, Monsanto may not sue any contaminated farmer for patent infringement if the level of contamination is less than 1 percent. For farmers contaminated by more than 1 percent, perhaps a day will come to address whether Monsanto's patents may be asserted against them. We are confident that if the courts ever hear such a case, they will rule for the non-GMO farmers."

Farmers had sought court protection under the Declaratory Judgment Act that should they become the innocent victims of contamination by Monsanto's patented gene-splice technology, they could not perversely be sued for patent infringement.

"The Supreme Court failed to grasp the extreme predicament family farmers find themselves in," said Maine organic seed farmer Jim Gerritsen, president of lead plaintiff OSGATA. "The Court of Appeals agreed our case had merit. However, the safeguards they ordered are insufficient to protect our farms and our families. This high court which gave corporations the ability to patent life forms in 1980, and under Citizens United in 2010 gave corporations the power to buy their way to election victories, has now in 2014 denied farmers the basic right of protecting themselves from the notorious patent bully Monsanto."

The historic lawsuit was filed in 2011 in Federal District Court in Manhattan. The plaintiff group numbered 83 individual American and Canadian family farmers, independent seed companies and agricultural organizations whose combined memberships total more than 1 million citizens, including many non-GE farmers and more than 25 percent of North America's certified organic farmers.

"The Appellate Court decision could leave Canadian farmers out in the cold because their protection may not extend to Canada at all," said Saskatchewan organic grain farmer Arnold Taylor, a member of plaintiff member Canadian Organic Growers. "Like many Canadian farmers, we sell crop into the United States and can therefore be liable to claims of patent infringement by Monsanto."

In a complicated ruling issued in June 2013 by the U.S. Court of Appeals for the Federal Circuit in Washington, D.C., American farmers were handed a partial victory when the three justices agreed with the farmers' assertion that contamination by Monsanto was inevitable. The justices ordered Monsanto not to sue American farmers whose fields were contaminated with trace amounts of patented material, which the Court defined as 1 percent.

In a related situation, Canadian soybean farmer Stephen Webster of Ontario experienced just how abusively Monsanto treats innocent contamination victims. Through no fault of his own, Webster, who farms with his elderly father, had his 2012 identify-preserved (IP) non-GE soybean crop contaminated by Monsanto's patented GE seed. The Websters' soybeans were ruined for export to specialty markets in Japan. "First Monsanto claimed we had too many bees and that we were at fault for the contaminated crop," said Webster. "Then they threatened to run up \$100,000 in legal bills that we would have to pay."

"We have a fourth generation farm," said organic dairy farmer and plaintiff Rose Marie Burroughs of California Cloverleaf Farms. "Monsanto cannot be trusted. Their refusal to provide a binding legal covenant not to sue our fellow farmers would make anyone wonder, what are their real motives? GMO contamination levels can easily rise above 1 percent, and then we would have zero protection from a costly and burdensome lawsuit."

Significant contamination events, including Starlink corn and LibertyLink rice, have already cost farmers and food companies nearly \$2 billion. In 2013, discovery of Monsanto's illegal GE

wheat in an Oregon farmer's field and GE alfalfa in Washington state put farmers' economic livelihoods at risk, as foreign markets refused to buy the GE-contaminated crops.

“Monsanto has effectively gotten away with stealing the world's seed heritage and abusing farmers for the flawed nature of their patented seed technology. This is an outrage of historic proportions and will not stand,” said Dave Murphy of Food Democracy Now! (“Organic Seed Growers, Family Farmers File Brief in Final Appeal to U.S. Supreme Court to Protect Their Crops from Contamination and to Invalidate Monsanto's GMO Patents,” Dec. 23, 2013, Organic Seed Growers and Trade Assoc.;

<http://archive.constantcontact.com/fs122/1104248386985/archive/1116068568927.html>;

“Farmers' suit against Monsanto reaches Supreme Court,” by Joel Dyer, Boulder Weekly, Jan. 2, 2014;

www.boulderweekly.com/article-12133-farmers-suit-against-monsanto-reaches-supreme-court.html; “Supreme Court Denies Family Farmers the Right to Self-Defense from Monsanto Abuse,” Food Democracy Now! Jan. 13, 2014;

<http://www.fooddemocracynow.org/blog/2014/jan/13/supreme-court-denies-farmers-protection-monsanto/>

As the USDA considers whether to approve the first **GE forest tree** for commercial use, the Center for Food Safety (CFS) released its report, Genetically Engineered Trees: The New Frontier of Biotechnology. The report details the potential ecological and socioeconomic hazards of GE trees currently under commercial development.

USDA is reviewing a GE eucalyptus for unrestricted planting. Eucalyptus is cultivated primarily to provide pulp for paper and wood pellets for fuel. The GE tree, developed by ArborGen, is engineered to grow in colder climates. ArborGen hopes to cultivate GE tree plantations across much of the southeastern United States. The CFS says such “factory forests” will accelerate and expand large-scale, chemical-intensive, monoculture plantations, requiring vast amounts of fertilizers, pesticides and water; reducing biodiversity; possibly increasing greenhouse gas emissions, and leading to deforestation.

Among the report's key findings are the following:

- Claims that burning wood-pellets for fuel will help mitigate climate change are likely false. While turning to wood pellet biomass for fuel does reduce overall sulfur dioxide emissions, burning wood pellets increases other pollutants and may not reduce greenhouse gases.
- GE trees could contaminate related wild trees, potentially compromising the health of American forests. Poplar, pine and eucalyptus trees are being engineered to alter lignin content to make it easier to process into biofuels and other wood-based products. Because lignin maintains structural integrity and helps repel pests and pathogens, the spread of these genes could be harmful.
- Tree plantations have increased the rates of deforestation in many parts of the globe. For example, oil palm plantations have been a major factor in the 60 percent loss of Indonesian forests since 1960. Demand for the products of these plantations creates economic incentives to replace forests with more plantations.
- GE trees could escape from plantations into forests, where they could disrupt longstanding relationships between species.

(“New Report Highlights Potential Hazards of Genetically Engineered Trees Currently Under USDA Review,” Center for Food Safety, Nov. 5, 2013;

www.centerforfoodsafety.org/press-releases/2701/new-report-highlights-potential-hazards-of-genetically-engineered-trees-currently-under-usda-review# ; Complete report at www.centerforfoodsafety.org/files/ge_pages_final_nov-1_80728.pdf)

UC Davis **Professor Pamela Ronald** is well known for defending GE crops. In the last year her laboratory at UC Davis **has retracted two scientific papers**, and other researchers have questioned a third. The two retracted papers form the core of her research program into how rice plants detect specific bacterial pathogens

(“Can the Scientific Reputation of Pamela Ronald, Public Face of GMOs, Be Salvaged?” by Jonathan Latham, Ph.D., Independent Science News, Nov. 12, 2013;

www.independentsciencenews.org/news/can-the-scientific-reputation-of-pamela-ronald-public-face-of-gmos-be-salvaged/)

The Elsevier journal Food and Chemical Toxicology (FCT) retracted a paper by Gilles-Eric S eralini et al. that claimed that GE corn and Roundup herbicide could cause cancer and premature death in rats. A year after publication the paper was withdrawn, according to the editor, because its results were “inconclusive” – because too few rats were used in the study (even though Monsanto used the same number to show its corn was “safe”), and the Sprague-Dawley strain of rat used was prone to cancer (even though the strain is commonly used in toxicology studies, including those done by Monsanto for approval of its Roundup Ready corn – work published in FCT).

The study followed 10 groups of rats, each with 10 males and 10 females, for two years. Some were fed Monsanto’s Roundup Ready NK603 corn – some from fields treated with Roundup and some from untreated fields. Others received various doses of glyphosate, the active ingredient in Roundup, in their water. A control group consumed non-GE corn and water without glyphosate. Rats consuming GE corn or glyphosate had more tumors and kidney and liver damage and died sooner than those in the control group.

After passing peer review and being published, the paper was criticized by scientists associated with the GE industry and by European food safety authorities for using a strain of rat susceptible to tumors. It was withdrawn after FCT appointed former Monsanto scientist Richard E.

Goodman, now with the GE industry-funded International Life Sciences Institute, to FCT’s newly created post of associate editor for biotechnology. Elsevier did not publish names of the second round of reviewers who called for retraction.

GMWatch called the retraction “illicit, unscientific, and unethical. It violates the guidelines for retractions in scientific publishing set out by the Committee on Publication Ethics (COPE), of which FCT is a member.” COPE guidelines call for retraction only when evidence is clear that findings are unreliable due to misconduct (e.g., data fabrication); when an honest error has occurred; or due to plagiarism, redundant publication or unethical research – none of which occurred in the S eralini study. GMWatch noted that scientific journals often publish inconclusive results, and the European Network of Scientists for Social and Environmental Responsibility (ENSSER) calls conclusive results “rare in science.”

The ENSSER called the retraction, which lacked transparency regarding reviewers' names and methods for evaluating the study, "a severe blow to the credibility and independence of science, indeed a travesty of science," adding, "Unpleasant results should be checked, not ignored."

FCT withdrew another peer-reviewed, published paper after Goodman's appointment – a Brazilian study showing that Bt insecticidal toxins similar to those engineered into GE Bt crops were not broken down in digestion and had toxic effects on the blood of mice. The paper was then immediately published in another journal.

Despite FCT's retractions, the European Commission is spending 3 million Euros to repeat the Séralini study, running it for two years with 50 or more rats and looking at carcinogenicity. "So they're actually going to do the full-blown cancer study, which suggests that Séralini's work was important," says Consumer's Union scientist Michael Hanson, "because you wouldn't follow it up with a 3 million Euro study if it was a completely worthless study." ("Paper Tying Rat Cancer to Herbicide Is Retracted," by Andrew Pollack, The New York Times, Nov. 28, 2013; www.nytimes.com/2013/11/29/health/paper-tying-rat-cancer-to-herbicide-is-retracted.html?_r=0; "Journal retraction of Séralini study is illicit, unscientific, and unethical," GM Watch, Nov. 27, 2013; www.gmwatch.org/index.php/news/archive/2013/15184-journal-retraction-of-seralini-study-is-illicit-unscientific-and-unethical; "Journal's retraction of rat feeding paper is a travesty of science and looks like a bow to industry," European Network of Scientists for Social and Environmental Responsibility, Nov. 29, 2013; www.ensser.org/fileadmin/user_upload/ENSSERcommentsretraction_final.pdf; "GMO Study Retracted – Censorship or Caution?" by Steve Curwood, Living on Earth, Dec. 6, 2013; www.loe.org/shows/segments.html?programID=13-P13-00049&segmentID=2)

In November 2013, the **Hawaii** County Council passed Bill 113 by a 6-3 vote, **forbidding biotech companies from operating on the Big Island and prohibiting all new GE crops** – but the papaya industry is exempt from the bill. Also in November, the county council of the Hawaiian island of Kauai passed Pesticide Disclosure Bill 2491, which, in August, will require heavy users of restricted use pesticides to disclose the names, amounts and locations of pesticides they are spraying and where they are growing any GE crops. The legislation also creates buffer zones between fields sprayed with pesticides and schools, parks, medical facilities and private residences; and requires the county to study whether pesticides are harming the environment or health of residents. ("Kauai's GMO and Pesticide Bill Is Set to Become Law After Veto Override," by Sophie Cocke, Honolulu Civil Beat, Nov. 16, 2013. www.civilbeat.com/articles/2013/11/16/20426-kauais-gmo-and-pesticide-bill-is-set-to-become-law-after-veto-override/;

"Hawaii's Big Island Bans Biotech Companies & GMO Crops," Huffington Post, Nov. 19, 2013; www.huffingtonpost.com/2013/11/19/big-island-bans-gmo_n_4305729.html)

Corn grower Chris Huegerich of Breda, Iowa, says that for five years, GE traits worked against corn rootworm and weeds, but now those pests are adapting. So he tried 320 acres of non-GE corn two years ago and got 15 to 30 more bushels and \$100 more profit per acre than from his GE corn. Modern Farmer reports that other **U.S. farmers are becoming fed up with the expense of GE seed** and the need to buy and use more chemicals on the crops; and that farm

consultant Aaron Bloom found that a western Iowa/southern Minnesota farmer growing non-GE instead of GE corn can save about \$82 per acre per season. Modern Farmer also reports increased seed sales among companies selling non-GE seed – possibly reaching 20 percent of the market within five years.

In Quilin, Missouri, Kade McBroom and his father grow rice, corn, soybeans and wheat on about 3,200 acres, and Kade has been growing non-GE soy for the past seven years, earning a premium for the crop from Archer Daniels Midland. Now he and other farmers want to build a facility to process value-added products such as non-GE soybean meal for animal feed. “Farmers around here are proving that non-GMO soybeans can yield as well as GMO,” McBroom told Organic Connections magazine. Weed resistance to glyphosate herbicides is another motivation for growing non-GE crops.

Likewise, James Frantzen of Elma, Iowa, grows organic corn, soybeans, small grains, hay and pasture while raising beef cows and hogs – and has started a non-GE feed business, Riverside Feeds, LLC, for his customers. Large hog operations have told Frantzen they want non-GE feed because GE feed is allegedly causing reproductive problems in their hogs. (“The Post-GMO Economy,” by Elizabeth Royte, Modern Farmer, Dec. 6, 2013; <http://modernfarmer.com/2013/12/post-gmo-economy/>; “Young Farmers See Growth in Going non-GMO,” by Ken Roseboro, Organic Connections, Jan. 8, 2014; <http://organicconnectmag.com/young-farmers-see-growth-going-non-gmo/#.Us1gzmRdWQw>)

The USDA Animal and Plant Health Inspection Service collected comments through Dec. 9, 2014, about **GE Arctic Apples** from Okanagan Specialty Fruits, which has engineered Golden and Granny Smith apples so that they do not brown when sliced and exposed to the air. Okanagan inserted nptII, neomycin phosphotransferase type II gene, from E. coli Tn5. This gene allows the GE apple tissue to grow on a medium containing the antibiotic kanamycin but confers no benefit to the apple plant. So every cell of every GE apple tree, including the fruit, will show resistance to kanamycin – an antibiotic commonly used to treat infections in humans. Eating an Arctic Apple could transfer the gene for kanamycin resistance into the human digestive system. A similar transfer has been demonstrated with GE soy. Then bacteria in the human digestive system could develop kanamycin resistance – a major concern among medical professionals.

The DNA of the GE apple can also spread to bacteria on the plant and in the soil, possibly making diseases such as fireblight more difficult to control.

The GE DNA can persist in soils for at least a year, where it can be taken up by natural soil bacteria and incorporated into their genetic structure. (The Cornucopia Institute, Dec. 6, 2013; <http://www.cornucopia.org/2013/12/crushed-nutsrotten-apples-pasteurized-nuts-gmo-apples-tell-fda-usda/>)

According to the Union of Concerned Scientists (UCS), an herbicide-resistant “superweed” epidemic now affects more than 60 million acres of U.S. cropland, increasing farmers’ costs and leading to the use of older, more toxic herbicides. “**The Rise of Superweeds – and What to Do About It**” analyses the problem with existing and proposed technology fixes, and lays out more sustainable ways with multiple benefits to control resistant weeds.

Monsanto's GE Roundup Ready crops, used now for 17 years, were supposed to reduce herbicide use. That happened initially – but not for long, as weed species evolved resistance to glyphosate, the active ingredient in Roundup. Fifty percent of U.S. farmers surveyed report glyphosate-resistant weed infestations. In the Southeast, more than 90 percent of cotton and soybean farmers are affected. Today, 24 species of weeds have developed resistance; as a result, overall herbicide use is now higher than it was before Roundup Ready crops came along.

In response, seed companies have engineered new crop varieties to withstand older, more toxic herbicides, such as dicamba and 2,4-D. These next generation herbicide-tolerant crops are likely to exacerbate the problem, speeding development of weeds that resist multiple herbicides.

Moreover, dicamba and 2,4-D have been linked to increased rates non-Hodgkin's lymphoma and other diseases in farmers and farm workers. They are prone to drifting on the wind and dispersing into the air, and can settle on farm fields far from where they were applied. They are extremely toxic to many of the most common fruit and vegetable crops, and to plants that provide food and habitat for pollinators and other beneficial insects.

By contrast, agroecological farming practices adapted to fit the needs of farmers in particular areas can help combat weeds while dramatically reducing the need for herbicides. Iowa State University research has shown that using cover crops and more complex crop rotations can cut herbicide use by more than 90 percent while maintaining or increasing farmers' profits. But current farm policies aren't doing enough to help farmers adopt and perfect such practices.

The UCS recommends policy changes such as increased funding for USDA's Conservation Stewardship Program, which offers financial incentives for farmers using sustainable weed control methods. More resources should also be directed toward multidisciplinary research on integrated weed management strategies and technical assistance to help farmers adopt them. The new generation of herbicide-resistant crops should not be approved without adequate safeguards to protect the public and reduce the possibility of more resistant weeds.

Meanwhile, the U.S. government has proposed eliminating restrictions on the use of GE corn and soybean seeds engineered to resist the herbicide 2,4-D. ("Government might deregulate corn, soybean seeds," by M. L. Johnson, AP, Philly.com, Jan. 3, 2014; www.philly.com/philly/business/homepage/20140103_ap_d148a417749e4d9a97d63d40e43ea6ac.html; "The Rise of Superweeds—and What to Do About It," Union of Concerned Scientists, Dec. 2013; www.ucsusa.org/assets/documents/food_and_agriculture/rise-of-superweeds.pdf)

During the 2013 growing season at the Heritage Farm of the Seed Savers Exchange (SSE), the garden crew grew out 18 varieties of open-pollinated corn to replenish its supply, increase seed viability and evaluate varietal characteristics. **Preventing cross-pollination – especially from all the GE corn** grown in the corn belt – was difficult. Methods to avoid cross pollination include growing only one variety, growing varieties that flower at very different times, or pollinating by hand – putting bags over ears before silks emerge to keep any pollen from landing on silks, then collecting pollen by tightly bagging the tassels and hand-pollinating silks on each

ear with that pollen. Separating varieties by distance can also help, yet research has shown that even at distances up to 1,640 feet, cross-pollination was above 0.1 percent. The Heritage Farm crew grew one variety a half-mile from neighboring GE corn with a buffer of woods and elevation changes between the two. Even with those precautions, six ears from 200 plants contained GE genetics – which was “unacceptable” for saving seed “because the contamination will increase exponentially in each successive generation,” say SSE’s Tor Janson and Steve Carlson.

“The main lesson here,” they add, “is that if you are saving corn seed in the corn belt, it is extremely difficult to prevent GMO cross-pollination without doing hand-pollination ... Corn-belt seed savers who want to ensure they eliminate all GMO contamination may want to learn to hand-pollinate their corn, or grow varieties where GMO contamination is visually apparent, such as white or blue corn.” (“GMO Contamination in Your Open-Pollinated Corn,” by Tor Janson and Steve Carlson, Seed Savers Exchange, Dec. 9, 2013; <http://blog.seedsavers.org/preventing-gmo-contamination-in-your-open-pollinated-corn>)

European researchers studied 31 batches of soybeans from Iowa – GE glyphosate-tolerant soy; non-GE soy grown using a conventional “chemical” cultivation; and non-GE soy grown organically. Organic soybeans had more sugars, protein and zinc, and less fiber, saturated fat and omega-6 fatty acids than conventional or GE soy. GE soy had high residues of glyphosate and AMPA (a glyphosate degradation product), while conventional and organic soy had none. The researchers conclude, “**we were able to discriminate GM, conventional and organic soybeans without exception, demonstrating ‘substantial non-equivalence’** in compositional characteristics for ‘ready-to-market’ soybeans.” (“Compositional differences in soybeans on the market: glyphosate accumulates in Roundup Ready GM soybeans,” by T. Bøhna et al., Food Chemistry, Dec. 18, 2013; www.sciencedirect.com/science/article/pii/S0308814613019201)

Farm Bill

In a December 20, 2013, press release about the U.S. Farm Bill, Sen. Patrick Leahy (D-Vt.) noted that more than 440 days had passed since the Farm Bill first expired. “Farms are businesses, and farmers in Vermont and across the country are desperate to have a new Farm Bill enacted to give them the much-needed certainty for their planting and other farm decisions. Since the 2008 Farm Bill expired last year, we have seen parts of the country ravaged by blizzards that wiped out cattle herds while commodity prices slump. More than 20 programs, including the Organic Certification Cost Share Program, the Beginning Farmer and Rancher Development Grant Program, livestock disaster, renewable energy programs, and assistance for rural small business owners have been stranded without updated charters, and the USDA has had to press the pause button since these programs are stuck with no authorized funding. Those who participate in these programs are left hanging. That is as unwise as it is unfair.”

The House of Representatives did pass a short-term extension of the Farm Bill in December and has asked the Senate to do the same. I have heard a lot of concern here in the Senate that this short, one-month extension could allow direct payment subsidies to continue for another full year. We have already agreed on a bipartisan and bicameral basis to get rid of these unnecessary and expensive direct payment subsidies to agribusiness, so we should not fall into this trap of

extending them for a full year. That would be unacceptable, and, according to Secretary Vilsack, unnecessary.

Secretary Vilsack has indicated that if Congress completes the Farm Bill in early January, which can be done based on progress we have already made, we will not see the negative effects of the expiration of the dairy title, and implementation of the law should go smoothly. This is a reassuring, positive signal from the Secretary that consumers and our dairy farmers will not see the spikes in the cost of milk that we had all feared last New Year's Eve.

Of course, if the House of Representatives really wanted to get a Farm Bill done sooner, they would have kept the House in session this week instead of recessing for the year. Instead, they pushed forward a counterproductive short term extension to make it seem that they are doing something for farmers. This comes after the House leadership spent much of the past two years dragging their feet on farm policy and reforms, while the Senate has now passed two overwhelmingly bipartisan and reform-oriented Farm Bills.

While we had first hoped to complete this work in 2012, the Farm Bill was pushed back to 2013, and it will soon become the 2014 Farm Bill. Over the last two years, the need for this comprehensive legislation has only grown. We have all heard stories from our home states about the real impacts caused by the failure of Congress to pass a new Farm Bill and the continued uncertainty for farmers and those who rely on USDA's nutrition programs. I regret that far too many hungry and food insecure families across America have to wonder whether this most basic assistance will still be in place to offer support in the new year. I have always been a strong proponent of nutrition assistance programs and the doors they open and will continue to oppose drastic and draconian cuts and damaging changes to these programs.

I look forward to returning in January and sitting down with the Conference Committee to work through the final details of this bill. We cannot delay any longer, and I am pleased that Chairwoman Stabenow and Chairman Lucas have come together in a bipartisan way to move the Farm Bill forward. As a past chairman of the Senate Agriculture Committee, and a seven-time Farm Bill conferee, I know the challenges they have faced. I look forward to helping with the final steps in conferencing this legislation – a bill that touches every American. Its passage will strengthen the Nation and grow our economy.

The Farm Bill has long stood as a model of bipartisan consensus. I look forward to the Senate and House reaching a final bipartisan agreement that will move the bill forward to the President's desk.

(Statement of Senator Patrick Leahy On the Farm Bill Conference Progress, Sen. Patrick Leahy, Dec. 20, 2013;

<http://www.leahy.senate.gov/press/statement-of-senator-patrick-leahy-on-the-farm-bill-conference-progress>

Summer 2014

The Good News

Preliminary data from the 2012 USDA census show that **the number of Maine farmers 34 years old and younger increased by almost 40 percent between 2007 and 2012**, while the number of young farmers nationwide increased by only 1.5 percent. The value of agricultural products increased by 24 percent in the same five years, while the amount of land in farms grew by 8 percent. The full agricultural census was to be released in May. More preliminary information is posted at www.agcensus.usda.gov.

Maine	2007	2012
No. farms (7,196 in 2002)	8,136	8,174 – more than any other New England state
Ave. age	56.4	57 (vs. 58.3 for U.S.)
No. farmers under age 34	396	551
No. women farmers	2,043	2,381
No. male farmers	6,093	5,793
Land devoted to farming	1,347,566 A	1,455,304 A
Ave. size of farm	166 A	178 A
Market value of Maine ag products	\$617,190,000	\$764,387,000

A study of **potato production systems** conducted at MOFGA certified organic Wood Prairie Farm and at UMaine’s conventional Aroostook Farm from 2007-2009 found that **combining rapeseed rotation with compost amendment generally reduced disease and increased yield**. Other specific findings included these:

- Rapeseed rotation reduced all observed soilborne diseases (stem canker, black scurf, common scab and silver scurf) by 10 to 52 percent in at least one year at both sites.
- Compost amendments affected tuber diseases variably but consistently increased yield by 9 to 15 percent at both sites.
- *Rhizoctonia solani* hypovirulent isolate Rhs1A1, a biological control agent, decreased black scurf marginally at the conventional site in one year.
- *Trichoderma virens*, another biological control agent, reduced multiple diseases at the organic site in at least one year.

Wood Prairie Farm adds organic matter annually and uses a four-year rotation that ordinarily includes a rapeseed cover crop. Aroostook Farm uses a two-year rotation. As a result, Wood Prairie has more than double the organic matter and organic carbon in its soils. The study suggests that including rapeseed in the four-year rotation is integral for disease management. The researchers say that combining all of the management practices (rotation crop, compost amendment, biological control amendments) used at Wood Prairie “is perhaps the most important aspect of this study, since it provides information on how these treatments function together in an agricultural system, in contrast to most studies which focus on the effects of a single type of treatment on disease suppression ... Perhaps most importantly, this research demonstrated that these treatments and their combinations can be effective approaches for reducing disease and

increasing yield under both conventional and organic production practices, and under a variety of cropping backgrounds and management histories."

Interestingly, the researchers found that compost additions increased disease severity in some years, but disease suppression by the rapeseed rotation counteracted that effect – which is important, because compost additions increased yields.

According to Jim Gerritsen of Wood Prairie, "The study validated many organic practices we have employed for decades on Wood Prairie Farm involving sod and green manure crops, use of approved biological soil inoculants for disease control on organic seed potatoes and a long four-year crop rotation including plow down rapeseed as a soil cleansing biofumigant. Importantly, contrary to the tired serial propaganda from corporate detractors of organic farming, yields and effectiveness of disease suppression stood up very well on the organic plots when compared to their conventionally farmed counterparts." (Rapeseed rotation, compost and biocontrol amendments reduce soilborne diseases and increase tuber yield in organic and conventional potato production systems,

Edward Bernard et al., *Plant and Soil* (2014) 374:611-627; abstract at <http://link.springer.com/article/10.1007%2Fs11104-013-1909-4#page-1>)

MOFGA has a new fact sheet on zone tillage, based on the method used at Jan Goranson and Rob Johanson's Goranson Farm in Dresden, Maine. Johanson says the method has many benefits, including improving soil structure and biology, reducing the weed seedbank, and saving time, labor and fuel.

<http://www.mofga.org/Portals/2/Fact%20Sheets/FS%2020%20Zone%20Tillage%20Web.pdf>

By **changing row-crop management practices** in economically and environmentally stable ways, U.S. farms could contribute to **improved water quality, biological diversity, pest suppression and soil fertility** while helping to stabilize the climate, according to research conducted over 25 years at Michigan's Kellogg Biological Station. Midwest farmers, especially those with large farms, appear willing to change their farming practices to provide these ecosystem services in exchange for payments. And surveyed citizens are willing to make such payments for environmental services such as cleaner lakes.

The research, by G. Philip Robertson et al., investigated yields and environmental benefits achievable by growing corn, soybean and winter wheat using one-third of the usual amount of fertilizer – or none at all – with cover crops fertilizing the fields in winter. The research also examined no-till techniques. The regime that used fewer chemicals also reduced by more than 50 percent the amount of nitrogen that escaped into groundwater and rivers, with crop yields close to those of standard management. Nitrogen pollution is an important contributor to aquatic "dead zones."

The no-till and reduced chemical regimes also removed greenhouse gases from the atmosphere, in contrast to standard management, which produces significant greenhouse warming by emitting nitrous oxide. The zero-chemical regime mitigated greenhouse warming enough to compensate for emissions produced under standard management. All three regimes led to more fertile soil compared with conventional management.

(“Farming for improved ecosystem services seen as economically feasible,” American Institute of Biological Sciences, April 9, 2014; http://www.eurekalert.org/pub_releases/2014-04/aiob-ffi040714.php)

Twenty-five agrarian elders, each with 30 or more years of practical experience with the art and craft of natural systems agriculture, gathered in Big Sur in January to share stories, farming techniques and insights, and to create a vision for the future of food and agriculture. The group, including Jim Gerritsen and Eliot Coleman from Maine, discussed climate change, government regulation (including the Food Safety Modernization Act), co-opting of the organic market, contamination by genetically engineered crops and patenting of the seed supply by biotech companies, and the rising population and urbanization of the planet.

Considering a “perpetual agriculture,” they evaluated today’s organic movement, talked about practices that worked for them, and envisioned where the movement should go next. A “perpetual agriculture,” they said, might involve more human labor; more agile equipment; horse power; season extension structures; wind and solar power; and organic breeding for nutrient density. Organic farms would be designed as organisms and ecosystems.

The elders also discussed their own next steps – toward retirement and passing on their farms and their knowledge to the next generation.

They discussed issues related to USDA organic, including its reductionist or diluted standards; the emergence of industrial organic agriculture; and the time and cost to complete paperwork for certification.

Participants noted the need for increased research into organic agriculture; the need for a more holistic understanding of farming and nature than modern science affords; and the power of observation.

A video of the conference by Deborah Koons Garcia and a book by Michael Abelman are planned. (Esalen Agrarian Elders Conference Summary; www.esalen.org/resource/2014-agrarian-elders-conference-summary)

The steering committee of the **Grassroots Seed Network** (GSN, <http://grassrootsseednetwork.org>) is delighted to announce the formation of this new national (hopefully soon to be international) seed preservation organization. The GSN will provide a participatory, member-governed, democratic network through which those who preserve and maintain our treasured heritage of open-pollinated vegetable seeds can share those seeds with each other and encourage and help educate the next generation of seed savers. Over the past year, the five “steerers” (Will Bonsall and CR Lawn from Maine, Jim Tjepkema from Minnesota, George Stevens from California and Sylvia Davatz from Vermont) have worked to put the basic organizational infrastructure in place. GSN has two levels of membership. Listed Members offer seeds through GSN’s Source List, may request seeds from other Listers, and pay annual dues of \$15. Sustainers, those who do not yet offer seeds but who wish to support the organization, pay annual dues of \$25. Sustainers may request seed through the Source List but do not have voting rights. The steering committee is in the process of accepting nominations for its board of

directors and of assisting in the first election. All Listed Members are eligible to be board members and to vote in the election. The steering committee will dissolve once the new board is seated. GSN will seek 501(c)(3) nonprofit status. For more information, please visit the website or contact Yaicha Cowell-Sarofeen, 2470 Industry Rd., Starks, ME 04911.

A group of scientists and food activists passed out seed of 29 varieties of “**open source seeds.**” Anyone receiving them must pledge not to restrict their use (or use of any plant derived from the) by means of patents, licenses or any other kind of intellectual property. (“Plant Breeders Release First 'Open Source Seeds',” by Dan Charles, April 17, 2014; www.npr.org/blogs/thesalt/2014/04/17/303772556/plant-breeders-release-first-open-source-seeds)

Researchers at the University of Illinois added **low concentrations of plant extracts to pigs’ diets to study their effects on porcine reproductive and respiratory syndrome (PRRS) and E. coli.** Weanling pigs received either a control diet or a diet that included garlic botanical, turmeric oleoresin or capsicum oleoresin. Half the pigs in each dietary treatment were challenged with either E. coli or PRRS virus while the other half were not challenged. The experiment was done twice.

Pigs challenged with E. coli that had been fed any of the three plant extracts had a lower frequency of diarrhea (20 percent) than pigs fed the control diet (40 percent). Pigs fed plant extracts were more efficient (40 percent) in feed use than pigs fed the control diet in the E. coli-challenged group, and challenged pigs fed plant extracts had sounder gut morphology compared with challenged pigs fed the control diet. Even pigs in the non-challenged group, with a low frequency of mild diarrhea, benefited from the plant extracts.

Pigs challenged with the PRRS virus that received the three plant extracts were more efficient in week 1 (55 percent) and week 2 (40 percent) than pigs fed the control diet. The pigs continued eating and gaining weight – especially with turmeric added to the diet. Pigs with the PRRS virus that were fed plant extracts also had a lower blood viral load (13 percent) and lower concentrations of inflammatory mediators than pigs fed the control diet, suggesting that feeding plant extracts could suppress ongoing inflammation and prevent secondary infections.

The researchers believe the benefits resulted from effects on the pigs’ immune systems, because feeding plant extracts reduced inflammation caused by E. coli and the PRRS virus. Inflammation reduces feed intake and diverts nutrients away from growth and to the immune system. Results were published in the Journal of Animal Science. (“Beneficial anti-inflammatory effects observed when plant extracts fed to sick pigs,” University of Illinois, Feb. 26, 2014; <http://advancement.aces.illinois.edu/shared-category/animal-sciences>)

A report by Food Tank shows that **family farms can nourish the world while protecting the environment.** “Food Tank by the Numbers: Family Farming” features research from the U.N. Food and Agriculture Organization (FAO) and draws on dozens of agriculture and sustainability experts. It proves that family farms are not only feeding the world but are also developing effective ways to address global food security, increase income, protect biodiversity and conserve the environment for a growing population.

Agriculture has its problems. Approximately 70 percent of the world's freshwater goes toward agriculture – a figure expected to increase by 19 percent by 2050; soils are being depleted 10 to 40 times faster than they are being replenished, so 30 percent of global arable land has lost productivity. And deforestation and land degradation resulting from agriculture are contributing to climate change.

But millions of family farmers are using agroecological approaches to combat climate change and create resilience to food price shocks, natural disasters and conflict. Agroforestry, intercropping, cover crops and green manures, solar drip irrigation, integrated pest management, and using orphan (neglected) and indigenous crops are helping protect natural resources, improving nutrient density and increasing farmers' incomes. These innovative practices, grounded in farmers' knowledge, are nourishing communities and protecting the planet's resources. "Smallholder and family farmers are the backbone of food production all over the world," says Food Tank President Danielle Nierenberg. According to the report, by planting diversified and indigenous crops, family farmers can produce 20 to 60 percent greater yield than farmers who produce only one type of crop.

Supporting family farmers' livelihoods through facilitating access to markets can significantly increase rural incomes. Organic certification for family farmers has also increased incomes. In Indonesia, the Boyolali Farmers' Association has shown a 40 percent reduction in production costs with organic farming practices, and their market price for organic rice is 20 percent higher than that for non-organic rice.

Family farming also drives economic growth and social stability by providing job opportunities. Small farmers create a "multiplier" effect that extends beyond the farm sector, spending a high share of their income in other sectors, including construction, infrastructure and manufacturing, which creates demand for other goods and sectors in their communities. In Asia, every dollar of income that the farming sector generates creates an additional \$0.80 US in nonfarming sectors.

With increased support for and investment in family farmers, global food security can be achieved, environmental resources can be protected and national economies can grow, says the report.

Here are further highlights from the report:

- More than 98 percent of farms FAO sampled are family farms, and these produce at least 56 percent of the world's agricultural production. In many countries, the contribution of family farmers to food production far surpasses their share of land holdings.
- Family farming makes up the majority of agricultural production in sub-Saharan Africa, where approximately 33 million farms in the region, or 80 percent, are smallholder farms.
- More than 80 percent of all agricultural holdings measure less than 5 acres.
- All farmers can directly impact nutrition through the crops they grow and consume and through postharvest and preparation methods.

- Smallholder farmers’ practices preserve biodiversity – for nutrition and taste; because cultivating a wide variety of species helps insulate farmers against risk of plant disease; and because crop diversity promotes soil health and increases yields.
 - Diversified and indigenous crops are typically more resilient to climate change and extreme weather conditions.
 - Use of organic fertilizers by family farms effectively reduces soil degradation.
 - Smallholder farmers typically use innovative technologies to conserve resources. Drip irrigation methods used in Benin, for example, can save 30 to 60 percent more water than conventional methods.
 - Smallholder and family farming can be the key to mitigating negative effects of climate change and improving food security.
 - If 10,000 small- and medium-sized farms converted to organic, sustainable production, they would sequester as much carbon as would removing more than 1 million cars from the road.
 - In Vietnam, land tenure reforms that provide private land use rights to smallholder farmers have increased agricultural productivity and household incomes.
 - Mobile phone technology has helped smallholder rural farmers, especially women, access markets.
 - Despite growth of large-scale farms around the world, smallholder and family farming still makes up the majority of global agriculture.
- (“New Report: Food Tank By The Numbers: Family Farming,” by Sarah Small, March 6, 2014; <http://foodtank.com/news/2014/03/release-food-tank-by-the-numbers-family-farming-report>)

Global nonprofit Kiva’s new Kiva Zip program (<https://zip.kiva.org>) for U.S. entrepreneurs, with a focus on supporting small farmers, has **loans at 0 percent interest rate** with no fees. They can be paid back between six and 24 months and have optional grace periods of up to six months. Once you repay the first loan (up to \$10,000), you can take out larger loans of \$15,000 and then \$20,000. These loans are crowd-funded, so hundreds of people lend as little as \$5 each – and lenders can be customers and supporters. Farmers, on average, raise funds on Kiva Zip in less than two weeks. Last year, a MOFGA certified organic farmer raised \$5,000 to buy a truck and packing supplies (<https://zip.kiva.org/loans/733>). Kiva covers its operational expenses through donations, grants, foundations, corporate sponsorships, etc.

Shoppers care about sustainability. Among 1,003 U.S. shoppers ages 18 and above, sampled online by Cone Communications,

- 77 percent rate sustainability as a priority, relating sustainability to such issues as packaging and animal welfare;
- 89 percent consider where items are produced;
- 81 percent want options that protect the environment;
- 74 percent want companies to better explain how their products affect the environment;
- 84 percent want more disclosure about genetically engineered (GE) ingredients;
- 55 percent did not know whether GE foods are good or bad for them;
- 73 percent of women and 60 percent of men would pay more for local food;
- 52 percent of women and 38 percent of men would sacrifice variety to eat locally produced foods.

("3 Out Of 4 Food Shoppers Care About Sustainability In Their Supermarket Decisions," by Ben Schiller, Fast Company, April 3, 2014;
www.fastcoexist.com/3028353/3-out-of-4-of-food-shoppers-care-about-sustainability-in-their-supermarket-decisions)

Local Production

According to Tufts University researcher Tim Griffin and colleagues, in the 12 Northeastern states, almost 40 percent of cropland grows corn, most for animal feed. **The Northeast produces**

- about as much fluid milk as it consumes
- about 70 percent of its eggs
- 45 percent of its shellfish
- 23 percent of its fish
- just under 30 percent of its chicken
- 26 percent of its vegetables
- 18 percent of its fruit.

Population in the Northeast is expected to increase by about 3 percent (2 million) by 2030. More than half the Northeast's farmland is in Pennsylvania and New York; 20 percent in Maryland. Griffin and his colleagues calculated these baseline data in order to look at the area's soils, climate, land use and infrastructure; policy barriers to agricultural expansion, and incentives to address those barriers. ("Food production in northeastern U.S. may need to change if climate does," Tufts University, Science Daily, 2/28/2014;

<http://www.sciencedaily.com/releases/2014/02/140228103323.htm>)

Food environment factors – such as store/restaurant proximity, food prices, food and nutrition assistance programs, and community characteristics – interact to influence food choices and diet quality. Research has been documenting the complexity of these interactions, but more research is needed to identify causal relationships and effective policy interventions. The **USDA's Food Environment Atlas** assembles statistics on food environment indicators to stimulate research on the determinants of food choices and diet quality, and provides a spatial overview of a community's ability to access healthy food and its success in doing so. It includes data, by county, on population, farmers' markets (including which take SNAP benefits), farm-to-school programs, the Food Distribution Program on Indian Reservations, food dollars available, very low household food security, and 2012 state-level obesity rates. (USDA releases updated Food Environment Atlas, USDA

<http://www.ers.usda.gov/data-products/food-environment-atlas.aspx#.UxJDUGRdWQx>)

Food Safety

The 1958 Food Additives Amendment exempted from the formal, extended FDA approval process common food ingredients such as vinegar and vegetable oil that are "**generally recognized as safe**" (GRAS). Since then, the exemption has been stretched to allow manufacturers themselves to determine whether their newest chemicals in food are safe, without notifying FDA. The FDA simply asks that industry voluntarily inform it about their chemicals. The Natural Resources Defense Council (NRDC) has identified 275 chemicals from 56 companies that appear to be marketed for use in food based on undisclosed GRAS safety

determinations; it estimates that 1,000 such undisclosed GRAS determinations exist. The NRDC found that when companies did voluntarily submit reviews to FDA, the agency often had serious concerns about the safety of certain chemicals, and companies sometimes made safety decisions with little understanding of the law or science. For example, companies found their chemicals safe for use in food despite potentially serious allergic reactions, interactions with common drugs, or proposed uses much greater than company-established safe doses. When the FDA is asked to review a GRAS determination, it rejects or triggers withdrawal of about one in five notices. Furthermore, the public is not informed about many substances with GRAS determinations that are never submitted to FDA – and that may pose a much greater danger. The NRDC believes that the GRAS loophole is better named "Generally Recognized as Secret" than "Generally Recognized as Safe." It says the FDA and Congress need to fix the problem, and, in the meantime, consumers need to demand that their grocery stores and their favorite brands sell only food products with ingredients that the FDA has found to be safe. ("Generally Recognized as Secret – Chemicals Added to Food in the United States," Natural Resources Defense Council, April 2014;

<http://www.nrdc.org/food/safety-loophole-for-chemicals-in-food.asp>)

Of 26 drug companies asked to phase out certain **antibiotics used to promote growth in farm animals**, 25 have agreed to comply with FDA's voluntary plan. About 80 percent of the U.S. antibiotic supply is used on farms, some to hasten growth or prevent illness in unsanitary, crowded conditions and likely promoting resistance to antibiotics in pathogens that can affect humans. When companies remove claims that their antibiotics promote growth, use of the drugs for that purpose becomes illegal. The plan includes only antibiotics such as penicillin and tetracycline, used in humans. The measure does not prohibit use of the antibiotics to prevent disease due to crowding, however – possibly limiting its effectiveness. ("More drug makers agree to limit antibiotics for farm animals," by David Pierson, Los Angeles Times, March 26, 2014; www.latimes.com/business/money/la-fi-mo-fda-antibiotics-20140326,0,985413.story#axzz2x8Z41bFP)

People whose **sugar** intake is about a quarter or more of their total daily calories had twice the risk of dying from **heart disease** as those who whose intake was 7 percent, according to the research published in the Journal of the American Medical Association. ("Excess Sugar May Double Heart Disease Risk, Researchers Say," by Nicole Ostrow, Bloomberg, Feb. 3, 2014; www.bloomberg.com/news/2014-02-03/excess-sugar-may-double-heart-disease-risk-researchers-say.html)

Phthalates

Maine people are polluted with chemicals called phthalates, according to a report released by the Alliance for a Clean and Healthy Maine. The report, "Hormones Disrupted: Toxic Phthalates in Maine People," captures the stories and reactions of 25 Mainers who provided urine samples to test for the presence of seven phthalates (pronounced THAL-ates), a group of hormone-disrupting chemicals widely used in consumer products.

All 25 men and women who voluntarily participated had detectable levels of phthalates in their bodies. All were exposed to at least five of the seven phthalates tested, and some were exposed at

much higher levels than other Americans. Eight were in the top 5 percent of phthalate exposure nationally, and another four were in the top 10 percent.

The report concludes, “Mainers are widely exposed to phthalates, which cause serious health problems and are difficult to avoid due to lack of public information” and that “our chemical safety system fails to protect pregnant women and children.” The report recommends that “the State of Maine should act now to close the information gap” and “the use of phthalates should be phased out in favor of safer alternatives.”

Dozens of human health studies link phthalate exposure to serious health effects, including abnormal development of male sex organs; harm to the brain, causing learning and behavior problems in children; and increased rates of asthma and allergies. Phthalates harm reproductive health through reduced fertility, premature birth, early puberty in girls, breast growth in boys and increased risk of prostate and testicular cancer. Phthalates are also “obesogens” that interfere with fat-related hormones linked to obesity and metabolic disorder. Pregnant women and children are more vulnerable to the adverse effects of phthalates and face higher exposures, but teens and adults are also at risk.

Phthalates are used to soften vinyl plastic and are routinely added to hundreds of everyday products and building materials found in the home, including lunch boxes, kids’ backpacks, school supplies, raincoats and boots, shower curtains, tablecloths, floor tiles and wall covering. They are also a common ingredient of “fragrance” found in many cosmetics, lotions and other personal care products. Phthalates readily escape from products and enter the human body through breathing, eating and skin contact, including from frequent hand-to-mouth activity and teething by toddlers.

All seven of the phthalates tested in Maine people have been prioritized by various state, federal and European government agencies due to scientific concern about hazards and exposures. Six are named in a “Phthalates Action Plan” by the U.S. EPA; six are “Chemicals of High Concern to Children” in the state of Washington; five are banned in toys and childcare items by the U.S. Consumer Product Safety Commission; five are known to cause cancer and/or developmental toxicity by the state of California; and four are banned as “Substances of Very High Concern” by the European Chemicals Agency.

Heather Spalding of MOFGA, one of the 25 test subjects, said that a similar biomonitoring study in 2007 found industrial chemicals in MOFGA's former executive director, Russell Libby, who died in 2012 from prostate cancer.

"Russell Libby said we have to challenge the idea that contamination is just the price of living in a modern world," Spalding said.

After the 2007 study, Maine lawmakers passed the Kids Safe Products Act, which required Maine to adopt a list of high concern priority chemicals. It also required manufacturers to disclose toxic chemicals used in products and authorized the state to require safer alternatives.

"And that law, as wonderful as it is, has been underused," Spalding said, because phthalates aren't listed as a priority chemical.

Petitions to require the Maine Department of Environmental Protection to initiate a rule-making process on phthalates, with a goal of listing four phthalates as priority chemicals, were expected to have been submitted by the end of April. ("New Report: Maine people are polluted with dangerous chemicals called phthalates," Alliance for a Clean and Healthy Maine, March 18, 2014; www.cleanandhealthyme.org/Home/tabid/36/newsid531/639/Default.aspx)

Biodiversity

Thirty years of data from 94 studies and 184 farms (most in Western Europe) showed that **organic farms support 34 percent more plant, insect and animal species than conventional.** Organic farms influenced species richness most when they were in areas that were intensively farmed. The researchers said more study is needed to determine effects of organic farming in tropical areas, as in banana and cocoa plantations, and of converting natural areas to farms. ("Organic Farms Support More Species," Phys.org, Feb. 3, 2014; <http://phys.org/news/2014-02-farms-species.html>; Original study: Land-use intensity and the effects of organic farming on biodiversity: a hierarchical meta-analysis, by Sean L. Tuck et al., Journal of Applied Ecology, Feb. 2014, <http://onlinelibrary.wiley.com/doi/10.1111/1365-2664.12219/abstract>)

When a Michigan blueberry grower planted **flowering cover crops** – buckwheat, soybeans, mustard, alfalfa and clover – in the 10-foot-wide gaps **between his blueberry rows** for improved pollination, enough beneficial insects also showed up that he was able to reduce spraying from 10 to 12 times per season to two to three times, to save \$5,000 to \$6,000 on insecticides, and to rent half as many honeybee hives as previously. ("Growing Insects: Farmers Can Help to Bring Back Pollinators, By Richard Conniff, Environment 360, Feb. 3, 2014; http://e360.yale.edu/feature/growing_insects_farmers_can_help_to_bring_back_pollinators/2735)

Researchers planted marginal lands surrounding productive blueberry fields with a mix of 15 native perennial wildflowers to determine whether increasing the wild bee population would improve pollination in nearby crop fields. (The fields were pollinated by honeybees.) The first two years saw little to no increase in the number of wild bees, but after that twice as many were present as in control fields with no habitat improvements – and the blueberries had more seeds and were larger. Based on the results, **a 2-acre field planted with wildflowers adjacent to a 10-acre field of blueberries boosted yields by 10 to 20 percent.** ("Attracting wild bees to farms is a good insurance policy," Michigan State University Today, April 3, 2014; <http://msutoday.msu.edu/news/2014/attracting-wild-bees-to-farms-is-a-good-insurance-policy/>)

A report published in the Proceedings of the National Academy of Sciences, based on U.N. data from 152 countries from 1961 to 2009, says that "**national per capita food supplies** expanded in total quantities of food calories, protein, fat and weight" but simultaneously **declined "in the total number of plant species upon which humans depend for food."** More and more people rely on a limited number of major crops, such as wheat, corn, soy, dairy and meat, which are displacing such crops as sweet potatoes, yams, sorghum, oca and maca. This shift may be contributing to the increase in obesity, heart disease and diabetes and may be making the food

supply more vulnerable to drought, insects and diseases. The report suggests promoting alternative crops and supporting crop diversity and conservation. (“Global food supply grows increasingly homogeneous, study says,” by Mary MacVean, Los Angeles Times, March 3, 2014; www.latimes.com/science/sciencenow/la-sci-sn-global-food-supply-20140303,0,5664949.story#axzz2uxtn8Iom)

Bees

Beekeeper Anthony Cantrell of Burlington, Vermont, found “**zombie bees**” in his hive last October, the first such occurrence in the eastern United States. Zombie bees occur when the Apocephalus borealis fly lays its eggs in bees, where they grow and apparently cause neurological damage followed by death. They were first found in 2008 in western states by San Francisco State University Professor John Hafernik. (“Zombie' bees identified in Vt., 1st in Eastern US,” by Beth Garbitelli, San Jose Mercury News, Jan. 29, 2014; www.mercurynews.com/science-headlines/ci_25011193/1st-zombie-bees-east-coast-found-vt)

A study led by Professor Dave Goulson of the University of Sussex found that **bumblebees exposed to low doses of imidacloprid**, a neonicotinoid insecticide, brought back pollen from only 40 percent of their trips, while unexposed bees brought back pollen from 63 percent of trips. Also, exposed bees that returned with pollen brought 31 percent less than unexposed bees, so their **nectars received 57 percent less pollen** overall. Neonicotinoids are systemic insecticides: They are taken up by and travel throughout plants. Previously Goulson and his coworkers found that exposure to neonicotinoids resulted in 85 percent fewer queens. (“Pesticides halve bees' pollen gathering ability, research shows,” by Damian Carrington, The Guardian, Jan. 29, 2014; www.theguardian.com/environment/2014/jan/29/bees-pollen-pesticides-ban)

Two diseases of honeybees – deformed wing virus and a fungal parasite called Nosema ceranae – have been **found in wild bumblebees** in Great Britain, shortening their lifespan. On the other hand, researchers found hives in Kenya infected with Nosema and with Varroa mites did not suffer from the pests. The hives – traditional wild nests in logs – had very low concentrations of only a few pesticides. Improving bee health through practices that reduce chemical use and give bees access to diverse flowering plants can make a difference in the insects' health, say the researchers. (“Bumblebees infected with honeybee diseases,” by Rebecca Morelle, BBC News, Feb. 19, 2014; www.bbc.co.uk/news/science-environment-26242960; “Honeybees in East Africa Resist Deadly Pathogens,” by Jennifer S. Holland, National Geographic, April 16, 2014; <http://news.nationalgeographic.com/news/2014/04/140416-honeybees-africa-kenya-disease-nosema-varroa-resistance-genetics-pesticides/>)

The USDA is spending about \$3 million to enable growers in Michigan, Minnesota, Wisconsin and the Dakotas to **reseed pastures with alfalfa, clover and other plants that support bees** and livestock and to install fences and watering tanks and make other changes to enable more rotational grazing – also to encourage plant growth for insects and livestock. The money can be used to plant cover crops, improving soil health at the same time. Beekeepers have found in recent years that small, diverse farms that grew clover and other bee-friendly crops have been

displaced by monocrops of corn, soy, cotton or canola. (“USDA Spending \$3M to Feed Honeybees in Midwest,” AP, The New York Times, Feb. 25, 2014; www.nytimes.com/aponline/2014/02/25/us/ap-us-help-for-honeybees.html?_r=0)

Organic

During the summer of 2013, Congress passed a new **farm bill** after a number of years of staff time, delays, extensions and posturing by both parties. The previous farm bill was passed in 2008, expired in September of 2012 but was extended repeatedly until, in February 2014, the Senate passed and President Obama signed the final 2014 bill.

The farm bill is actually a number of bills, or titles, combined into one “omnibus” bill covering aspects of food and agriculture, from food stamp programs to commodity price supports to forestry and farm conservation. The U.S. House of Representatives sought to remove the nutrition support programs, or SNAP, from the rest of the farm bill programs, but ended up reinstating them in the final passage of the bill.

Frustrating for many progressive farm organizations, which pushed hard for changes in the last farm bill, was exclusion of changes in the 2012 farm bill extension and challenges to their inclusion in this year’s negotiations. Many organic and sustainable farm advocacy organizations favored reshaping major commodity price supports through subsidized crop insurance and conservation programs, which reward specific farm conservation practices. Unfortunately the commodity farm lobby has a big influence on legislators from the commodity-producing farm states and was able to continue price supports in the current bill.

The farm bill covers a five-year period and did include a number of programs that will benefit organic agriculture, noted below. Most are structural in nature but offer some advantages to organic farmers down the road.

- **Cost Share:** From the early days of the National Organic Program, 16 states have received organic certification cost share assistance. This program under the Agricultural Management Assistance (AMA) Act included Maine and continued as part of the 2012 farm bill extension. The current bill maintains two separate programs for organic certification cost share assistance: the AMA program, providing \$1 million annually, and the National Organic Certification Cost Share Program (NOCCSP), funded at \$11.5 million annually. Left out of the AMA program, and the 2012 extension, were food processors – but with the 2014 bill, they are once again eligible for cost share under the NOCCSP funding.
- **Research:** The farm bill provides \$20 million annually in mandatory funding for the Organic Agriculture Research and Extension Initiative.
- **Organic Production and Market Data Initiative:** The bill provides \$5 million in one-time (not annual) mandatory funding for the Organic Data Initiative. This funding will allow for more accurate collection of organic marketing data, which will be used to determine future funding goals in organic agriculture.

- **Organic Crop Insurance:** The bill requires USDA by 2015 to offer for all organic crops price elections that reflect the actual retail or wholesale prices received by producers of organic crops. Previous legislation required that organic producers pay an insurance premium for the additional risks perceived in organic farming, yet payments on insurance claims made on organic crops were calculated based on conventional crop prices. Both provisions were changed in the current bill.
- **National Organic Program:** The bill includes the Senate provision, which provides \$5 million in one-time (not annual) mandatory funding for USDA to upgrade and modernize NOP's existing database. Most organic certifiers would like NOP to develop a real time, web-based, searchable database of current farm and processor certification status.
- **Conservation Programs:** The Environmental Quality Incentives Program (EQIP) and Conservation Stewardship Program (CSP) are critical to organic farmers. Both need reform to address concerns unique to organic farms, such as the unfamiliarity of NRCS staff with organic systems, duplication between organic certification requirements and NRCS program requirements, and payment limit inequities. The final farm bill does nothing to address these concerns of organic farmers participating in the EQIP and CSP programs.

--Dave Colson

Approval of the 2014 farm bill reenergized efforts to create an **Organic Research and Promotion Program**. In such a program, commonly called a “**check-off**,” producers and processors pay into a common fund to support marketing efforts. The farm bill gave USDA authority to consider creating the organic check-off program, but the organic industry itself will decide whether to do so.

To that end, the Organic Trade Association (OTA) convened regional meetings with organic producers, handlers and processors to solicit ideas on the check-off and posted a draft program framework on its website for discussion.

Laura Batcha, OTA executive director, says the website offers certified organic operations and other interested parties a chance to voice their views on a variety of program options, including governance, promotional and research expenditures, and assessments and exemptions. OTA plans to continue soliciting comments on the website over the next few months; no date for ending the survey has been set.

“Originally, we thought we’d have a general sense of how certified operators were feeling about the idea by late May, but that’s slowed down a bit because of the farm bill delay,” says Batcha. “We’re kind of thinking now that we’ll have a better sense of the feelings by this fall, maybe in September.”

Achieving a final vote on the check-off is a multi-step process that could take two or more years. The initial opinion survey will help OTA craft a final program framework, which will then be referred back to the organic community for a survey vote to determine whether strong support exists for the check-off plan. If the industry – all organic certificate holders – resoundingly supports the plan, OTA will formally petition USDA to create the program. Once petitioned, USDA would review the proposal and evaluate industry support, then conduct a formal

referendum in which non-exempt organic certificate holders would vote on whether or not to endorse the check-off. Under USDA rules, a super majority vote of 66 percent in the affirmative is required to establish a check-off program.

To participate in the framework survey, visit United for More Organic at <http://www.unitedformoreorganic.com/>. For additional information about the check-off proposal, see <http://www.ota.com/ORPP.html?idp=3&ida=32>.

--Ted Quaday

Climate

For woodland owners and agricultural producers, creation of the **Northeast Regional Hub for Risk Adaptation and Mitigation to Climate Change** in Durham, N.H., will bring climate change science tools closer to home. Seven such U.S. regional hubs were announced in February 2014 to address increasing risks, such as fires, invasive pests, devastating floods and crippling droughts, on a regional basis, aiming to translate science and research into information for farmers, ranchers and forest landowners on ways to adapt and adjust their resource management. This is part of the President's Climate Action Plan to cut carbon pollution and slow the effects of climate change. The Northeast Climate Hub will cover Maine to West Virginia and be led by the U.S. Forest Service. ("Forest Service to Lead New USDA Regional Climate Hub in the Northeast," press release, U.S. Forest Service, Northern Research Station, Feb. 6, 2014; www.nrs.fs.fed.us/news/release/ne-climate-hub)

Genetic Engineering (GE)

As we went to press, a bill requiring **labeling of genetically engineered (GE) foods in Vermont** had passed the Senate by 28-2 and the House by 114-30 and was awaiting Governor Peter Shumlin's signature. The Senate established in the bill a fund of up to \$1.5 million to help defend the state against a potential lawsuit. The bill would require labeling as of July 1, 2016, on packaged foods sold at retail in Vermont and made with GE ingredients and on GE fresh produce sold in grocery stores – but not on prepared food sold in restaurants, or on meat, dairy or liquor. Unlike bills that have passed in Maine and Connecticut, the Vermont bill does not require other states to pass similar bills. ("GMO bill one step from law," by Terri Hallenbeck, Burlington Free Press, April 24, 2014; www.burlingtonfreepress.com/story/news/politics/2014/04/23/gmo-house/8060463/; "Vermont Senate votes 26-2 for GMO labeling," by Terri Hallenbeck, Burlington Free Press, April 15, 2014; www.burlingtonfreepress.com/article/20140415/NEWS03/304150009/-1/rss?utm_source=dlvr.it&utm_medium=twitter&nlick_check=1)

The **Safe and Accurate Food Labeling Act**, introduced to Congress on April 9, 2014, **would require the FDA to review the safety of GE products** before they enter the marketplace. Foods found to be unsafe or materially different from those produced without GE ingredients would have to be labeled. Consumer groups see the bill as an effort to undermine stronger state efforts to label foods made from GE ingredients. ("Legislation would ban state GMO labeling measures," by Christopher Doering, USA Today, April 9, 2014; www.usatoday.com/story/news/politics/2014/04/09/genetic-labeling-bill/7519937/)

General Mills and Post Foods are making (and labeling) Cheerios and Grape Nuts with non-GE ingredients. The companies join Ben & Jerry's and Chipotle in committing to eliminating GE ingredients. The Non-GMO Project, a third-party testing project, now verifies more than 14,000 products representing \$5 billion in sales in 2013. By 2017, non-GE products are projected to comprise 30 percent of food and beverage sales, with a value of about \$264 billion. ("Non-GMO Is Going Mainstream," by Ken Roseboro, Organic Connections, Feb. 4, 2014; <http://organicconnectmag.com/non-gmo-going-mainstream/>)

Australian farmer Steve Marsh is suing neighbor Michael Baxter after harvested seed heads from Baxter's GE Roundup Ready canola crop blew onto Marsh's organic farm, germinating there and contaminating land where he grew oats and wheat. Marsh lost organic certification on 70 percent of his farm as a result – and profits associated with organic production. This is the first case in the world in which an organic farmer is suing a GE farmer to recover loss and damages. Baxter bought his seeds from Monsanto. Marsh did not sue Monsanto because the company has a non-liability contract with farmers who buy its seed. ("Organic Farmer Going to Court Against Monsanto's GM Crops," by Kristina Chew, Care2, Jan. 29, 2014; www.care2.com/causes/organic-farmer-going-to-court-against-monsantos-gm-crops.html; "Neighbouring farmers fight landmark Australian GMO court case," by Jane Wardell and Colin Packham, Reuters, Feb. 7, 2014; <http://in.reuters.com/article/2014/02/06/australia-gmo-testcase-idINL3N0L52XH20140206>)

The Environmental Working Group's **Shopper's Guide to Avoiding GE Food** has these suggestions:

- Buy organic.
- Buy food certified as "Non-GMO Project Verified."
- If you can't do the above, avoid the most common ingredients from GE crops: corn, soy, sugar and vegetable oils, including canola, cottonseed, soybean and corn oil.

("EWG's 2014 Shopper's Guide To Avoiding GE Food," Environmental Working Group, Feb. 19, 2014; www.ewg.org/research/shoppers-guide-to-avoiding-ge-food?inlist=Y&utm_source=201402geshopperssuba&utm_medium=email&utm_content=first-link&utm_campaign=food)

In the UK, foods containing GE material for human consumption must be labeled, but foods such as meat, fish and dairy products coming from animals fed GE grains are not labeled. Some European supermarkets are starting such labeling, and the Soil Association is urging **labeling of all products from GE-fed animals**. Some farmers say that non-GE feed is increasingly difficult to source and/or afford, and the choice now is between organic and GE. ("Revealed: How Genetically Modified Food Is Finding Its Way Onto Your Dinner Plate," by Andrew Wasley, The Huffington Post UK, Feb. 17, 2014; www.huffingtonpost.co.uk/andrew-wasley/genetically-modified-food_b_4794557.html)

As more weeds have become resistant to glyphosate due to overuse of Roundup in Roundup Ready GE crops, **Dow Chemical** has a solution: **GE 2,4-D-resistant crops**, which it dubs

“Enlist” crops. The herbicide 2,4-D has been linked to non-Hodgkin's lymphoma, lowered sperm counts, liver disease, Parkinson's disease and effects on reproductive, neurological and immune systems. 2,4-D is also the seventh largest source of dioxins – highly toxic chemicals that bioaccumulate – in our environment. (“Meet the New Monsanto: Dow Chemical... and Their New 'Agent Orange' Crops,” by Andrew Kimbrell, Huffington Post, Feb. 18, 2014; http://www.huffingtonpost.com/andrew-kimbrell/dow-chemical-agent-orange-crops_b_4810311.html?utm_hp_ref=food&ir=Food)

A Feb. 20 **USDA report** cites the following data:

- GE crops were planted on about 169 million U.S. acres in 2013, about half the total land used for crops.
- The price of GE soy and corn seeds increased by about 50 percent between 2001 and 2010.
- GE seeds have not definitively increased yield and have sometimes reduced yields compared with non-GE varieties.
- Some research finds no significant difference in net returns from GE versus non-GE seeds.
- Insecticide use on corn was 0.02 pounds per acre in 2010 versus 0.21 in 1995.
- Herbicide use on GE corn was 1.5 pounds per acre in 2001 and more than 2.0 pounds per acre in 2010.
- 14 U.S. weed species and biotypes are now glyphosate resistant.

(“U.S. GMO crops show mix of benefits, concerns – USDA report,” by Carey Gillam, Reuters, Feb. 24, 2014; www.reuters.com/article/2014/02/24/usda-gmo-report-idUSL1N0LT16M20140224)

Growing crops free from contamination by GE crops and pesticides used on them is getting more difficult and costly for U.S. farmers, says a report by Food & Water Watch and the Organic Farmers' Agency for Relationship Marketing (OFARM), based on responses to a survey from 268 U.S. farmers. One out of three respondents had dealt with GE contamination on their farms. Of those contaminated, more than half had crops rejected by buyers because of GE contamination – at a reported median cost of \$4,500 per semi-load (about 1,000 bushels). Farmers growing organic and non-GE crops have to leave buffer zones around their crops and/or delay planting to attempt to avoid GE contamination, at a reported cost in lost income of \$2,500 to \$20,000 per year. “The results of this survey,” says Food & Water Watch, “reveal that the risks and the effects of GMO contamination have unfairly burdened organic and non-GMO farmers with extra work, longer hours and financial insecurity, which has led to general skepticism about coexistence within the organic community.”

Food & Water Watch and OFARM recommend that companies holding GE seed patents be held accountable for all losses associated with GE contamination; that responsibility for preventing contamination be shared by those growing GE crops rather than resting solely on organic and non-GE producers; that the USDA research, track and analyze incidents of contamination and associated costs; and that USDA dedicate resources through its extension service for education about this issue. (“Organic Farmers Pay the Price for GMO Contamination,” Food and Water Watch, March 2014;

http://documents.foodandwaterwatch.org/doc/GMO_contamination.pdf)

The Center for Food Safety (CFS) has filed suit to try to **force the USDA to release documents that may tell why it approved Monsanto's herbicide-resistant GE alfalfa** despite concerns about the crop. "USDA determined Monsanto's Roundup Ready alfalfa posed significant environmental and economic harms and initially proposed placing restrictions on it. Yet the agency went ahead and granted full unrestricted approval one month later," says Andrew Kimbrell, executive director of CFS. "Did the White House intervene? Did Monsanto pressure the agency? The fact is we don't know, and unless the court orders USDA to hand over these documents we may never know." Alfalfa, the fourth most commonly grown crop in the United States, is pollinated by bees, so farmers who raise organic and non-GE crops are concerned about contamination. The Los Angeles Times reports that Roundup Ready alfalfa was developed by Monsanto and Forage [Genetics](#), an alfalfa seed maker owned by Land O'Lakes Inc. ("Center for Food Safety sues USDA over genetically modified alfalfa," by David Pierson, Los Angeles Times, March 13, 2014; www.latimes.com/business/money/la-fi-mo-gmo-alfalfa-20140313,0,6462829.story#axzz2vxW1ugM1)

All five "independent" UK **scientists who wrote a report calling for fast-tracking of GE crops into British agriculture have links to the GE industry**. They include a consultant whose lab is funded by the GE company Syngenta; an employee of a lab funded by one of the UK's biggest supporters of GE crops; a founding member of CropGen, which promotes GE crops and foods; and two scientists who work for institutions heavily involved in GE research. The study touted the alleged ability of GE crops to feed those starving in Third World countries and minimized problems associated with the crops, such as effects on wildlife, emergence of superweeds, and the lack of research into their safety for human consumption. ("Scientists' hidden links to the GM food giants: Disturbing truth behind official report that said UK should forge on with Frankenfoods," by Sean Poulter and Ben Spencer, Daily Mail, March 14, 2014; www.dailymail.co.uk/news/article-2581387/Scientists-hidden-links-GM-food-giants-Disturbing-truth-official-report-said-UK-forge-Frankenfoods.html#top)

The **Chilean government** in March **withdrew the Plant Growers Law (the "Monsanto Law")**, a seed patent law, from Congress over concerns for small- and medium-sized farmers' rights. The law would have aligned Chilean legislation over seed and plant patenting with international agriculture law. Opponents said it would largely benefit big seed developers who could patent new seed strains – including some based on strains Chilean farmers have long used – and charge smaller farmers for their use. Farmers also worried that they would be held liable if and when patented seed contaminated their fields. ("Government withdraws controversial 'Monsanto Law' from Congress," by Belinda Torres-Leclercq, The Santiago Times, March 18, 2014; <http://santiagotimes.cl/government-withdraws-controversial-monsanto-law-congress/>)

Researchers at Iowa State University have found **western corn rootworms** in Iowa fields that **resist two of the three types of Bacillus thuringiensis (Bt) toxin** produced by GE corn – Cry3Bb1 and mCry3A. Crop rotation is one way to combat rootworms. ("Pests worm their way into genetically modified maize," by Brian Owens, Nature, March 18, 2014; www.nature.com/news/pests-worm-their-way-into-genetically-modified-maize-1.14887?WT.ec_id=NEWS-20140318)

The number of **Monarch butterflies** wintering in Mexico reached the **lowest level** since record-keeping began in 1993, says a report by the World Wildlife Fund, Mexico's Environment Department and the Natural Protected Areas Commission. Entomologists say the main factor now in the decline is killing of milkweed plants in fields of **herbicide-resistant GE crops** in the U.S. Midwest. Other factors include urban sprawl; extreme weather; and habitat loss due to logging. Monarchs once covered more than 44.5 acres in their wintering spot in Mexico; in 2013, that dropped to 1.65 acres. To help support the species, homeowners are encouraged to plant milkweed; and crews tending public lands are encouraged not to cut milkweed during Monarch breeding seasons. ("Monarch butterflies drop, migration may disappear," by Mark Stevenson, San Francisco Chronicle, Jan. 30, 2014; www.sfgate.com/news/science/article/Monarch-butterflies-drop-migration-may-disappear-5184818.php#page-1 ½)

Pesticides

Board of Pesticides Control Convenes Risk Advisory Committee

By Katy Green

In response to legislation introduced in Maine this session, Maine's Board of Pesticides Control (BPC) has convened the Environmental Risk Advisory Committee (ERAC). This committee, which has not met since 2006, is being asked to examine whether current pesticide residues can affect Maine's lobster resource directly or via impact on other marine organisms. Representative Walter Kumiega (D-Deer Isle) introduced "An Act to Protect Maine's Lobster Fishery," which sought to prohibit use of methoprene and resmethrin in areas that drain into the Gulf of Maine. The BPC opposed the legislation, reasoning that those two pesticides are not widely used in Maine, so the bill would not be effective. Additionally, BPC members argued that in the event of government-sponsored spray programs to combat mosquitos that carry Eastern Equine Encephalitis and West Nile Virus, the board would like the option of using these products.

Ultimately the bill did not make it out of committee, but the committee did ask the BPC to look more carefully at how pesticides may be impacting Maine's lobster populations. The board has chosen committee members who are experts in their fields of study to participate in the discussion via the ERAC. A preliminary report to the legislature is expected in January 2015.

Product Registrations

At its February meeting the board approved registration of a genetically engineered (GE) Bt (insecticide-containing) soybean to be grown in Maine. This is the first GE soybean registered for use in the state. The unanimous approval vote occurred without any input from the Plant Incorporated Protectant (PIP) technical review committee, which generally provides input on registrations of GE crops. Use of this approved crop is for seed production only, but BPC staff noted that a different label use might be up for approval at some point.

Consent Agreements

The board reached a consent agreement with Atlantic Pest Solutions of Kennebunkport as a result of a pesticide application from which pesticide drifted into a brook near the application site. In this case an unlicensed applicator applied Talstar P Professional Insecticide for mosquito/tick control, an allowed action if a licensed applicator is on site. A neighbor observed the application and alerted the board when the application entered the brook. Lab results from samples taken from the brook confirmed the presence of the active ingredient of the insecticide. As a result Atlantic Pest Solutions agreed to pay a \$750 fine.

The board approved a consent agreement with Ramon Forestry Service LLC of Clinton for a pesticide application made to an RT Allen and Son's Inc. blueberry field in Palermo. A neighbor whose land abuts the field contacted the board due to concern that drift had occurred from an application made the day before. Foliage samples collected confirmed the presence of the active ingredient of Fitness Fungicide, the pesticide used in this instance. The fine in this case was \$400.

The board fined Gateway Inn of Medway \$500 for a series of pesticide applications made throughout 2012. The owner of the facility used Bed Bug, Lice and Dust Mite Spray to control fleas and ticks in rooms where guests had pets, including instances where guests had left the premises only briefly. The owner did not have the required license for this type of application and had not notified employees that applications were taking place.

The board reached a consent agreement with Olde English Village LLC of South Portland, a housing complex, for unlicensed pesticide applications made at the complex. Employees of the complex applied pesticides to apartments and common areas without the required license. During the investigation four different pesticides were identified at the site. The company agreed to a \$500 fine.

The board levied a \$250 fine against Jato Highlands Golf Course, located in Lincoln, for pesticide applications made in 2012. This course is open to the public, so someone with a commercial applicator's license must perform any pesticide applications made there. The previous commercial applicator ended employment at the course in 2011, and the individual who applied pesticides in 2012 did not have the required license.

Collins Insect Control Inc. of Portland was fined for a pesticide application at a residential property in Westbrook. The caller who alerted the board believed a pesticide application made by Collins Insect Control on an abutting property had drifted and caused the death of the caller's dog. Inspectors found no evidence that the dog's death was related to the pesticide application but did find evidence of drift onto the caller's property, in violation of board rules. The applicator also admitted to not wearing the chemical resistant gloves required to comply with the label of Cross-X Check Plus Multi-Insecticide, the product used in this case. The board imposed a \$400 fine.

Sidebar

Comment Now!

The EPA is accepting comments until June 17, 2014, on proposed changes to the Agricultural Worker Protection Standard (WPS). The EPA states the proposed changes are intended “to increase protections from pesticide exposure for the nation's 2 million agricultural workers and their families.” Changes include increased training, mandatory posting of signs, age restrictions on young farmworkers handling pesticides and others. To learn more and submit comments, due on or before June 17, visit <http://www.epa.gov/oppfead1/safety/workers/proposed/index.html>.

[End of BPC news]

Gilles-Eric Seralini and coworkers found that eight of nine **pesticides** (three insecticides, three fungicides and three herbicides, including Roundup) tested on human cells **were two to 1,000 times more toxic than their active ingredients** alone. Seralini points out that only active ingredients are used to determine guidelines for acceptable exposure levels to pesticides. (“Controversial scientist claims pesticide toxicity 'proof,’” *phys.org*, Jan. 30, 2014; <http://phys.org/news/2014-01-controversial-scientist-pesticide-toxicity-proof.html#jCp>)

Several studies have **linked pesticides with development of Parkinson's disease**. A new study involving Californians shows that low levels of 11 pesticides affect the enzyme aldehyde dehydrogenase (ALDH), involved in processing the brain chemical dopamine, increasing the risk of Parkinson's. People with a common variant of the ALDH2 gene are particularly sensitive to ALDH-inhibiting pesticides and were two to six times more likely to develop Parkinson's than those without the variant when exposed to these pesticides. All the metal-coordinating dithiocarbamates tested (e.g., maneb, ziram), two imidazoles (benomyl, triflumizole), two dicarboximides (captan, folpet) and one organochlorine (dieldrin) inhibited ALDH activity. (“Aldehyde dehydrogenase variation enhances effect of pesticides associated with Parkinson disease,” by Arthur G. Fitzmaurice et al., *Neurology*, Feb. 4, 2014; www.neurology.org/content/82/5/419; “Pesticides increase risk for Parkinson's disease: Certain people may be more susceptible,” *Science Daily*, Feb. 3, 2014; <http://www.sciencedaily.com/releases/2014/02/140203163428.htm>)

Pyrethroid insecticides found in roach sprays, flea bombs, ant traps and pet shampoos **persist indoors for years** after use and collect in bodies of adults and children, possibly posing health risks, says a UC Davis study. Researchers took wipe samples of floors and measured pyrethroids in urine and found the insecticides in a majority of 173 Californians tested. Concentrations found on floors were related to those found in urine of children tested but not mothers, suggesting children are more exposed in homes, and mothers from diets or outdoors. Pyrethroids, synthetic versions of naturally occurring pyrethrins, have been linked to respiratory ailments, heart palpitations and nausea in farmworkers and have disrupted hormones and delayed puberty in lab animals. One study found that mothers of autistic children had used anti-flea and anti-tick shampoos on pets twice as often while pregnant as mothers whose children developed typically. (“Insecticides linger in homes, study finds,” by Edward Ortiz, *The Sacramento Bee*, Feb. 25, 2014; www.sacbee.com/2014/02/25/6186580/insecticides-linger-in-homes-study.html)

Glyphosate (the active ingredient in Monsanto's Roundup and other herbicides) may help carry toxic heavy metals from soils and contaminated fertilizers to kidneys, possibly explaining the epidemic of **chronic kidney disease** (CKD) in Sri Lanka, South and Central America and India

where rice and sugarcane are grown, say researchers. The disease is not found in parts of Sri Lanka where agrochemical use was banned until recently to prevent bomb-making during the country's civil war. Rice-growing soils where CKD occurs are naturally high in heavy metals, and the synthetic fertilizer triple superphosphate contains heavy metals, such as cadmium, chromium, nickel and lead, and arsenic. In March, Sri Lanka's president ordered a ban on glyphosate. In September 2013, the Salvadoran legislature also approved a ban on glyphosate and other agrochemicals, but the proposal has not been signed into law yet. ("Glyphosate, Hard Water and Nephrotoxic Metals: Are They the Culprits Behind the Epidemic of Chronic Kidney Disease of Unknown Etiology in Sri Lanka?" by Channa Jayasumana et al., International Journal of Environmental Research and Public Health, 2014; 11(2):2125-2147; www.mdpi.com/1660-4601/11/2/2125; "Sri Lanka killer kidney disease linked to Monsanto weedicide, phosphate fertilizer: study," Lanka Business Online, March 2, 2014; www.lankabusinessonline.com/news/sri-lanka,-kidney-disease-linked-to-glyphosate,-phosphate-fertilizer/2081217214; "Sri Lanka bans Monsanto herbicide citing potential link to deadly kidney disease," by Sasha Chavkin, The Center for Public Integrity, March 13, 2014; www.publicintegrity.org/2014/03/13/14418/sri-lanka-bans-monsanto-herbicide-citing-potential-link-deadly-kidney-disease)

Scientists conducting the CHAMACOS (Center for the Health Assessment of Mothers and Children of Salinas) study have been following several hundred Salinas Valley children of primarily Latino farmworkers since birth. After sampling for exposure to pesticides, bisphenol A and flame retardants, they found that **children of mothers with the highest levels of organophosphates were at the greatest risk for neurodevelopmental problems**, including poorer reflexes, pervasive developmental disorder, autism-related conditions, hyperactivity and lower IQ scores.

In her article about CHAMACOS, author Susan Freinkel covers other research showing effect of pesticides on brain development and the resulting health, social and economic effects. She also notes effects of variants of the gene PON1, which produces an enzyme that helps detoxify organophosphates and, depending on the gene type, can make children far more susceptible to the pesticides – raising questions about how the EPA assesses pesticide risks and about excessive use of its "conditional registration" category, which allows use of some pesticides before all safety testing has been done. The author interviews experts who are concerned about the slow process at EPA for reviewing pesticides; about the lack of attention paid to mixtures of pesticides and mixtures of pesticides with other synthetic chemicals; about simply substituting neonicotinoids or pyrethroids, which have their own potential health risks, for organophosphates; about measures farm workers could take to limit their exposure to pesticides – if they were paid enough to afford to wash their clothes separately, to not have to have children with them in fields or cars, or to buy organic foods.

Freinkel's article is one of three about pesticides in The Nation. Another, by Lee Fang, shows how pesticide-producing companies have spent millions of dollars lobbying politicians and received favorable treatment for their products in return. Yet another by Freinkel tells how to avoid consuming pesticides in light of inadequate regulation. ("Warning Signs: How Pesticides Harm the Young Brain," by Susan Freinkel, The Nation, March 11, 2014; www.thenation.com/article/178804/warning-signs-how-pesticides-harm-young-brain; "The

Pesticide Industry vs. Consumers: Not a Fair Fight,” by Lee Fang, The Nation, March 11, 2014; www.thenation.com/article/178802/pesticide-industry-vs-consumers-not-fair-fight#; “6 Ways to Avoid Eating Pesticide Residue,” by Susan Freinkel, The Nation, March 13, 2014; <http://www.thenation.com/article/178829/6-ways-avoid-eating-pesticide-residue>)

A group of Midwest vegetable farmers called the Save Our Crops Coalition has failed to convince **Monsanto** to reformulate its dicamba herbicide that could become widely used and can drift and damage vegetable crops. The herbicide will likely become far more popular if Monsanto’s **genetically engineered Roundup Ready 2 Extend corn and soy varieties, which also resist dicamba**, come to market – as is expected in about two years, if approved. The new crops were developed after GE Roundup Ready crops, engineered to resist the herbicide glyphosate (the active ingredient in Roundup), were overused and weeds became resistant to glyphosate. Dow AgroSciences reformulated its 2,4-D herbicide that will be used with its 2,4-D-resistant Enlist corn and soy seeds to make it less prone to vaporize and drift, and labeled it to restrict its use when wind was blowing toward sensitive crops. Both 2,4-D and dicamba are prone to drifting and can deform and kill broadleaf plants – including vegetable crops. (“Monsanto in dispute with veggie farmers over herbicide,” by Elizabeth Weise, USA Today, March 13, 2014; www.usatoday.com/story/news/nation/2014/03/13/monsanto-dow-agrosciences-herbicides-save-our-crops/6015519/)

A study found that **fruit flies exposed to very low doses of the neonicotinoid insecticide imidacloprid produced fewer offspring than control insects did**. The effect was not seen with the highest dose of imidacloprid. The researchers think regulators should look not only at short-term mortality when evaluating pesticides, but also at very low doses. Researchers do not know why such low doses of imidacloprid are so harmful. One possibility is that tiny doses do not trigger cells’ detoxification mechanisms. (“Low Doses Of A Controversial Insecticide May Harm Friendly Insects,” by Puneet Kollipara, Chemical & Engineering News, March 14, 2014; <http://cen.acs.org/articles/92/web/2014/03/Low-Doses-Controversial-Insecticide-Harm.html>)

Researchers tested **effects on honeybee larvae of the four most common pesticides detected in pollen and wax** – fluvalinate, coumaphos, chlorothalonil and chloropyrifos. All at levels found in hives increased larval mortality compared with untreated larvae. A mixture of 34 mg/L chlorothalonil and 3 mg/L fluvalinate showed synergistic toxicity, but when diluted 10-fold was antagonistic. Chlorothalonil at 34 mg/L synergized the miticide coumaphos at 8 mg/L. Adding coumaphos significantly reduced the toxicity of the fluvalinate and chlorothalonil mixture. The “inert” ingredient N-methyl-2-pyrrolidone at seven concentrations was highly toxic to larvae. The researchers suggest that pesticide mixtures in pollen be evaluated by adding their toxicities until complete data on interactions are available. (“Four Common Pesticides, Their Mixtures and a Formulation Solvent in the Hive Environment Have High Oral Toxicity to Honey Bee Larvae,” by Wanyi Zhu et al., PLoS ONE, Jan. 8, 2014; <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0077547#pone-0077547-g005>)

A Center for Food Safety literature review shows that **neonicotinoid insecticide seed treatments offer little benefit**, do not increase crop yield and do cause widespread environmental and economic damage – **and are implicated in bee population declines** and

colony collapse. The authors examined 19 peer-reviewed studies of the relationship between neonicotinoid treatments and yields of major U.S. crops. Eight studies found that neonicotinoid treatments did not provide any significant yield benefit; 11 showed inconsistent benefits. The studies corroborate evidence from European countries that were able to maintain crop yields even after neonicotinoid bans. The review cites the EPA for failure to conduct a thorough cost-benefit analysis and calls on EPA to suspend seed treatment product registrations. Almost all U.S. corn seed and approximately half of U.S. soybean seeds are treated with neonicotinoids (which are not allowed in organic production). Neonicotinoid pesticides are slow to break down, so they can build up where they are applied. They contaminate surface water, ground water and soil, endangering beneficial species that inhabit these ecosystems. One study found the same yield in fields of treated and untreated soybeans, with no effect of neonicotinoids on the targeted soybean aphid but with harm to ladybugs, lacewings and spiders – predators of soybean aphids. (“New Report: Widely-Used Neonicotinoid Seed Treatments Are Unnecessary in Most Cases,” Center for Food Safety, March 24, 2014; www.centerforfoodsafety.org/press-releases/3000/new-report-widely-used-neonicotinoid-seed-treatments-are-unnecessary-in-most-cases ; “Pesticides that hurt bees don't help farmers, study finds,” by Josephine Marcotty, Star Tribune, March 24, 2014; www.startribune.com/politics/statelocal/252104351.html?page=all&prepage=2&c=y#continue)

Americans have collectively forfeited 41 million IQ points as a result of exposure to certain neurotoxins, says Harvard researcher Dr. David Bellinger. Exposure to organophosphate insecticides alone was calculated to result in a loss of 16.9 million IQ points. Other Harvard researchers say 12 neurotoxins are believed to be causing ADHD and autism spectrum disorders as well as lower IQs. The 12 include two insecticides – chlorpyrifos and DDT/DDE – and manganese, fluoride, tetrachloroethylene (PERC), polybrominated diphenylethers (PBDEs), arsenic, lead, mercury, toluene, ethanol and polychlorinated biphenyls (PCBs). The government restricts use of some of these chemicals. Writer James Hamblin says, “The greater concern lies in what we’re exposed to and don’t yet know to be toxic. Federal health officials, prominent academics, and even many leaders in the chemical industry agree that the U.S. chemical safety testing system is in dire need of modernization.” Hamblin cites economist Elise Gould’s figure that combined current levels of pesticides, mercury and lead cause IQ losses resulting in around \$120 billion lost annually – about three percent of the annual U.S. budget. (“The Toxins That Threaten Our Brains,” by James Hamblin, The Atlantic, March 18, 2014; www.theatlantic.com/features/archive/2014/03/the-toxins-that-threaten-our-brains/284466/)

British scientists asked about 623,080 women aged 50 or over whether they ate organic foods, and then tracked development of the 16 most common types of cancer among those women for nine years. Comparing the 180,000 women who reported that they never ate organic food with about 45,000 who reported that they usually or always ate organic foods, the researchers found **21 percent less non-Hodgkin lymphoma and a slight increase in breast cancer in those who ate organic foods**. No difference was noted in other cancers.

Peter Melchett, director of policy for the Soil Association, said that consumers support organic for a variety of reasons, including benefits to wildlife, prohibition of hydrogenated fats, artificial colors and additives and genetically engineered ingredients – and reduced exposure to pesticides. Melchett said the researchers measured the women’s body mass index and physical activity only once during the study, and he noted the challenge of studying the relationship between diet and

cancer, “given that processes that lead to development of cancer can operate over a lifetime and are hard to separate.”

The Organic Center says, “When you look at all the factors that may be confounding the study published by Bradbury et al. in the British Journal of Cancer, broad generalizations about cancer incidence decreases due to organic food consumption are not possible.”

Those factors include the subjective, self-reported, unvalidated survey answers, which were not controlled for accuracy or consistency; the construction of the study, which did not include many important external factors that could influence cancer development; and the short timescale of the study. Given the many limitations of the study, The Organic Center says the fact that researchers could still find a link between consuming organic food and reducing one’s risk of developing non-Hodgkin lymphoma “means that the connection between avoiding this type of cancer and eating organic must be extremely strong.” (“Women who eat organic foods no less likely to develop cancer, research finds,” by Haroon Siddique, The Guardian, March 27, 2014; www.theguardian.com/society/2014/mar/28/women-organic-foods-develop-cancer; “Organic food does not cut women's cancer risk' – study,” by Padraic Flanagan, The Telegraph, March 28, 2014; www.telegraph.co.uk/earth/agriculture/food/10728223/Organic-food-does-not-cut-womens-cancer-risk-study.html; “Organic food doesn’t lower overall cancer risk,” Cancer Research UK, March 28, 2013; <http://www.cancerresearchuk.org/about-us/cancer-news/case-study/organic-food-doesn%E2%80%99t-lower-overall-cancer-risk>; Bradbury, K.E. et al., “Organic food consumption and the incidence of cancer in a large prospective study of women in the UK,” (2014) British Journal of Cancer; doi:10.1038/bjc.2014.148; “Cancer Study Has Major Limitations,” The Organic Center, March 28, 2014; <http://organic-center.org/news/cancer-study-has-limitations/>)

Scotts Miracle-Gro Co. plans to release of a **GE grass seed** within the next couple of years that resists insecticides and herbicides, likely leading to greater use of these chemicals. The Connecticut Senate approved a ban on GE grass seed in April, but the House failed to pass it, so it died. (“State House rejects ban on GMO grass seed,” by Ken Dixon, Stamford Advocate, April 12, 2014; www.stamfordadvocate.com/local/article/State-House-rejects-ban-on-GMO-grass-seed-5398409.php)

Moms Across America and Sustainable Pulse found the herbicide **glyphosate** (the active ingredient in Roundup herbicide) at concentrations of concern **in 3 out of the 10 samples of breast milk** tested from American women, suggesting that the herbicide accumulates in women’s bodies over time. Concentrations were 76 ug/l to 166 ug/l – 760 to 1,600 times higher than the European Drinking Water Directive allows for individual pesticides but less than the 700 ug/l maximum contaminant level for glyphosate set by the U.S. EPA, based on the premise that glyphosate does not bioaccumulate. The testing commissioned by Moms Across America and Sustainable Pulse also analyzed 35 urine samples and 21 drinking water samples from across the United States and found levels in urine more than 10 times higher than those found in a similar survey done in the EU by Friends of the Earth Europe in 2013. These preliminary projects used ELISA tests, which have a high minimum detection level in breast milk and urine, so even samples that tested negative may have contained worrying levels of glyphosate. Women who had been eating organic and non-GMO foods for several months to two years did not have detectable

levels of glyphosate in their breast milk. (“Herbicide Discovered in U.S. Mothers’ Breast Milk,” Sustainable Pulse, April 6, 2014; <http://sustainablepulse.com/2014/04/06/worlds-number-1-herbicide-discovered-u-s-mothers-breast-milk/#.U0ssOmSwLby>)

Taiwanese researchers have found that **bee** larvae exposed to trace amounts (10 ppb) of imidacloprid, one of the most widely used **neonicotinoid** insecticides, have impaired ability, as adults, to find their way home and to learn how to gather nectar. Also, adult bees treated with 50 ppb imidacloprid seem to show discomfort and cannot navigate back to their hives. (“Taiwanese scholars find new clues in bee disappearances,” By Tseng Ya-chi, Liu Te-tsang and Scully Hsiao, Central News Agency, April 14, 2014; <http://focustaiwan.tw/news/asoc/201404140034.aspx>)

Fall 2014

The Good News

A meta-analysis of 343 peer-reviewed publications indicates statistically significant and meaningful differences in composition between organic and non-organic crops/crop-based foods. Concentrations of some antioxidants were higher in organic foods. Many antioxidants have been linked to a reduced risk of cardiovascular disease, neurodegenerative diseases, certain cancers and other chronic diseases. Also, pesticide residues occurred four times more often in conventional crops, which also contained significantly higher concentrations of the toxic metal cadmium. Significant differences were also detected for some other compounds, e.g. minerals and vitamins. The differences occurred across regions and production seasons. The higher antioxidant and lower cadmium concentrations may be linked to non-use of synthetic nitrogen and phosphorus fertilizers, respectively, in organic farming. This is the fourth meta-analysis of the nutritional composition of conventional versus organic foods. Three others worked with far fewer studies of lesser quality, say the authors of the most recent study. Still, two (the most recent study and one other) found that pesticide residues were about four- to five-fold more common in conventional crops, and polyphenol concentrations were higher in organic foods. (“Higher antioxidant and lower cadmium concentrations and lower incidence of pesticide residues in organically grown crops: a systematic literature review and meta-analyses,” by M. Barański et al., British Journal of Nutrition, July 15, 2014; http://csanr.wsu.edu/m2m/papers/organic_meta_analysis/bjn_2014_full_paper.pdf; “New Meta-Analysis Identifies Three Significant Benefits Associated With Organically Grown Plant-Based Foods,” by Chuck Benbrook, Center for Sustainable Agriculture and Natural Resources, July 11, 2014; <http://csanr.wsu.edu/significant-benefits-organic-plant-based-foods/>)

A review of studies related to the influence on public health of organic agriculture and crops grown organically found that “... both animal studies and in vitro studies clearly indicate the **benefits of consumption of organically produced food** instead of that conventionally produced.” According to The Organic Center, “The increased phenolic compounds and lower pesticide residues found in organic produce could partially account for these benefits, but the study also points out that the significant advantages of organic cannot be explained by these variables alone. Researchers suggest that synergistic effects between various constituents within

organic food are likely to be part of the reason organic food is more beneficial to public health than conventional products.” (“Contribution of Organically Grown Crops to Human Health,” by Eva Johansson et al., *Int. J. Environ. Res. Public Health* 2014, 11(4), 3870-3893 – April 2, 2014; www.mdpi.com/1660-4601/11/4/3870; “Study finds that Organic Food Consumption Benefits Public Health,” The Organic Center, May 20, 2014; <http://organic-center.org/hot-science/study-finds-that-organic-food-consumption-benefits-public-health/>)

Retail sales of organic products in the United States grew 11.5 percent to \$35.1 billion in 2013, the strongest growth the industry has seen in five years, according to the Organic Trade Association (OTA) Organic Industry Survey. More than 200 companies responded to the survey. The OTA is predicting growth of 12 percent in 2014.

Organic food purchases now account for more than 4 percent of the \$760 billion annual food sales in the United States. The growth rate of organic food sales, which has averaged almost 10 percent every year since 2010, has dwarfed the average annual growth of just over 3 percent in total food sales during that same period.

Organic food sales were \$32.3 billion – 92 percent of the total organic sales. Non-food organic products sales – including flowers, fiber, household products and pet food – were almost \$2.8 billion, an eight-fold increase since 2002.

Produce sales were \$11.6 billion, up 15 percent. More than 10 percent of the fruits and vegetables sold in the United States now are organic. The \$1.5 billion in new sales of organic fruits and vegetables represented 46 percent of the organic sector’s \$3.3 billion in new dollars.

Organic condiments sales grew 17 percent, to reach sales of \$830 million.

The organic snack food sector was up 15 percent to \$1.7 billion.

Organic bread and grain sales were up 12 percent to \$3.8 billion.

Organic meat, poultry and fish sales were up 11 percent to \$675 million.

Organic packaged and prepared food sales were up 10 percent to \$4.8 billion.

Organic dairy, at \$4.9 billion, grew by 8 percent.

Organic beverage sales, about \$4 billion, showed a 5 percent growth rate.

Farmland in the United States is not being converted to organic at the pace needed to meet the growing demand for organic, says the OTA. And supplies of organic feed and organic grain have been tight and costly, which could limit growth, especially in the organic dairy and meat sectors.

Also, consumers continue to be confused about what organic means. The “organic” message can be lost next to the presence of “natural” products and the long debate around genetically engineered ingredients. (“American appetite for organic products breaks through \$35 billion

mark,” Organic Trade Association, May 15, 2014;
www.organicnewsroom.com/2014/05/american_appetite_for_organic.html)

The Maine Food Strategy 2014 Consumer Survey Report was based on a fall 2013 survey of almost 600 Maine households about their attitudes and buying preferences around locally grown, raised and harvested food. Here are some of the results:

- 61 percent of Mainers define “local” in “local food” as coming from Maine; 19 percent as coming from their county; 9 percent, from New England; 6 percent, from their town.
- Given the choice of buying food or fish grown, raised or caught in Maine, or from “somewhere else,” almost 80 percent chose to purchase local or Maine food. Two-thirds of all Maine households said they purchase local food to support farmers, fishermen and businesses.
- In a typical month, 41 percent of Maine households surveyed spend \$1 to \$50 on food grown or produced locally; 27 percent spend \$51 to \$100; and 31 percent spend more than \$100; 1 percent spend \$0.
- Of the Maine households that buy fish, 68 percent spend \$1 to \$50 on Maine-raised or caught fish in a typical month; 23 percent spend \$51 to \$100; 6 percent spend \$0 and 3 percent spend \$100-plus.
- One-third of respondents are involved in food self-provisioning activities such as gardening, hunting, fishing and gathering food from the wild. Barriers that prevent Maine households from gardening or raising more of their own food are lack of access to land or enough space (37 percent) and lack of time (32 percent).
- These factors influence Mainers when buying food:
 - 93 percent freshness
 - 87 percent flavor
 - 85 percent nutrition
 - 70 percent cost
 - 65 percent humanely raised
 - 60 percent local
 - 57 percent antibiotic/hormone-free
 - 48 percent fair trade
 - 44 percent knowing producer/fisherman
 - 39 percent GMO-free
 - 34 percent easy to prepare
 - 26 percent certified organic
- Two-thirds of Maine households surveyed reported purchasing fish, seafood or shellfish within the past month. Respondents purchase seafood at grocery chain stores (61 percent) and fish stores/lobster pounds (30 percent).
- Respondents who purchased Maine-raised or Maine-caught fish in the past month bought it from a fish market or lobster pound (45 percent), chain grocery store (36 percent) or roadside truck or stand (11 percent).
- Maine households do not purchase more locally raised, grown or caught food due to lack of access (24 percent), inconvenience (20 percent) or because it’s not in season (16 percent).
- Respondents shop most for food at these outlets:
 - 80 percent chain grocery store

- 8 percent superstore
- 7 percent local grocery
- 2 percent discount grocery
- 0.5 percent farmers' market or farm stand
- 0.3 percent community supported agriculture (CSA)
- 0.06 percent community supported fishery (CSF)
- More than 56 percent of respondents said that in addition to shopping at a chain grocery store, they also purchased food at a farmers' market or farm stand.
- Respondents belong to a CSA or CSF for these reasons:
 - 50 percent support local farmers/fishermen/businesses
 - 44 percent food quality
 - 36 percent organic
 - 24 percent food freshness
 - 19 percent purchase from someone known
 - 8 percent healthy food

For more, see <http://mainefoodstrategy.org/>.

The Food Solutions New England (FSNE) report “**A New England Food Vision**” outlines how New England can produce at least 50 percent of the healthy, accessible food needed for all New Englanders by 2060 while increasing sustainable farming and fishing that contribute to thriving communities.

Written by nine experts in regional and sustainable food systems (including MOFGA member Amanda Beal and MOFGA's late executive director, Russell Libby) and incorporating more than three years of collaborative research and input from hundreds of voices throughout New England, “A New England Food Vision” imagines a future that is possible if our region commits to supporting a sustainable food system for all New Englanders.

The report found the following:

- About 5 percent of New England's land produces food for our almost 15 million inhabitants.
- About 90 percent of our food comes from outside New England.
- As many as 10 to 15 percent of New England households regularly do not have enough to eat.

“A New England Food Vision” envisions New Englanders in 2060 eating more diverse and healthier foods than today, with three times as much land (15 percent of the region, or 6 million acres) producing food: several hundred thousand acres in and around cities devoted to intensive production and several million acres of rural farmland supporting crops and livestock. This expansion leaves 70 percent of the region forested, with adequate room remaining for clustered “smart growth” and green development. In this scenario, the region grows most of its vegetables; half of its fruit; some of its grain and dry beans; and all of its dairy, beef and other animal products. The report examines the possibility of even more locally grown food, saying that “if pressed, New England could produce two-thirds of its own food.”

The report suggests policy changes to achieve more local food production.

“Today it takes an estimated 16 million acres to feed New England’s 14.5 million residents, but the region has just two million acres of active farmland,” says Brian Donahue, associate professor of American Environmental Studies at Brandeis University and one of the report authors. “Business as usual will no longer suffice. As a region, we must rethink how we can support more of our own population – and grow local economies – through local sustainable food production.” (“A New England Food Vision sets bold ‘50 by 60’ goal,” Food Solutions New England, June 16, 2014; www.foodsolutionsne.org)

Parents are buying more organic foods for their families. The Organic Trade Association’s U.S. Families' Organic Attitudes & Beliefs 2014 Tracking Study, a survey of more than 1,200 U.S. households with at least one child under 18, found that eight out of 10 American families have bought organic products one or more times in the past two years. In nearly half those families, concern about their children's health is a driving force behind that decision.

Ninety percent of parents report that they choose organic food products for their children at least "sometimes," with almost a quarter of those parents saying they always buy organic.

More than one-third of parents purchasing baby food said they always choose organic for their infant or toddler. Meanwhile, 74 percent of U.S. daycares offer organic options for the children they serve.

The proportion of parents who reported that they never buy any organic products fell to 19 percent, a significant decline from five years ago when the figure was almost 30 percent.

Almost 25 percent of parents buying organic said that wanting to steer clear of genetically modified foods is now one of their top reasons for selecting organic, the most in the four years the survey has been taken, and up significantly from 16 percent who said the same in 2013.

Seventy-three percent of parents – whether they were buying organic or not – know what GMO stands for. Further, when shopping for organic products, almost 70 percent of parents watch for the “non-GMO” or “Produced without GMOs” label to help guide their purchase decision.

OTA’s Gwendolyn Wyard stresses that while parents can be assured when buying an organic product with the USDA Organic seal that it will be non-GMO, products with only the non-GMO label are not necessarily organic. Wyard notes that the non-GMO assurance is just one of the benefits of buying organic, and that the organic seal conveys a swath of other characteristics that parents value, such as no artificial colors, no preservatives, no synthetic hormones.

OTA partnered with KIWI Magazine on the study, which was conducted in late February and early March. (“More parents choosing organic for their kids, says new study,” Organic Trade Assoc., June 16, 2014;

www.organicnewsroom.com/2014/06/more_parents_choosing_organic.html; “Aversion to GMOs becoming driving factor to buying organic,” Organic Trade Assoc. press release, June 26, 2014; www.organicnewsroom.com/2014/06/aversion_to_gmos_becoming_driv.html)

Wolfe's Neck Farm in Freeport has received a three-year, \$1,693,000 grant from Stonyfield and the Danone Ecosystem Fund for **The Organic Dairy Farmer Training Program**. The program will train the next generation of organic dairy farmers and will research forage and pasture-based organic dairy farming. Rick Kersbergen, University of Maine Cooperative Extension professor, plans to go on sabbatical to help start the program. ("Organic Dairy Training Program," Wolfe's Neck Farm press release, June 27, 2014; <http://wolfesneckfarm.org/organic-dairy-farmer-research-training-program/>)

The 2012 U.S. Agriculture Census documented 16,525 certified or exempt organic farms, an increase of 14 percent since a 2008 Organic Production Survey. Organic farms represent 0.6 percent of the 2.1 million U.S. farms.

The 2012 Ag Census reports \$3.1 billion of total organic product sales, representing data from the 14,326 farms that reported organic sales data. The Organic Trade Association in May announced that organic food sales in 2013 reached \$32.3 billion, showing the immense value added to farm gate organic products by the processing and manufacturing sector.

Of the \$3 billion in 2012 organic farm-level sales, 97 percent was sold by farms with annual sales of \$50,000 or more, and 68 percent by farms with annual sales of \$1 million or more. Fifty-five percent of organic farms are smaller than 100 acres; 14 percent had 500 acres or more. Total acreage of organic production was not tracked.

Organic dairy cattle and milk production made up 26 percent of all organic sales; organic vegetable and melon sales were 25 percent, and organic fruit and tree nut sales, 20 percent.

Eighteen percent of primary operators of organic farms are female, compared with 14 percent on U.S. farms overall. The average age of organic farmers is 53.4 years; the overall average farmer age is 58.3 years. Sixty-six percent of organic farmers have worked 10 years or more on their present farm; 77 percent of primary operators have worked 10 years or more on their present farm. Organic farmers average 18 years on their present farm.

The top 10 states for number of farms selling organically produced commodities are California, Wisconsin, New York, Washington, Pennsylvania, Maine, Oregon, Vermont, Ohio and Minnesota.

The top 10 states for sales of organically produced commodities are California, Washington, Oregon, Wisconsin, New York, Florida, Pennsylvania, Texas, Colorado and Minnesota.

A special organics tabulation of the data is slated to be released in September 2014.

Regarding Maine, the 2012 Census shows that both the number of farms and land in farms here increased since the 2007 Census, and Maine has the most farms of the New England states. Land in farms in Maine is up eight percent from 2007; the average size of a Maine farm is 178 acres, up seven percent; the value of aquaculture sales increased from \$26.3 million to \$75.1 million (ranking us eighth nationally); organic products increased from \$23.3 million to \$36.4 million; the total market value of agricultural sales increased 24 percent; the average value of sales per

farm increased 23 percent; and the value of crops, including nursery and greenhouse, went up 46 percent.

In 2012, the average age of a principal farm operator in Maine was 57, up from 56.4 in 2007 but still younger than the national average of 58.3. The number of female operators increased 17 percent, and in 2012 the percent of principal farm operators who were women increased to 29 percent from 25 percent in 2007. Nationally, women make up about 14 percent of all principal operators. Although the percent of principal operators in Maine who were beginning farmers (those who have been on their current operation 10 years or fewer) did not change from 2007 to 2012, the number who had been on their present farm two years or fewer increased 23 percent.

Maine agriculture is unique in other ways. Maine's 16 counties have 1,133 farms turning out forest products totaling \$8.6 million in sales. We also have 2,311 operations with direct market sales, placing us fifth nationally for direct market sales measured in percent of farms. Five percent of Maine farms participate in a community supported agriculture (CSA) arrangement, placing us third nationally, and we have three counties in the top 20 nationwide for the number of farms with a CSA arrangement. We rank fifth nationally for potato acreage, second nationally for land in berries and first nationally for blueberry acreage. We have 264 farms that have their own renewable energy producing systems, with solar panels being the most popular, followed by wind turbines. Lastly, Somerset County ranks first nationally for the number of maple taps and gallons of maple syrup produced, and Aroostook County ranks first for oat acreage and oat production.

("Ag Census Reveals Organic Farming Growth," by Jane Sooby, California Certified Organic Farmers, June 30, 2014;

www.ccof.org/blog/2012-ag-census-reveals-organic-farming-growth; "2012 Census Drilldown: Organic and Local Food," National Sustainable Agriculture Coalition, May 16, 2014;

http://sustainableagriculture.net/blog/2012-census-organic-local/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29;

"Maine Agriculture is 'Up' in More Ways than One," by Gary Keough, USDA, July 10, 2014;

<http://blogs.usda.gov/2014/07/10/maine-agriculture-is-up-in-more-ways-than-one/#more-52996>)

MOFGA Receives \$1 Million Gift for Farmer Training

Added challenge grant promises doubled donation

In July, MOFGA announced receipt of a \$1 million gift from the Partridge Foundation to establish an endowment for its new-farmer training programs.

"This Partridge Foundation gift represents a tremendous vote of confidence in MOFGA and an unprecedented opportunity to strengthen our innovative new-farmer training programs. We thank the foundation for its generous support," said Quaday, MOFGA's executive director.

The Partridge Foundation has pledged an additional \$1 million if MOFGA can raise a matching amount over the next 12 months – potentially bringing our educational programs endowment to \$3 million by the end of 2015.

"We could not be more excited and enthused," said Quaday. "We are reaching out to our many members and donors

inviting them to join us in building long-term support for these crucial programs."

The Partridge Foundation joined in announcing the gift with an expression of strong support for MOFGA and its educational programs.

"Partridge Foundation is proud to seed MOFGA's work in encouraging a new generation of organic farmers. The grant format of our award promotes both our founder Polly Guth's deep interest in healthful food and farming in New England and her zest for launching good small projects into broader-based appreciation and support. Partridge hopes new donations will total \$1 million so Partridge can give its second million to MOFGA," said the foundation in a written statement.

In the past decade, more than 200 farmers have learned organic farming techniques and sound business practices through MOFGA's journeyman training. These farmers have created more than 150 new farm businesses, and 89 percent of graduates are still farming in Maine. More than one-third of the farmers selling at the Portland Farmers' Market this year were MOFGA journeymen.

Daniel Mays trained as a journeyman and now operates the MOFGA certified organic Frith Farm in Scarborough with his partner, Sarah Longstreth, a current MOFGA journeyman.

"MOFGA's training program was an invaluable resource for me in starting my farm business. Tailored support from MOFGA staff, mentorship with experienced organic farmers and a myriad of peer-to-peer learning opportunities gave me the foundation I needed to build a successful farm in Maine," said Mays.

Quaday said, "Organic agriculture is a growing economic opportunity in Maine. Young people see that. They are coming to Maine to create new farm businesses largely because MOFGA is providing comprehensive training and support. Through our programs we are building an agricultural foundation that will help create new farm businesses and jobs while making sure that consumer demand for local organic food is met."

Thousands of young people have also gained valuable experience through MOFGA's apprenticeship program, and through MOFGA's new-farmer training. The apprenticeship program links farm operators with prospective farmers seeking farm learning opportunities. This year, 175 MOFGA apprentices are gaining hands-on experience on 105 Maine farms.

"We hope everyone who is committed to local, organic food will join us as we work to meet the fundraising challenge offered by the Partridge Foundation," Quaday said.

Dairy

In 2009, Hood suddenly stopped buying milk from 10 small organic dairy farms in Maine. In 2010, those farmers formed **MOO Milk**, a brand that became popular in 200 retail outlets in New England, especially after the film "Betting the Farm" was released.

Unfortunately, in 2014, the company ended production. "The issue is an aged and obsolete carton filler," said CEO Bill Eldridge. "This carton filler was used exclusively to package MOO Milk, and prevented us from delivering the freshest and highest quality milk – a pillar of our brand promise."

In July 2014, MOO Milk farmers, by then numbering 12, agreed to disband and seek individual contracts for their milk.

“In 2009,” said Eldridge, “when Hood discontinued the contract with each of these organic farmers, there were few opportunities [for] them. We are happy to report that five years later, this is not the case. MOO Milk appreciates each organization that stepped up to present potential opportunities to support these Maine farmers, and we encourage all MOO Milk fans to continue to support our farmers and organic farming in Maine.” Among the potential buyers of milk from individual farms were Oakhurst, Stonyfield and Organic Valley. (MOOMilk Update, <http://moomilkco.com/>; “Maine suppliers disband MOO Milk after rejecting Oakhurst offer,” by J. Craig Anderson, Portland Press Herald, July 7, 2014; <http://www.pressherald.com/2014/07/07/suppliers-disband-moo-milk-after-rejecting-oakhurst-offer/>)

In June Blue Hill farmer Dan Brown lost his appeal to the Maine Supreme Judicial Court. **Brown wanted to sell raw milk without a state license**, as he had done for years, having been told by the state veterinarian that he did not need a license if he did not advertise his milk for sale. But the state’s Quality Assurance Division began requiring licenses in 2009, and Brown was issued a civil summons in 2011 for continuing sales. Maine’s highest court rejected Brown’s arguments, including his belief that Blue Hill’s Local Food and Community Self-Governance Ordinance exempted him from requiring a license. The ordinance says local, small-scale farmers needn’t meet state and federal regulations when they sell food directly to consumers. Andy O’Brien reports, “The ordinance is based on Maine’s home-rule provision, which grants cities, municipalities and counties the ability to pass laws to govern themselves as they see fit. However, the Court interpreted the ordinance to only exempt local food producers and processors from municipal licensing and inspection requirements, not state rules and regulations.” The state fined Brown \$1,000 in civil penalties. The court’s decision is posted at courts.maine.gov/opinions_orders/supreme/lawcourt/2014/14me79br.pdf. (“Maine supreme court rejects appeal in case of farmer who sold raw milk without a state license,” by David Sharp, Greenville Daily Reporter, June 17, 2014; www.greenfieldreporter.com/view/story/36cffebe00e4441790a1703bda1e867a/ME--Raw-Milk-Maine;_4=Farmer_Brown_case_comes_to_an_end,” by Anne Berleant, The Weekly Packet, June 19, 2014; <http://weeklypacket.com/news/2014/jun/19/farmer-brown-case-comes-to-an-end/#.U6V-pWRdXfg>; “State Supreme Court Rules Against Raw-Milk Farmer,” by Andy O’Brien, The Free Press, June 26, 2014; <http://freepressonline.com/main.asp?SectionID=52&SubSectionID=78&ArticleID=33265>)

Organic

The **National Organic Standards Board’s** semiannual meeting, held in San Antonio in April, was delayed for about an hour by a protest by the Organic Consumers Association (OCA) over policy changes and was further delayed by a challenge by NOSB members over the propriety of a USDA official chairing the meeting.

The National Organic Standards Board (NOSB) is a 15-member expert citizen panel appointed by the USDA Secretary of Agriculture and including farmers, consumers, environmentalists,

processors, a retailer and a certifier. One of its duties concerns inputs allowed in organic production. Federal law prohibits synthetic pesticides, fertilizers, antibiotics, growth hormones and artificial food ingredients in organic production but, when no non-synthetic option is available, allows exempted inputs to be used for five years. More than 200 exempted inputs are on a “National List.”

At its April meeting, the NOSB was deliberating several input exemptions, including continued use of the antibiotic streptomycin on apples and pears to control fire blight, use of synthetic materials for aquaculture (before standards for organic fish have been defined) and use of methionine (an amino acid) in poultry feed.

Until recent changes, a “sunset process” previously required that inputs on the National List must be reviewed every five years. A two-thirds majority vote was required to keep items on the list. This process was meant to ensure that synthetic inputs were allowed in organic foods only until a non-synthetic option was available. It was designed to encourage production of non-synthetic inputs.

But in September 2013, the USDA Agricultural Marketing Service (AMS) decided, without public comment or input from the NOSB, that, in order to streamline the process, synthetic inputs could remain on the approved list until a two-thirds majority voted to remove rather than keep them. So nine NOSB members could object to an input, but it could remain on the list. Some – including the OCA and 75,000 who signed its petition – saw this change as a corporate effort to erode the organic rule. Three former NOSB chairs as well as U.S. Senator Patrick Leahy and Representative Peter DeFazio, original authors of the 1990 Organic Foods Production Act (OFPA), also wrote to the National Organic Program (NOP), objecting to the change.

In April, the NOSB voted to uphold the phase-out of streptomycin use in apple and pear production, set to expire on October 21, 2014; to send the methionine issue back to a livestock subcommittee for review; and to table review of aquaculture inputs until USDA disseminates draft aquaculture standards.

Eric Sideman, MOFGA’s organic crop specialist, had submitted a comment to the NOSB for this meeting opposing recommendations of all petitioned inputs for use in aquaculture until the NOP adopts a final, systems-based practice standard for aquaculture. (See Sideman’s article on issues related to aquaculture at <http://www.mofga.org/tabid/447/Default.aspx>)

In response to several recent moves by USDA to reclassify the NOSB’s role as a purely advisory and discretionary committee, 20 organic farm and consumer groups, including MOFGA, petitioned U.S. Secretary of Agriculture Tom Vilsack in June to protect the authority and permanence of the NOSB.

Petitioners maintain that in renewing NOSB’s charter under the Federal Advisory Committee Act, USDA mistakenly re-categorized the NOSB as a time-limited advisory board subject to USDA’s discretion and a narrowing of responsibilities. The petition finds that to comply with organic law, USDA must immediately revise the most recent NOSB Charter to accurately reflect the mandatory, non-discretionary duties and ongoing status of the NOSB as described in OFPA.

“These changes to the NOSB Charter are significant and directly controvert the specific mandates of OFPA and Congress that NOSB is a permanent, non-discretionary committee that must fulfill a long list of statutorily mandated duties integral to the organic program,” said Aimee Simpson, policy director and staff attorney for Beyond Pesticides.

“Congress created the Board so that a balance of organic interests, from consumer to industry, would have an irrevocable seat at the table in defining, maintaining and enhancing organic standards. That independent voice is now seriously jeopardized,” noted Paige Tomaselli, senior attorney at the Center for Food Safety.

“One of the most unique things about organic is that consumers can get involved in setting the standards behind the label. For that to remain true, we need to have a strong National Organic Standards Board process,” said Patty Lovera of Food & Water Watch.

“We have made our living from selling certified organic seed and food for over 30 years,” said Jim Gerritsen, a Maine organic farmer and president of Organic Seed Growers and Trade Association. “NOSB integrity and fulfillment of its unique legal responsibility to represent the interests of the organic community is critical to maintaining consumer confidence in organic food and to the success of organic farming.”

MOFGA’s director of agricultural services, Dave Colson, points out that “organic is the only place in the food system where the public has a chance to comment on all aspects of how the food is grown and processed. MOFGA supports the NOP and the NOSB process and stands behind the certified organic label.”

The NOSB’s next meeting is October 28-30 in Louisville, Kentucky. (“National Organic Standards Board Threatened by USDA Maneuvering,” Beyond Pesticides, June 17, 2014; www.beyondpesticides.org/dailynewsblog/?p=13456; “Organic Standards meeting gets off to rocky start,” Agri-Pulse, April 29, 2014; www.agri-pulse.com/Organic-Standards-meeting-gets-off-to-rocky-start-04292014.asp; “Food Defenders Protest Corporate Takeover of 'Organic' Standards,” by Lauren McCauley, Common Dreams, April 30, 2014; www.commondreams.org/headline/2014/04/29-2; “Comments on the proposal to add materials to the list of permitted synthetic materials for aquaculture use,” by Eric Sideman, April 7, 2014; “National Organic Standards Board Upholds Phase Out of Antibiotics in Organic Production,” eNews, May 5, 2014; www.enevspf.com/latest-news/science/science-a-environmental/52629-national-organic-standards-board-upholds-phase-out-of-antibiotics-in-organic-production.html; “Organic rule dispute leads to arrest,” by Mateusz Perkowski, Capital Press, May 6, 2014; www.capitalpress.com/Organic/20140506/organic-rule-dispute-leads-to-arrest; “The organic civil war,” by Jenny Hopkinson, Politico, May 2, 2014; www.politico.com/story/2014/05/organic-food-industry-civil-war-agriculture-usda-106295.html; “Turmoil Shakes National Organics Standards Board Meeting in Texas,” Cornucopia News, May 8, 2014; www.cornucopia.org/2014/05/turmoil-shakes-national-organics-standards-board-meeting-texas/?utm_source=rss&utm_medium=rss&utm_campaign=turmoil-shakes-national-organics-standards-board-meeting-texas; “Are Organic Standards in Jeopardy? Watchdogs Say Yes,” by Rebekah Wilce, PR Watch, May 21, 2014; <http://prwatch.org/news/2014/05/12480/organic-standards-jeopardy>)

Forestry

The U. S. Forest Service plans a **major timber harvest**, the Albany South Project, in the area of **White Mountain National Forest** (WMNF) located in Stoneham and Albany Township, Maine. The Forest Service will hire loggers to make cuts of varying sizes in several areas, all connected with skid and logging roads. Stoneham resident Frank Robey has walked that area every day for the two years since he learned of the plan, documenting and mapping details such as stone walls, old foundations, cemeteries, deer yards and the many tributaries of major streams. He knows more about this section of WMNF than even the Forest Service and estimates that 3,000 acres will be disturbed. The Forest Service contests that estimate but its final plans won't be made public until sometime in October, which will usher in its new 30-day public comment period. Many people are hoping that another round of public comment can persuade the Forest Service to discontinue – or at least limit – this planned disturbance of public forest land. For more information, contact Robey at fjr69@hotmail.com or visit www.whitemountainforest.org. For information about the comment period, contact Katie Stuart, district ranger, kstuart@fs.fed.us .

--by Joyce White

Food Dyes

Many studies have shown that **food dyes can impair children's behavior**, but until now the amounts of dyes in packaged foods have been a secret. Now Purdue University scientists have reported the dye content of scores of foods. According to the Center for Science in the Public Interest (CSPI), the amounts of dyes found in even single servings of numerous foods – or combinations of several dyed foods – are higher than levels demonstrated in some clinical trials to impair some children's behavior.

Examples include these:

mg dyes/serving	Product
31	Fruity Cheerios
41	Cap'n Crunch's Oops! All Berries
55.3	Target Mini Green Cupcakes
33.3	Skittles
29.5	M&M's Milk Chocolate
17.6	Kraft Macaroni & Cheese
14.4	Keebler Cheese & Peanut Butter Crackers
5	Kraft's Creamy French salad dressing
18.8	Full Throttle Red Berry energy drink
22.1	Powerade Orange Sports Drink
33.6	Crush Orange
41.5	Sunny D Orange Strawberry
52.3	Kool-Aid Burst Cherry

Clinical trials have shown that modest percentages of children are affected by doses up to 35 mg of mixtures of synthetic coloring, with larger percentages generally being affected by doses of

100 mg or more. The amount of dye needed to trigger reactions in the most sensitive children is not known.

Michael F. Jacobson, CSPI executive director, says, "... now it is clear that many children are consuming far more dyes than the amounts shown to cause behavioral problems in some children. The cumulative impact of so much dyed foods in children's diets, from breakfast, lunch, dinner, and snacks, is a partial reason why behavioral problems have become more common."

The Purdue researchers say the amount of artificial food dye certified for use by the FDA increased five-fold per capita between 1950 and 2012. They estimate that a child could easily consume 100 mg of dyes in a day and that some children could consume more than 200 mg per day. Studies that tested much smaller amounts could easily have downplayed or missed entirely the effect of dyes on behavior.

In 2011, the FDA acknowledged that food dyes (and other ingredients) cause behavioral problems in some children, but it has done nothing to protect children. Still, mounting public concerns about dyes have spurred several major companies to remove them from their products. ("First-ever Study Reveals Amounts of Food Dyes in Brand-name Foods," Center for Science in the Public Interest, May 7, 2014; <http://cspinet.org/new/201405071.html>; "Amounts of Artificial Food Dyes and Added Sugars in Foods and Sweets Commonly Consumed by Children," by Laura J. Stevens et al., Clinical Pediatrics, April 23, 2014; <http://cpj.sagepub.com/content/early/2014/04/21/0009922814530803.abstract>; "Amounts of Artificial Food Colors in Commonly Consumed Beverages and Potential Behavioral Implications for Consumption in Children," by Laura J. Stevens et al., Clinical Pediatrics, Sept. 13, 2013; <http://cpj.sagepub.com/content/early/2013/09/12/0009922813502849>)

Food Labeling

A national survey completed in April of 1,004 adult U.S. residents (half of the respondents were women) by the Consumer Reports National Research Center showed the **wide gap between consumer expectations of labeling and reality**. The survey found that 59 percent of consumers check to see if the products they are buying are "**natural**," despite no federal or third-party-verified label existing for this term.

The survey also revealed that more than 8 out of 10 consumers believe that packaged foods carrying the "natural" label should come from food that contains ingredients grown without pesticides (86 percent), do not include artificial ingredients (87 percent) and do not contain genetically modified organisms (85 percent).

Consumer Reports is calling for a ban on the "natural" label on food as part of a campaign in partnership with TakePart (takepart.com/food-labels).

Consumer Reports' poll also revealed what consumers expect from a range of food labels, including "fair trade," "humane," "organic," "raised without antibiotics" and "country of origin."

The FDA has no formal definition for use of the term “natural” or its derivatives. However, the agency has not objected to use of the term if “nothing artificial or synthetic (including all color additives regardless of source) has been included in, or has been added to, a food that would not normally be expected to be in the food” – although these are still found extensively in “natural” labeled foods. The USDA, which regulates meat and poultry, says a product is “natural” if it contains “no artificial ingredient or added color and is only minimally processed. Minimal processing means that the product was processed in a manner that does not fundamentally alter the product.” But Consumer Reports’ survey showed that consumers believe the label means and should mean far more.

Consumer Reports’ poll also showed that most U.S. consumers have a range of concerns when purchasing food, including supporting local farmers (92 percent), protecting the environment from chemicals (89 percent), reducing exposure to pesticides (87 percent), fair conditions for workers (86 percent), good living conditions for animals (80 percent) and reducing antibiotic use in food (78 percent).

The survey also found that about 80 percent of consumers will pay more for fruits and vegetables produced by workers under fair wage and working conditions. Ninety-two percent of respondents think that genetically engineered food should be labeled and meet long-term safety standards set by the government. Seventy-two percent said it is crucial for them to avoid GE ingredients when purchasing food. Ninety-one percent said the “organic” label on packaged or processed foods should mean no toxic pesticides were used and no artificial materials were used during processing. Ninety-two percent want food labels to reflect the country or origin. (“Consumer Reports Survey: Majority of Americans Look for ‘Natural’ Label when Shopping, Believe It Carries Benefits Despite the Contrary,” Consumer Reports press release, June 16, 2014; www.consumerreports.org/cro/news/2014/06/say-no-to-natural-on-food-labels/index.htm)

If a settlement is approved by a federal judge, **Kellogg Co. will stop labeling some Kashi and Bear Naked products as "All Natural" and "100 percent Natural"** and will pay more than \$5 million to settle a class-action consumer fraud lawsuit saying Kellogg deceived consumers by using the “All Natural” label on products that contained some synthetic ingredients. (“Kellogg to drop 'All Natural' from some Kashi product labels,” by Stever Gorman, Reuters, May 9, 2014; www.reuters.com/article/2014/05/09/us-usa-kellogg-labeling-idUSKBN0DP1GX20140509)

Land Grabs

According to José Graziano da Silva, Director General of the United Nations Food and Agriculture Organization (FAO), family farms manage 70 percent of the world's farmland. Small farmers produce most of the world’s food. But **rural people’s access to land is under attack everywhere**, says the nonprofit GRAIN. People are being dislodged from their farms and villages – or jailed or killed if they resist – as land becomes increasingly concentrated in fewer and fewer hands of the rich and powerful.

Using the most reliable data and the most consistent definitions of “small farmer” available, GRAIN drew these conclusions:

- The vast majority of farms in the world today are small and getting smaller.
- Small farms are currently squeezed onto less than a quarter of the world's farmland.
- We are fast losing farms and farmers in many places, while big farms are getting bigger.
- Small farms continue to be the major food producers in the world.
- Small farms are overall more productive than big farms.
- Most small farmers are women.

Meanwhile, control over land is being usurped from small producers and their families, says GRAIN, with elites and corporate powers pushing people onto smaller and smaller land holdings, or off the land entirely into camps or cities. And small farms have less than a quarter of the world's agricultural land. If the trend toward fewer and smaller small farms persists, says GRAIN, they might not be able to continue to feed the world. "We need to urgently put land back in the hands of small farmers and make the struggle for agrarian reform central to the fight for better food systems," says GRAIN. ("Hungry for land: small farmers feed the world with less than a quarter of all farmland," GRAIN, May 28, 2014; www.grain.org/article/entries/4929-hungry-for-land-small-farmers-feed-the-world-with-less-than-a-quarter-of-all-farmland)

The report "**Great Land Heist**" by ActionAid International says that responses to food shortages in 2007 and 2008 have led to land grabbing by wealthy investors, increasing hunger and poverty for millions. ActionAid wants new investment policies that help smallholder farming and sustainable agriculture rather than agri-business. Three-quarters of those land grabs have occurred in Africa and Southeast Asia, and the top three countries where investors live are the United States, United Kingdom and Malaysia. ("Global policies encourage land grabbing and worsen hunger and poverty, ActionAid report," by Stella Dawson, Reuters, May 23, 2014; www.trust.org/item/20140523061928-bn12w/; Original report at www.actionaid.org/sites/files/actionaid/the_great_land_heist.pdf)

Genetic Engineering (GE)

In May, **Vermont** became the **first U.S. state to adopt a law requiring labels for foods made from GE ingredients**, to go into effect on July 1, 2016. The Vermont Senate passed the bill by 26-2. Vermont joins some 60 countries that have banned GE foods or require labeling. The measure also established a fund to help defend against lawsuits – one of which was filed in federal district court in Vermont in June by the Grocery Manufacturers Association, the Snack Food Association, the International Dairy Foods Association and the National Association of Manufacturers. ("Vermont becomes first US state to require GM labelling for food," by Suzanne Goldenberg, The Guardian, May 8, 2014; www.theguardian.com/environment/2014/may/08/vermont-first-us-state-gm-labelling-food; "Trade groups sue VT over GMO labeling law," by Nancy Remsen Burlington Free Press, June 13, 2014; www.burlingtonfreepress.com/story/news/politics/2014/06/12/gma-sues-vt-gmo-law/10389209/)

In May, two-thirds of **Jackson County, Oregon, voters supported a ban on growing GE crops there** – despite \$1.3 million in opposition money, 95 percent from outside the county. Opposition

donors included Monsanto, DuPont, Syngenta, Bayer CropScience, Dow AgroSciences and groups affiliated with Farm Bureau.

Jackson County farmers were worried about cross-pollination by GE sugar beets with their own beet and chard seed crops. The measure requires that farmers "harvest, destroy or remove all genetically engineered plants" within 12 months of enactment of the ordinance.

Subsequently, voters in Josephine County, Oregon, passed a GE crop ban by 58 to 42 percent. This law may be challenged by a bill that Gov. John Kitzhaber signed last fall prohibiting local governments from regulating GE crops. The Jackson County measure had qualified for the ballot before this law was enacted.

Oregon may also be the first state to map GE fields and require buffer zones and exclusion areas for GE crops, per Gov. Kitzhaber's October 2013 direction to the State Department of Agriculture after several cases of GE contamination that prohibited export sales of non-GE crops – including an unapproved GE wheat variety. ("Beating Monsanto in the Food Fight: Oregon Counties Vote to Ban GMO Crops," by John Nichols, *The Nation*, May 21, 2014; www.thenation.com/blog/179962/ beating-monsanto-food-fight-oregon-counties-vote-ban-gmo-crops#; "Oregon hopes to be first state to map GMO fields," by Gosia Wozniacka, *Statesman Journal*, June 14, 2015; www.statesmanjournal.com/story/tech/science/environment/2014/06/14/oregon-first-state-map-gmo-crop-fields/10524295/; "GMO ban passes in Jackson County, Ore.," by Steven Dubois, *The Columbian*, May 20, 2014; www.columbian.com/news/2014/may/20/gmo-ban-passes-in-jackson-county-ore/; "Rural Oregon voters back ban on GMO crops amid U.S. labeling uproar," by Shelby Sebens, *Chicago Tribune*, May 21, 2014; http://articles.chicagotribune.com/2014-05-21/news/sns-rt-us-usa-oregon-gmos-20140520_1_gmo-crops-engineered-crops-jackson-county).

In May **France banned cultivation of Monsanto's GE insect-resistant MON810 corn** – and any strain the EU adopts in the future. France is the EU's major grain producer.

("French ban on GMO maize cultivation gets final approval," by Sybille de La Hamaide, *Reuters*, May 5, 2014;

www.reuters.com/article/2014/05/05/france-gmo-idUSL6N0NR2MZ20140505)

Last year the U.S. Supreme Court ruled that human genes cannot be patented because they occur naturally, and since then the U.S. Patent and Trademark Office has proposed policies for deciding whether an invention is too much like a natural product to be patented. The biotech industry says these policies go beyond the court's intention. Since the Supreme Court ruling, **patent rejections on natural products** or laws of nature have increased dramatically. ("Biotech feels a chill from changing U.S. patent rules," by Kelly Servic, *Science Magazine*, July 2014; www.law.uci.edu/news/in-the-news/2014/science-burk-july2014.pdf)

After **GE Roundup Ready canola** seed from Michael Baxter's farm drifted onto and, in 2011, **germinated on Steve Marsh's organic farm in Western Australia**, Marsh lost his license as an organic grower, as some of his organic wheat crop contained GE canola. Australia's organic certification authority, Standards Australia, has zero tolerance for contamination by GE material.

In May 2014, the Supreme Court of Western Australia ruled against Marsh's suit to be compensated for his losses by Baxter.

In response to the ruling, the Safe Food Foundation said, "The court in its judgment stated the decision by NASAA (National Association of Sustainable Agriculture Australia) to decertify Steve was erroneous. Given the extent of the contamination of Steve's farm we fail to see how NASAA could have taken any other decision. Certainly 100% of organic consumers would support the NASAA decision.

"Because the court did not recognise the NASAA decertification the court did not recognise the economic loss Steve suffered, and dismissed the case that Steve had brought for negligence and nuisance. This is a huge setback for organic and Non GM farmers and their choice to remain GM Free."

Marsh is appealing the decision. ("UPDATE 2-Australian organic farmer loses landmark GMO contamination case," by Colin Packham, Reuters, May 28, 2014; www.reuters.com/article/2014/05/28/australia-canola-gmo-idUSL3N0OE1HG20140528; "GM Farmer's Win is a Loss for All Organic and Non GM Farmers," Safe Food Foundation, May 28, 2014; <http://safefoodfoundation.org/2014/05/28/press-release-gm-farmers-win-is-a-loss-for-all-organic-farmers/>; "Steve Marsh to appeal GM canola contamination case," Safe Food Foundation & Institute, June 19, 2014; <http://safefoodfoundation.org/2014/06/19/steve-marsh-to-appeal-gm-canola-contamination-case/>)

In 2012, Gilles-Eric **Séralini et al.** published results in Food and Chemical Toxicology of their long-term study on **effects in rats of consuming Monsanto's GE corn and its associated pesticide, Roundup**, together and separately. The researchers found that rats consuming GE corn NK603 and tiny amounts of Roundup herbicide suffered severe toxic effects, including kidney and liver damage and increased rates of tumors and mortality.

A few months after former Monsanto employee Richard Goodman was appointed editor for biotechnology of the journal, the journal retracted the paper. It cited a low number of rats used in the Séralini study (even though Séralini et al. used the protocol number for a chronic toxicity study) and use of a strain prone to getting tumors.

Séralini et al. commented in 2014 in Food and Chemical Toxicology that the journal had recently published results of a similar study using GE rice – but this study found that GE rice was as safe and nutritious as non-GE. The rice study used the same strain of rat and the same number of rats per treatment group as did Séralini et al. They cite other instances of double standards in published studies of GE crop toxicity, saying "economic interests have been given precedence over public health."

In 2014 the Séralini study was republished in Environmental Sciences Europe. ("Conclusiveness of toxicity data and double standards," G. E. Séralini et al., Food and Chemical Toxicology, 2014;

<http://content.elsevierjournals.intuitiv.net/content/files/food-and-chemical-toxicology-21222339.pdf>

The EPA and USDA are expected to rule by the end of summer on **corn and soy engineered to tolerate two herbicides – glyphosate and 2,4-D** – instead of one, as “superweeds” have evolved in response to overuse of glyphosate herbicides. (Glyphosate is the active ingredient in Monsanto’s Roundup and some other herbicides.) Environmental and public interest groups see this as continuing the pesticide treadmill, using more and stronger products after overuse of one product leads to resistance. If approved, the new GE crops are expected to increase herbicide use in the United States. The EPA told WIRED magazine that the new crops do not pose a human health risk, but the Environmental Working Group says EPA’s reviews are flawed. One epidemiological review linked 2,4-D exposures with non-Hodgkin’s lymphoma; Dow Chemical’s review did not. The EPA did express concern about the endocrine disrupting potential of 2,4-D and noted the insufficient information available on ecological effects of increased 2,4-D use. (“The Next Generation of GM Crops Has Arrived—And So Has the Controversy,” by Brandon Keim, Wired, June 24, 2014; www.wired.com/2014/06/the-future-of-biotech-crops/)

Pesticides

Maine Board of Pesticides Control Begins Rulemaking Process

By Katy Green

Over the past several months, the Maine Board of Pesticides Control (BPC) has begun the process to undergo rulemaking, with changes to several chapters proposed. The board has created a list of issues within the rules that it would like to address. It held a public hearing during its August meeting to gather feedback on the proposed changes, which cover several subjects and are outlined briefly below.

- Chapter 20 – proposal to change how pesticide application sites are positively identified.
- Chapter 22 – proposal to exempt certain right-of-way pesticide applications from aspects of the rule; also, proposal to exempt certain residential applications from portions of the rule.
- Chapter 28 – proposal to change this chapter in order to align with changes proposed in Chapter 22.
- Chapter 31 – proposal to exempt certain individuals from licensing requirements. This proposal is based upon an existing board policy. Also, proposal to exempt aerial pesticide applicators from outside the state from passing a written test in Maine in the event of an urgent pest issue. Finally, a proposal to shorten the waiting period before someone can re-take the pesticide applicator exam after failing it. This change would affect Chapters 32 and 33 as well.
- Chapter 41 – proposal to change special restrictions placed on hexazinone, given recent changes in licensing requirements.

Details about these proposed changes can be found on the board's website, www.thinkfirstspraylast.org, or by contacting BPC director Henry Jennings at 207-287-7543. These major substantive rule changes will head to the legislature for approval after the board's process is complete.

Special Local Need and Variance Requests

In May the board unanimously approved a Special Local Need request for expanded use of Dual Magnum herbicide, a synthetic herbicide used on some non-organic farms in the state. This request, made by Mark Hutton of the University of Maine Cooperative Extension, will reduce the pre-plant interval for using the herbicide, thus will allow its use on an expanded list of crops that includes asparagus, cabbage, carrots, beets, Swiss chard, onions, spinach and pumpkins. Board member John Jemison expressed concern about the mobility of this product and movement to groundwater, but Hutton felt none of the sites where he believes the product will be used have organic matter levels low enough to allow high levels of mobility.

Also in May, the board approved a variance request from Asplundh to Chapters 22 and 29 of board rules that deal with identifying sensitive areas and buffers from waterways in order to treat the St. Lawrence and Atlantic Railroad rights-of-way using pesticides. This variance request garnered a great deal of discussion at the board meeting, because the Asplundh proposal included the herbicide Streamline, which is persistent, highly mobile and especially concerning regarding water quality. The board modified Asplundh's request to require that Streamline not be used within 25 feet of water. The board plans to reconvene a railroad committee over the winter to develop more concrete standards for this type of vegetation control.

Consent Agreements

In May the board reached a consent agreement with Remedy Compassions of Auburn, a licensed medical marijuana growing facility, for multiple pesticide violations. In this case the BPC inspector found evidence that the facility purchased five different pesticides, although Remedy Compassions does not admit to using all of the products. Maine state law clearly defines which products can be used in producing medical marijuana, and use of the purchased products does not comply with state law. Additionally, marijuana's illegal status at the federal level complicates pesticide use. The board also found violations at the site dealing with how pesticides were applied and disposed of. The fine imposed for these violations was \$5,500.

Also in May the BPC reached a consent agreement with Plants Unlimited of Rockport for multiple rule violations. In this case a board inspector determined that a pesticide labeled for outdoor use was used inside a greenhouse. Additionally, the inspector found that no pesticide application records were kept during the 2012 season and that employees were not trained as required by the Federal Worker Protection Standard. The Board levied a \$250 fine.

[End of BPC news]

This spring MOFGA took part in a national research project showing that **51 percent of bee-friendly home garden plants sold at Home Depot, Lowe's and Walmart had been pre-treated with pesticides that harm and kill bees.** Friends of the Earth U.S., the Pesticide Research Institute and SumOfUs coordinated the study and collaborated with MOFGA and dozens of other groups that conducted pesticide sampling across the United States and Canada.

The study, Gardeners Beware 2014, showed that 51 percent of garden plant samples (36 out of 71) purchased at top garden retailers in 18 U.S. and Canadian cities contained neonicotinoid (neonic) pesticides – believed to be key contributors to recent bee declines. Some flowers contained neonic levels high enough to kill bees outright, assuming comparable concentrations are present in the flowers' pollen and nectar. Further, 40 percent of the positive samples contained two or more neonics.

"The high percentage of contaminated plants and their neonicotinoid concentrations indicate that many gardens with bee-friendly plants may actually be harming bees," said Heather Spalding, deputy director of MOFGA. "We are calling on retailers to get neonicotinoid pesticides out of their plants and off their shelves. Until then, gardeners should request untreated plants from their garden centers. Purchasing certified organic plants is the best way to ensure the safety of bees."

Local gardeners can find sources of Maine-grown, certified organic flowers, seedlings and perennial plants at www.mofgacertification.org/?page_id=1492.

"Our data indicate that many plants sold in nurseries and garden stores across the U.S. and Canada are being pre-treated with systemic neonicotinoid insecticides, making them potentially toxic to pollinators," said Timothy Brown, Ph.D., co-author of the report from the Pesticide Research Institute. "Unfortunately, these pesticides don't break down quickly so these flowers could be toxic to bees for years to come."

MOFGA purchased poppies and English daisies from Home Depot and scabiosa (pincushion flower) and coreopsis from Lowes, both in Augusta. All but the poppies tested positive for neonicotinoids.



"So many people go out to buy flowers at garden centers thinking they will support the health of bees," said Elizabeth Sugg, a MOFGA volunteer who helped with the sampling research. "It's shocking to learn that your efforts to help bees actually may be making them sick or killing them because the plants you're buying are secretly poisoned with pesticides."

Bees and other pollinators, essential for two-thirds of the food crops humans eat every day, are in decline in countries around the world. The European Union banned the three most widely used neonicotinoids, based on strong science indicating that neonics can kill bees outright and make them more vulnerable to pests, pathogens and other stressors.

A new meta-analysis of 800 peer-reviewed studies by the Task Force on Systemic Pesticides – a group of global, independent scientists – confirms neonics are a key factor in bee declines and are harming beneficial organisms essential to functional ecosystems and food production, including soil microbes, butterflies, earthworms, reptiles and birds. The Task Force called for immediate regulatory action to restrict neonicotinoids.

Neonicotinoid insecticides have been responsible for several high profile bee kills from high doses of the pesticides, but a strong and growing body of science shows that neonics contribute to impaired reproduction, learning and memory, hive communications and immune response at doses far below those that kill bee. In this study, all nursery plant samples in which neonics were detected had the potential to harm or even kill bees.

More than half a million Americans have signed petitions demanding that Lowe's and Home Depot stop selling neonics. In the face of mounting evidence and growing consumer demand, nearly a dozen nurseries, landscaping companies and retailers are taking steps to eliminate bee harming pesticides from their garden plants and their stores. BJ's Wholesale Club, with more than 200 locations in 15 states, said it will require vendors to remove neonics from plants by the end of 2014 and/or require warning labels for plants treated with neonics.

A majority of the UK's largest garden retailers, including Homebase, B&Q and Wickes, have voluntarily stopped selling neonics.

In addition to pressuring retailers, U.S. groups are calling for the government to restrict neonics in the United States as the EU has done. Despite more than a million public comments urging swift protections for bees, the EPA has delayed taking substantive action on neonics until registration review is complete.

In 2013, U.S Representatives Earl Blumenauer (D-Ore.) and John Conyers (D-Mich.) introduced the "Saving America's Pollinators Act," which seeks to suspend the use of neonics on bee-attractive plants until EPA reviews all available data. The bill has bi-partisan support and 68 cosponsors. And in June, President Obama announced a federal strategy to protect pollinators and called on EPA to assess within 180 days the effects of pesticides, including neonics, on pollinators. ("New tests find bee-killing pesticides in 51% of bee-friendly plants from garden centers across U.S. and Canada," by Heather Spalding, MOFGA, June 25, 2014; www.mofga.org/Programs/PublicPolicyInitiatives/PesticidesAction/BeeKillingPesticides/tabid/2823/Default.aspx)

Harvard University scientists found that **exposure to two neonicotinoids killed half the honeybee colonies** they studied, while no bees disappeared from untreated colonies. Lead researcher Chensheng Lu said, "We demonstrated that neonicotinoids are highly likely to be responsible for triggering 'colony collapse disorder' in honeybee hives that were healthy prior to the arrival of winter." The study of 18 bee colonies in three central Massachusetts locations was published in the Bulletin of Insectology. Two hives at each location were treated with realistic doses of the neonicotinoid imidacloprid, two with another neonic, clothianidin, and two were untreated.

Bees from six of the 12 neonicotinoid-treated colonies abandoned their hives and died, with symptoms resembling those of Colony Collapse Disorder. Only one control colony was lost, due to the Nosema fungus. All 18 colonies had nearly identical levels of pathogens. ("Honeybees abandoning hives and dying due to insecticide use, research finds," by Damian Carrington, The Guardian, May 9, 2014;

www.theguardian.com/environment/2014/may/09/honeybees-dying-insecticide-harvard-study; Original study: "Sub-lethal exposure to neonicotinoids impaired honey bees winterization before proceeding to colony collapse disorder," by Chensheng Lu et al., Bulletin of Insectology, 67 (1): 125-130, 2014

www.bulletinofinsectology.org/pdfarticles/vol67-2014-125-130lu.pdf)

When Dutch scientists compared long-term data for farmland bird populations and chemical concentrations in surface water, they found that in areas where water contained high concentrations of the **neonicotinoid** insecticide imidacloprid, **bird populations tended to decline** by an average of 3.5 percent per year. The researchers checked the data for other possible causes of the declines, such as changes in crops grown, fertilizer used and urbanization, and found no other correlations. ("Second Silent Spring? Bird Declines Linked to Popular Pesticides," by Jason Bittel, National Geographic, July 9, 2014;

<http://news.nationalgeographic.com/news/2014/07/140709-birds-insects-pesticides-insecticides-neonicotinoids-silent-spring/>; Original study: "Declines in insectivorous birds are associated with high neonicotinoid concentrations," by Caspar A. Hallmann et al., Nature, July 9, 2014; www.nature.com/nature/journal/vaop/ncurrent/full/nature13531.html#ref-link-43)

Bayer, Syngenta and Monsanto are using tobacco company-style tactics of public relations, lobbying and litigation **to divert attention from the problem of the neonicotinoid pesticides** they produce or use while trying to appear to be leading the effort to save bees. "Their goals," says Michele Simon, are to "manufacture doubt about their products' contribution to the bee crisis and delay action, or defeat bans or limits on neonic pesticides, in order to allow them to continue profiting from these products as long as possible." The tactics have included establishing bee care centers, putting out children's books on the importance of bees, putting out "news interviews" using professional actors, blaming farmers for bee deaths, attacking regulators and more. Simon notes the coincidence that neonics are synthesized from nicotine, a toxin produced by the tobacco plant. She urges Congress to pass the Saving America's Pollinators Act; the EPA to listen to the growing body of science linking neonicotinoids to bee declines and to move quickly to limit the use of these pesticides while taking other steps to protect bees and

other essential pollinators; the White House to push Congress and federal agencies to move quickly to protect bees; and the media to be aware of the tobacco-style tactics. (“Follow the Honey – 7 ways pesticide companies are spinning the bee crisis to protect benefits,” by Michele Simon, Friends of the Earth, April 2014; <https://libcloud.s3.amazonaws.com/93/f0/f/4656/FollowTheHoneyReport.pdf>)

About 200 households in Boulder’s Melody-Catalpa neighborhood established the first **"bee-safe"** locality in Colorado by pledging not to use neonicotinoids or similar systemic pesticides. Participating households receive green flags for their lawns. The Living Systems Institute of Golden, Colorado, confirmed that Melody-Catalpa was the first neighborhood to document at least 75 contiguous homes pledging not to use systemic insecticides. (“Boulder neighborhood state's first to be declared 'bee-safe',” by Charlie Brennan, Daily Camera, June 14, 2014; www.dailycamera.com/news/boulder/ci_25960458/boulder-neighborhood-states-first-be-declared-bee-safe)

Thirteen adults ate either a conventional diet or one with at least 80 percent organic foods for a week, then switched (conventional eaters ate organic; organic eaters ate conventional) for a week. **Eating a mainly organic diet for just seven days reduced concentrations of organophosphate pesticide metabolites in urine by 89 percent.** (“Going organic for one week cuts pesticide exposure: study,” Health Canal, April 29, 2014; <http://www.healthcanal.com/environmental-health/50256-going-organic-for-one-week-cuts-pesticide-exposure-study.html>; Original study: “Reduction in urinary organophosphate pesticide metabolites in adults after a week-long organic diet,” by Liza Oates et al., Environmental Research, Volume 132, July 2014, Pages 105–111, <http://www.sciencedirect.com/science/article/pii/S001393511400067X>)

A study of soybeans grown in Iowa – 11 samples from organic farms, 10 from conventional farms that did not grow Roundup Ready soy and 10 from farms growing Roundup Ready GE soy – found that **every sample of engineered soybeans had residues of glyphosate** and AMPA (Aminomethylphosphonic acid – a glyphosate metabolite). Glyphosate is the active ingredient in the herbicide Roundup. Residues were undetectable in soy from organic and non-GE farms, while GE soy contained a mean concentration of 3.3 parts per million (ppm) glyphosate and 5.7 ppm AMPA – concentrations the researchers call “high.”

In addition, organic soybeans had more sugars; more total protein and zinc; and less fiber, total saturated fat and total omega-6 fatty acids than both conventional and GM-soy.

“Using 35 different nutritional and elemental variables to characterise each soy sample,” say the researchers, “we were able to discriminate GM, conventional and organic soybeans without exception, demonstrating ‘substantial non-equivalence’ in compositional characteristics for ‘ready-to-market’ soybeans.”

Michael Hanson, senior staff scientist at Consumers Union, told Living on Earth that a recent study found that glyphosate in the parts per trillion range had an effect on breast cancer cells that are sensitive to hormones; that evidence is increasing that glyphosate might cause birth defects;

and that epidemiological studies have linked glyphosate to non-Hodgkin's lymphoma. ("Compositional differences in soybeans on the market: Glyphosate accumulates in Roundup Ready GM soybeans," by T. Bøhn et al., Food Chemistry, Vol. 153, June 15, 2014, Pages 207–215; www.sciencedirect.com/science/article/pii/S0308814613019201; "Pesticides Found in GM Soy; Vermont Orders Labels," by Steve Curwood, Living on Earth, May 2, 2014; www.loe.org/shows/segments.html?programID=14-P13-00018&segmentID=1)

Sixty-three percent of **bread** samples taken in the UK in 2013 had **pesticide residues**, with 17 percent having more than one residue. In 2001, 28 percent has residues. Seven percent (three of 42) of organic samples taken in 2013 had a residue; none had multiple residues. ("What chemicals are lurking in your loaf? Nearly two thirds of bread products found to contain pesticide residues," Daily Mail, July 16, 2014; www.dailymail.co.uk/news/article-2695224/What-chemicals-lurking-loaf-Nearly-two-thirds-bread-products-contain-pesticide-residues.html)

Fifteen 60-day-old male **rats were exposed to 0.5 percent Roundup** (similar to the concentration in water after agricultural spraying) for eight days. Monitoring at days 68, 87 and 122 after treatment showed **abnormal sperm morphology and decreased expression of two proteins** despite a normal sperm concentration and motility. ("An acute exposure to glyphosate-based herbicide alters aromatase levels in testis and sperm nuclear quality," by Estelle Cassault-Meyer et al., Environmental Toxicology and Pharmacology, July 2014; www.sciencedirect.com/science/article/pii/S1382668914001227)

Pregnant women who lived near fields and farms where chemical **pesticides** were applied experienced a two-thirds increased risk of having a child with **autism spectrum disorder or other developmental delay**, according to a study by researchers with the University of California Davis MIND Institute. The associations were stronger when exposures occurred during the second and third trimesters of the women's pregnancies.

The large, multisite, California-based study, published in Environmental Health Perspectives, examined associations between specific classes of pesticides, including organophosphates, pyrethroids and carbamates, applied during the study participants' pregnancies and later diagnoses of autism and developmental delay in their offspring. Earlier research has reported similar associations. Lead study author Janie F. Shelton says, "Women who are pregnant should take special care to avoid contact with agricultural chemicals whenever possible."

The study linked data from the California Pesticide Use Report with residential addresses of approximately 1,000 participants in the Northern California-based Childhood Risk of Autism from Genetics and the Environment (CHARGE) Study. The study includes families with children between 2 and 5 diagnosed with autism or developmental delay or with typical development. Study participants' residential addresses during the pre-conception and pregnancy periods were overlaid on maps with locations of agricultural chemical application sites based on the pesticide-use reports to determine residential proximity. The study also examined which participants were exposed to which agricultural chemicals.

Organophosphates applied over the course of pregnancy were associated with an elevated risk of autism spectrum disorder, particularly for chlorpyrifos applications in the second trimester. Pyrethroids applied immediately before conception and in the third trimester were moderately associated with autism spectrum disorder. Carbamates applied during pregnancy were associated with developmental delay. (“UC Davis MIND Institute study finds association between maternal exposure to agricultural pesticides, autism in offspring,” press release, June 23, 2014; study available at <http://ehp.niehs.nih.gov/1307044/>)

Winter 2014-2015

The Good News

Dr. John Navazio, veteran plant breeder, agroecologist, author and organic seed production specialist, **has joined Johnny’s Selected Seeds** as manager of its plant breeding program. Navazio holds a Ph.D. in plant breeding from the University of Wisconsin and is a progressive leader, educator and mentor to the sustainable agriculture movement. He has worked on developing crop varieties adapted to minimal-input and organic production systems and has worked with farmers on participatory breeding projects.

Navazio’s foundational field work has helped enhance the genetic breadth in vegetable crops to improve their nutritional value, flavor, texture, nutrient-scavenging capability, weed competitiveness, disease resistance and cold tolerance.

Rob Johnston, Johnny’s founder and CEO, said, “Some of North America’s most important crop germplasm is being housed and developed right here in Central Maine. Most of my life’s work has been in helping growers meet the challenges they face by breeding varieties from robust, genetically diverse germplasm that we identify as being better adapted to a range of environmental demands and under cropping systems that use less intensive inputs. The mark of success of this breeding work is measured by whether the grower’s crops are more productive and healthy — even when conditions are less than perfect.”

Navazio has taught numerous classes and workshops on commercial-scale organic seed production and is the author of “The Organic Seed Grower: A Farmer’s Guide to Vegetable Seed Production.” He was a senior breeder at the Alf Christianson Seed Company in charge of spinach, beet and carrot breeding before co-founding the Organic Seed Alliance in Washington state, where he also had a joint appointment with Washington State University as an Extension specialist for organic seed production. He previously taught at College of the Atlantic in Bar Harbor and at Prescott College in Arizona. Some longtime MOFGA members may remember his gorgeous displays of cucurbits at the Common Ground Country Fair when it was in Windsor. (“Dr. John Navazio Joins Johnny’s Selected Seeds,” press release, Johnny’s Selected Seeds, Oct. 9, 2014)

High Mowing Organic Seed Company now offers the first full line of certified organic, Non-GMO Project Verified seeds for farmers and gardeners. The Non-GMO Project is an independent non-profit committed to preserving and building the non-GMO food supply. High Mowing initiated the verification process for its 600-plus varieties two years ago. The process

involves ongoing, third-party evaluation of the company's extensive efforts to prevent cross-contamination in the field, sampling and testing of selected seeds, a thorough on-site inspection, and evaluation of the company's detailed documentation of best practices. The company will submit to re-verification annually.

("High Mowing Organic Seeds Offers Nation's First Full Line of Non-GMO Project Verified Seeds," High Mowing press release, Oct. 14, 2014; <http://www.highmowingseeds.com/Non-GMO-Project-Verified-Organic-Seeds.html>)

USDA Agricultural Research Service (ARS) agronomist Frank Forcella and South Dakota State University researchers have devised a tractor-mounted system that uses **compressed air and particles of grit made from dried corncobs to shred small annual weeds**, such as common lambsquarters. The system may help organic growers tackle within-row infestations of weeds that have sprouted around the bases of corn, soybean and other row crops.

Dubbed "Propelled Abrasive Grit Management" (PAGMan), the system disperses 0.5-millimeter-sized grit particles in a cone-shaped pattern at the rate of about 300 pounds per acre, using 100 pounds per square inch of compressed air.

"For the first few weeks of the growing season, weeds are relatively small, and that's when we target them with the grit," says Forcella, at the ARS North Central Soil Conservation Research Laboratory in Morris, Minnesota. The crop plants escape harm because they are taller than the weeds, and their apical meristems (growing points) are protected beneath the soil or by thick plant parts.

The tractor-mounted system uses compressed air to spray corn grit onto weeds growing between four rows of crops simultaneously. Nozzles work in pairs to control small weeds by shredding them.

"Last year, in corn with its full complement of weeds, we were able to get season-long weed-control levels of 80 to 90 percent using two treatments of the abrasive grit – one at the first-leaf stage [when the corn was about 4 to 6 inches tall] and the second at the three- or five-leaf stage of corn growth [when the corn was about a foot tall]," Forcella says. Corn yields compared favorably to those in hand-weeded control plots.

Current organic weed control methods include flaming (or scorching), soil tillage and hand-pulling, among others. Still, weeds remain a chief agronomic concern requiring new approaches, says Forcella.

Organic growers suggested using corn gluten meal as a way to fertilize crops and blast weeds simultaneously. "We tried corn gluten meal and found it just as effective," says Forcella. "The amounts necessary for controlling weeds were similar to those used to supply nitrogen to organic crops." Ground walnut shells and soybean meal also worked.

The method costs about five times more than using an herbicide, but the technology is still under development. It may be more cost effective with higher value crops, such as fruits and vegetables, according to Sam Wortman of the University of Illinois. Wortman found that one

application in tomatoes reduced weed density by about 75 percent. He says growers could make their own weed blasters for \$2,000 to \$3,000 with an air compressor, applicator and cart.

("Whacking Weeds Organically," by Jan Suszkiw, USDA-ARS, July 2014;

<http://www.ars.usda.gov/is/AR/archive/jul14/weeds0714.htm>; "Weed blaster shows promise as alternative to herbicides," by Tom Meersman,

Star Tribune, Aug. 25, 2014;

<http://www.startribune.com/business/272510321.html?page=all&prepage=1&c=y#continue>)

Governments must shift subsidies and research funding from industrial monocultures to small farmers using agroecological methods, according to Hilal Elver, the UN Special Rapporteur on the Right to Food, and according to an agroecology initiative of the UN Food and Agriculture Organization (FAO). Environmental issues associated with industrial agricultural threaten land, water and resource availability and do not address root causes of hunger, said Elver in a recent speech at an FAO conference on agroecology. She added that governments need to support "agricultural democracy" to empower rural small farmers. She said women must be recognized as the world's major food providers. Also, "if we deal with small farmers we solve hunger and we also deal with food production," said Elver. The FAO has found that 70 percent of food consumed globally comes from small farmers. Instead of supporting these demographics, 80 percent of EU subsidies and 90 percent of research funding support conventional industrial agriculture. ("UN: only small farmers and agroecology can feed the world," by Nafeez Ahmed, Ecologist, Sept. 23, 2014;

www.theecologist.org/News/news_analysis/2566719/un_only_small_farmers_and_agroecology_can_feed_the_world.html)

Diverse plant communities are more successful and enable higher crop yields than pure monocultures, a European research team headed by ecologists from the University of Zurich has discovered. In a 10-year study, researchers examined yields from grassland plants they had cultivated in monocultures or mixed plant communities. The latter proved to be more productive. "Due to their diversity, plant species in communities occupy all the niches available in an ecosystem. This enables them to use soil nutrients, light and water far more effectively than monocultures, which ultimately leads to greater yields," explains postdoc Dan Flynn. Also, pests can spread less effectively in a biodiverse community as they cannot find their host plants as easily, so plants can use resources for growth and producing offspring instead of for pest control.

Species adapted to their plant communities within a few generations, leading to a continued increase of crop yield in mixtures. Species specialize in their strengths and thus improve the complementary use of resources throughout the plant community by "character displacement." Grasses, for instance, develop thicker leaves, which can use direct sunlight in the upper layer of a meadow, while clover species sprout larger but thinner leaves to absorb the weaker light close to the ground more effectively. ("Plant communities produce greater yield than monocultures," University of Zurich, Oct. 16, 2014;

www.mediadesk.uzh.ch/articles/2014/pflanzengemeinschaften-bringen-mehr-ertrag-als-monokulturen_en.html; "Selection for niche differentiation in plant communities increases biodiversity effects," by Debra Zuppinge-Dingley et al., Nature, Oct. 14, 2014; www.nature.com/nature/journal/vaop/ncurrent/full/nature13869.html)

Here's an **alternative school fundraiser**: In some New York and northern California communities, residents can order groceries online from local farms through Farmigo, and

Farmigo donates 10 percent of proceeds to schools. Farmigo collects produce from farms (which receive 60 to 70 percent of the revenue) and delivers it to pick-up locations, such as workplaces, community centers, homes and schools. A pick-up site requires a minimum of 10 orders. The school fundraising aspect helps the startup build momentum. Schools use the funds for general expenses, school gardening programs or other special programs. (“The New School Fundraising Model Sells Local, Organic Groceries,” by Alice Truong, Fast Company, Sept. 27, 2014; www.fastcompany.com/3036171/second-shift/move-over-bake-sales-the-new-school-fundraising-model-sells-local-organic-groce)

On September 30, the National Agricultural Statistics Service (NASS) released more detailed **organic agriculture data from the 2012 Census of Agriculture**. The new data set includes national- and state-level data on all farms and farmers with organic sales as of 2012. The data include state level information on the number of farms producing organic crops, total acreage in organic production, value of production from farms with organic sales, farming practices employed by farms with organic sales, ownership characteristics of farms with organic sales, and more.

The NASS noted the following significant findings about organic agriculture:

- Only 7 percent of U.S. farms but 42 percent of organic farms sold agricultural products directly to consumers.
- 30 percent of organic farms marketed directly to retail outlets, 16 percent produced value-added products, and 13 percent distributed products through CSAs (community supported agriculture farms).
- Organic farms were more likely than other farms to invest in on-farm renewable energy producing systems, such as solar panels and wind turbines.
- Almost 90 percent of organic farms sold crops, such as fruits and vegetables, while a slightly fewer than 50 percent sold livestock or poultry products.
- Organic producers were more likely to be beginning farmers, with 27 percent starting farming in the last 10 years, compared with 18 percent of all principal farm operators.
- Organic operators were younger, with 26 percent under 45 years old, compared with 16 percent of all principal operators.

So organic producers are younger, are exploring diverse marketing channels and are using innovative sustainable farming practices at a higher rate than all farmers.

The National Sustainable Agriculture Coalition (NSAC) says these data affirm the need for continued and increased support for research programs that benefit organic farmers. “Programs like the Organic Research and Extension Initiative, the Beginning Farmer and Rancher Development Program, the Sustainable Agriculture Research and Education Program, and the Farmers Market and Local Food Promotion Program are critical to ensuring the continued success of organic farmers and ensuring there are enough organic farmers to meet the increasing

demand in the years to come.”

The NSAC notes that the Census of Agriculture does not break out separately the organic portion of a farm’s sales but reports all of the farm’s sales, organic and conventional, together. It also does not provide trend data on the number of actual farmers engaged in organic production, since the 2007 and 2012 Censuses of Agriculture define “organic” differently. Thus, the NASS plans to conduct an organic-specific survey for 2014 that will be almost identical to a survey conducted after the last census of agriculture. It will focus on a farmer’s organic production and not the entire farm’s production. (“Organic Farms Noteworthy in Many Ways According to USDA Census of Agriculture,” National Sustainable Agriculture Coalition, Oct. 2, 2014; http://sustainableagriculture.net/blog/nass-2012-census-organic-data/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29; 2012 Census of Agriculture – Characteristics of All Farms and Farms with Organic Sales, USDA National Agricultural Statistics Service, Sept. 2014; http://www.agcensus.usda.gov/Publications/2012/Online_Resources/Special_Organics_Tabulation/organictab.pdf)

To support the local farming community, encourage responsible financial decisions and connect community members to a steady supply of local, healthy food, the Brunswick-Topsham Land Trust and Kennebec Estuary Land Trust have partnered with three local financial institutions to start a **Farm Share Savings Account program**. Five County Credit Union, First Federal Savings & Loan Association of Bath and People’s United Bank of Brunswick offer a fee-free savings account for their customers and members to purchase a CSA (community supported agriculture) farm share from whichever farm they choose. Farm shares generally cost about \$250 to \$550, depending on the size of the weekly share and items provided. Making a lump sum payment of that size can be difficult, but saving throughout the year with a Farm Share Savings Account enables local residents to make the full payment to farmers more conveniently. For a directory of farms that offer farm shares, see www.mofga.net/Directories/CommunitySupportedAgricultureinMaine. For more information about the Farm Share Savings Account program, contact **Chris Cabot** at chris.btl.t.kelt@gmail.com or 207-729-7694 or 207-442-8400.

A provision in the 2014 farm bill removed **hemp** grown for research purposes from the Controlled Substances Act. Farmers and researchers doing pilot programs in the 15 states that have their own hemp legislation (including Maine) now have the right to import those seeds. Canadian farmers reportedly netted \$250 per acre from hemp in 2013, an almost \$1 billion per year crop there. The plant can be used for fiber, biomass, oil and other products. (“A tip for American farmers: Grow hemp, make money,” by Doug Fine, Kennebec Journal, July 25, 2014; www.centralmaine.com/2014/07/26/a-tip-for-american-farmers-grow-hemp-make-money/)

Whole Foods is rating its produce and flowers as "good," "better" or "best," depending on pesticide and water use, treatment of farm workers, waste management, conservation areas for pollinators and other issues. ("Whole Foods to Rate Its Produce and Flowers for Environmental Impact," by Stephanie Strom, The New York Times, Oct. 15, 2015; http://www.nytimes.com/2014/10/16/business/whole-foods-to-rate-its-produce-and-flowers-for-environmental-impact.html?_r=0)

The National Food Policy Scorecard rates legislators on the most important food legislation considered by the House and Senate. The Scorecard reflects the consensus of top food policy experts who select the key food policy votes each year. The scored food policy issues include domestic and international hunger, food safety, food access, farm subsidies, animal welfare, food and farm labor, nutrition, food additives, food transparency, local and regional food production, organic farming and the effects of food production on the environment. Maine legislators did well: Sen. King - 100; Sen. Collins - 75; Rep. Michaud - 80; Rep. Pingree - 96. (Food Policy Action, Oct. 16, 2014; <http://foodpolicyaction.org/all-politicians/?stab=ME&chamber=BOTH&party=B&orderby=State>)

Climate Change

In July, the USDA issued a 600-plus-page report, “**Quantifying Greenhouse Gas Fluxes in Agriculture and Forestry: Methods for Entity-Scale Inventory**,” that provides uniform scientific methods for quantifying changes in greenhouse gas emissions (GHG) and carbon storage from various land management and conservation activities. “Conservation practices and other management changes can reduce GHG emissions and increase carbon storage while improving soil health, productivity and resilience to drought and other extreme weather,” said Undersecretary for Natural Resources and Environment Robert Bonnie.

In critiquing the report, the National Sustainable Agriculture Coalition says the analysis “misses the opportunity to highlight and incorporate the value of a whole-farm, systems-approach that considers the benefits of sustainable agriculture systems. Not only do these systems have a role to play in any future efforts to support on-farm mitigation, but they offer existing solutions to help farmers build resilience into their farming operations.

“Just last year, USDA’s Climate Change Program Office issued a report that found that adaptation measures such as ‘diversifying crop rotations, integrating livestock with crop production systems, improving soil quality, minimizing off-farm flow of nutrients and pesticides, and other practices typically associated with sustainable agriculture are actions that may increase the capacity of the agricultural system to minimize the effects of climate change on productivity.’

“Yet, in this report, USDA summarily dismisses the benefits of sustainable practices systems as outside the scope of this project: ‘Finally, the methods in this report are not intended as a sustainability assessment. Other environmental services and cobenefits are not addressed by these methods. Nor are potential tradeoffs or detriments to other environmental concerns addressed here. The methods are specific to GHG emissions only, and sustainable farm, ranch, or forest management should consider the GHG implications of management in tandem with other environmental concerns such as water quality, soil health, and ecosystem health.’” (“Quantifying Greenhouse Gas Fluxes in Agriculture and Forestry: Methods for Entity-Scale Inventory,” USDA, July 2014; www.usda.gov/oce/climate_change/estimation.htm; “USDA Climate Report Misses Sustainable Systems,” National Sustainable Agriculture Coalition, Aug. 1, 2014; <http://sustainableagriculture.net/blog/usda-ghg-report/>)

Food Safety

The FDA will revise its proposed rules for the **Food Safety Modernization Act** after widespread comments from farmers, farm organizations, consumers and others. It will require less testing of irrigation water than originally proposed, eliminate the proposed nine-month waiting period before applying raw manure to fields and harvesting a crop (National Organic Program rules will still have the 90- and 120-day waiting period for organic farms), exempt small farms (those with produce sales of \$25,000 or less) from certain produce safety rules and enable brewers and distillers to give spent grains to farmers for animal feed. The agency will accept public comments on the revisions for 75 days after they are published in the Federal Register. Check <http://sustainableagriculture.net/fsma/> for updates. (“FDA plans to revise landmark food safety law,” by David Pierson, Los Angeles Times, Sept. 19, 2014; <http://www.latimes.com/business/la-fi-fda-food-safety-20140919-story.html>; “Release: FDA’s Revised Draft Food Safety Rules for Farms Responsive to NSAC’s Concerns,” by Sophia Kurszewski, National Sustainable Agriculture Coalition, Sept. 19, 2014; http://sustainableagriculture.net/blog/release-fdas-revised-draft-food-safety-rules-for-farms-responsive-to-nsacs-concerns/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29)

Organic Issues

The **National Organic Standards Board** (NOSB) advises USDA on which substances should be allowed or prohibited in organic farming and processing, based on criteria under the Organic Foods Production Act. It also makes recommendations on a wide variety of purview, including organic pet food standards and organic inspector qualifications. (See <http://www.ams.usda.gov/AMSV1.0/nosb>) The Cornucopia Institute, a farm policy research group, says illegal appointments to the board by current and past USDA Secretaries have subverted congressional intent. When Cornucopia analyzed the **voting records** of individual members of the NOSB over the past five years, it found strong differences between corporate agribusiness members of the board versus farmers and consumers on whether to allow synthetic and non-organic additives in organic food and on animal husbandry standards. Cornucopia says this is especially concerning when board members appointed as “farmer” representatives do not meet the intent and legal qualifications that Congress had set out for composition of the board. (“National Organic Standards Board Voting Scorecard Released,” The Cornucopia Institute, Aug. 19, 2014; www.cornucopia.org/nosb-voting-scorecard/; “Cornucopia: USDA Maintains Pattern of Corporate Appointments,” The Cornucopia Institute, Sept. 18, 2014; <http://www.cornucopia.org/2014/09/cornucopia-usda-maintains-pattern-of-corporate-appointments/>)

The **USDA** responded to a legal petition from 20 farm, consumer and environmental groups (including MOFGA) by **reinstating some authorities of the National Organic Standards Board (NOSB)**, while continuing to limit the board's advisory authority. The NOSB was established by Congress in 1990 to operate as a permanent independent authority. In May 2014, USDA reauthorized the board under the Federal Advisory Committee Act as it is required to do every two years by law. Changes made to the charter, however, mistakenly re-categorized the NOSB as a time-limited advisory board subject to USDA's discretion and narrowed the board's responsibilities. The USDA rejected petitioners' request that changes to description of NOSB

duties be amended to indicate the full breadth of responsibilities outlined in the organic statute. (“Organic Farm and Consumer Groups Achieve Partial Victory to Protect National Organic Standards Board,” PRNewswire, Oct. 3, 2014;

www.prnewswire.com/news-releases/organic-farm-and-consumer-groups-achieve-partial-victory-to-protect-national-organic-standards-board-278041911.html)

Genetic Engineering (GE)

The USDA recently summarized **adoption of herbicide-tolerant and insect-resistant GE crops** since their introduction in 1996. Among the highlights:

- GE soy accounts for 94 percent of that crop in the United States
- GE corn for 93 percent
- GE cotton for 96 percent
- 95 percent of U.S. sugar beets are GE – for herbicide tolerance
- Herbicide-tolerant crops do not appear to yield more but save time and simplify farming for growers
- Up to 70 percent of processed foods in the United States contain ingredients that come from GE crops
- About 12 percent of farmland worldwide grows GE crops – mostly corn, soy, cotton and canola

(“How GMO crops conquered the United States,” by Brad Plumer, Vox, Aug. 12, 2014; www.vox.com/2014/8/12/5995087/genetically-modified-crops-rise-charts; “Adoption of Genetically Engineered Crops in the U.S.,” USDA, July 14, 2014; www.ers.usda.gov/data-products/adoption-of-genetically-engineered-crops-in-the-us.aspx#.U_X6sWRdXfj)

A report from **Friends of the Earth International examines the reality of GE crop production worldwide**. It differentiates claims from reality, drawing evidence from experiences of small farmers and communities that live with GE crops. The report concludes that significant resistance exists to GE crops on all continents; that two decades of cultivation of GE crops in North and South America shows increased levels of pesticide use due to weed and insect resistance; that herbicide-tolerant and insect-tolerant (BT) GE crops do not provide an effective solution to the problem of agricultural pests; that emerging evidence of the negative impacts of pesticides on the environment and people’s health suggest that these GE crops are not sustainable; that no scientific consensus exists on the safety of GE crops, with many doubts and questions unanswered; that bio-fortified GE Golden Rice is not the best solution for vitamin A deficiency; and that, despite hype around new GE varieties for improved nutrition and climate adaptation, industry figures show about 99 percent of GE crops grown are still herbicide-tolerant, insect-resistant or both. (“Who benefits from GM crops? An industry built on myths,” Friends of the Earth International, April 2014; www.foeeurope.org/who-benefits-gm-crops-industry-myths-280314)

Ramon Seidler, a former senior scientist with the EPA, **debunks media reports that GE crops have reduced pesticide use**. He says these reports are inaccurate and rely on pesticide application rates and volumes reported before 2010, when widespread resistance began to emerge in insects and weeds, leading to applications of more pesticides; and that they ignore the

now widespread practice of coating seeds with systemic neonicotinoid pesticides (to control rootworms, for instance, when they become resistant to GE Bt crops). Seidler says USDA data show that since 1996, glyphosate use has increased some 12-fold, and overall herbicide use has increased by more than 500 million pounds; that insecticide use has dramatically increased since 2010; and that reporting on the number of pounds of insecticide used does not reflect the increased toxicity and broad non-target effects of even small amounts of widely used neonicotinoid insecticides (especially to pollinators). (“Pesticide Use on Genetically Engineered Crops,” by Ramon J. Seidler, Environmental Working Group, Sept. 2014; http://static.ewg.org/agmag/pdfs/pesticide_use_on_genetically_engineered_crops.pdf)

This summer, **Condé Nast**, which owns the New Yorker, asked various food activists, including Marion Nestle, Michael Pollan, Anna Lappé and Andrew Kimbrell, to participate in four 5-minute videos about food, agriculture and the environment. They declined after finding out, as Andrew Kimbrell of the Center for Food Safety said, “that it wasn't a journalistic endeavor; it was actually paid **advertising on behalf of Monsanto**” and was coming from the advertising rather than editorial department of Condé Nast. Kimbrell received a memo from Condé Nast describing the videos as a “Monsanto-funded film series,” with two guests and one Monsanto expert per episode. The show was to be hosted by Mo Rocca of CBS, according to Condé Nast, although Rocca said he did not agree to participate.

This type of production is called “native advertising” – ads made to look like journalism. John Oliver has a masterful piece on native advertising on his “Last Week Tonight” show, available on YouTube.

Shortly after Condé Nast’s misleading communication to food activists, the New Yorker published an article by Michael Specter critical of Vandana Shiva, an Indian food activist, seed saving proponent and critic of GE and globalized agriculture. Shiva pointed out the many errors in the New Yorker piece on her website, and Jim Gerritsen, MOFGA certified organic farmer and president of the Organic Seed Growers and Trade Association, cited similar attacks on other renowned scientists whose findings were inconvenient for industry. “This is just another episode in an attempt to tear down anyone who dares to question the products that industrial ag and biotech want to push upon the American people,” said Gerritsen. (“Monsanto: Engineering the Debate over Genetic Engineering,” by Andrew Kimbrell, Center for Food Safety, Aug. 9, 2014; www.centerforfoodsafety.org/blog/3375/monsanto-engineering-the-debate-over-genetic-engineering; Seeds of Truth – A Response to the New Yorker, by Dr. Vandana Shiva, Aug. 26, 2014; <http://vandanashiva.com/?p=105>; Jim Gerritsen on Heritage Radio Network, Aug. 25, 2014; www.heritageradionetwork.org/category_posts/748-Vandana-Shiva-Questioned; “Read the Emails in the Hilarious Monsanto/Mo Rocca/Condé Nast Meltdown,” by Tom Philpott, Mother Jones, Aug. 7, 2014; www.motherjones.com/tom-philpott/2014/08/monsanto-and-conde-nast-offered-big-bucks-writers-pr-project)

The U.S. Fish and Wildlife Service (FWS) will phase out use of GE crops to feed wildlife and will ban neonicotinoid insecticides from all wildlife refuges nationwide by January 2016. The decision follows a longstanding grassroots, legal and policy campaign by the Center for Food Safety (CFS) and Public Employees for Environmental Responsibility (PEER) to end the

harmful practices – a campaign that led to judicial decisions concluding that allowing GE crops on refuges violated environmental laws in multiple refuge regions across the country. The FWS is the first federal agency to restrict the use of GE crops and neonicotinoids in U.S. farming.

GE crops and neonicotinoid pesticides are regularly used in refuge farming programs. Yet, says CFS, these harmful farming practices often interfere with protection of the wildlife and the native grasses that the national refuge system is designed to protect. Scientists also warn that the use of GE crops can lead to increased pesticide use on refuges, negatively affecting birds, aquatic animals and other wildlife. And recent scientific findings have implicated neonicotinoids in pollinator declines and ecosystem harm. For example, the U.S. Geological Survey found widespread contamination of neonicotinoids in surface waters throughout the Midwest.

CFS, PEER, Beyond Pesticides and Sierra Club are currently litigating FWS's allowance of industrial agriculture practices on Midwest Wildlife Refuges. This recent FWS announcement includes a partial GE phase-out by January 2016, allowing GE crops only for habitat restoration. The groups maintain that the phase-out is not adequately comprehensive; they continue to advocate for the FWS to take stronger measures. ("Fish and Wildlife Service Agrees to Phase-Out Genetically Engineered Crops and Ban Bee-Killing Pesticides on National Refuges," Center for Food Safety, July 31, 2014;

www.centerforfoodsafety.org/press-releases/3342/fish-and-wildlife-service-agrees-to-phase-out-genetically-engineered-crops-and-ban-bee-killing-pesticides-on-national-refuges)

The Center for Biological Diversity, the Center for Food Safety, the Xerces Society and monarch scientist Dr. Lincoln Brower have **petitioned the U.S. Fish and Wildlife Service to protect the monarch butterfly** under the Endangered Species Act, saying widespread use of **pesticides and GE crops are the biggest threats to the butterflies**. These agricultural practices have cut monarch's summer breeding grounds by nearly a third, says the petition, and monarch populations have declined by more than 90 percent in less than 20 years. Roundup herbicide, used with most GE crops, kills milkweed, the monarch caterpillar's only food. ("Biodiversity: Endangered species protection sought for dwindling monarch butterflies," Summit County Citizens Voice, Aug. 26, 2014;

<http://summitcountyvoice.com/2014/08/26/biodiversity-endangered-species-protection-sought-for-dwindling-monarch-butterflies/>)

U.S. District Court Judge Barry M. Kurren has **struck down a Kauai County (Hawaii) ordinance requiring more disclosure from biotechnology companies** about use of restricted pesticides and GE crops. The ordinance also called for buffer zones between areas sprayed and roadways and schools. Seed corn is the largest export crop for Hawaii. Kurren said Ordinance 960 unlawfully preempted state law governing pesticide use. ("Federal Judge Invalidates Kauai's Anti-GMO Law," by Anita Hofschneider, Civil Beat, Aug. 25, 2014;

www.civilbeat.com/2014/08/court-declares-invalid-kauai-ordinance-regulating-gmos-pesticides/)

China's Ministry of Agriculture has decided not to renew biosafety certificates that allowed research groups to grow three varieties of GE rice and corn. The existing permits expired on August 17. The reason for the decision – whether due to public concern about the safety of the crops or to economics (China is already almost self-sufficient in rice, growing non-GE varieties)

– is unknown. At the same time, the Chinese government is increasing its support for other GE Bt corn, reports Science. (China pulls plug on genetically modified rice and corn,” by Dennis Normile, Science, Aug. 20, 2014; <http://news.sciencemag.org/asiapacific/2014/08/china-pulls-plug-genetically-modified-rice-and-corn>)

In September, the **USDA approved commercial planting of corn and soy genetically engineered to resist the herbicide 2,4-D** – developed by Dow and called its Enlist weed control system. In October, the EPA approved Dow’s “Enlist Duo” herbicide mixture of glyphosate and 2,4-D. Enlist will be used on Dow’s GE corn and soy. Some growers say the new GE crops are needed to combat weeds that became resistant to the herbicide glyphosate – due to overplanting of GE glyphosate-resistant crops. Because 2,4-D tends to drift, produce growers worry that planting 2,4-D-resistant crops near their farms will affect their fruits and vegetables. Dow says its new 2,4-D formulation is less prone to drifting. The EPA requires a 30-foot in-field “no spray” buffer zone around the application area, no pesticide application when the wind speed is over 15 mph, and permits only ground applications. The use of 2,4-D-resistant crops could lead to a 200 to 600 percent increase in 2,4-D herbicide use nationwide by 2020, according to the National Sustainable Agriculture Society. This is particularly troubling in light of a recently published U.S. Geological Survey study showing that pesticide concentrations in a majority of U.S. rivers and streams in urban, agricultural and mixed-land use watersheds currently exceed aquatic-life benchmarks. In October, the Center for Food Safety and Earthjustice filed suit against the EPA for its decision on behalf of Beyond Pesticides, Center for Biological Diversity, the Environmental Working Group, the National Family Farm Coalition and Pesticide Action Network North America. The suit says the EPA did not adequately analyze the impact of the Enlist ingredient 2,4-D.

(“Altered to Withstand Herbicide, Corn and Soybeans Gain Approval,” by Andrew Pollack, The New York Times, Sept. 17, 2014; www.nytimes.com/2014/09/18/business/alterd-to-withstand-herbicide-corn-and-soybeans-gain-approval.html?_r=0; “New GE Corn and Soybean Varieties Approved,” National Sustainable Agriculture Society, Sept. 18, 2014; [http://sustainableagriculture.net/blog/ge-crops-approved/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29](http://sustainableagriculture.net/blog/ge-crops-approved/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29;); “EPA Announces Final Decision to Register Enlist Duo, Herbicide Containing 2, 4-D and Glyphosate,” EPA press release, Oct. 15, 2014; “Critics of Dow herbicide sue U.S. EPA over approval,” by Carey Gillam, Reuters, Oct. 22, 2014; www.reuters.com/article/2014/10/23/us-agriculture-dow-lawsuit-idUSKCN0IB2PW20141023)

An inspection of an orchard of **experimental GE apples** in Washington state last year found GE trees **flowering less than 100 feet from conventional apple trees**, leading to a penalty of \$19,250. The same grower, Gebbers Farms, previously had been cited for conducting a field trial too near conventional apples, for not keeping good records and for making no effort to keep animals away from the plot. A Seattle Post Intelligencer report cites other problems with field trials of GE crops, including crops producing pharmaceuticals; vandalism and theft; escaped or unapproved crops and more.

(“Gene-altered apple tested in Washington state,” by Bill Lambrecht, Seattle Post Intelligencer, Sept. 5, 2014;

www.seattlepi.com/local/article/Gene-altered-apple-tested-in-Washington-state-5736742.php)

Danish farmer Ib Borup Pederson has found that his **pigs are healthier, more productive and profitable, and suffer fewer birth deformities since he switched from GE to non-GE feed.** His pigs now suffer less diarrhea; the farm uses two-thirds less medicine; and sows have on average 1.8 more piglets per litter and more live-born pigs. Sows no longer suffer from bloating or ulcers and they have longer productive lives, dropping in fertility after eight litters compared to six on GE soy.

Pederson believes the striking deformities he saw previously may have been due to glyphosate toxicity, as they were similar to those seen in other studies and in babies in the United States and Argentina where high levels of glyphosate are used. Professor Monika Krüger at Leipzig University in Germany studied the organs of Pederson's deformed pigs and found glyphosate in all of them.

Using data of 30,000 piglets born over two years, with tests on their food, fetuses and urine, Pederson found that "a five-fold increase in glyphosate levels [in feed] from 0.2 to 1 part per million resulted in a five-fold increase in cranial and spinal deformities at birth, five times more abortions, and 0.95 less piglets born per litter." The concentration of glyphosate in Pederson's own urine – 2.58 ppb ("not from eating GM contaminated feed but from eating normal food from the Danish shops") – was at the level that caused higher rates of abortions and deformities in pigs.

Pederson writes that "at 1,000 ppb, glyphosate is patented by Monsanto as an antibiotic, actually killing the beneficial microorganisms. At 0.1 ppb (less than 1/25 the level measured in my urine) Roundup caused tumours in 80% of rats compared to 20% in the controls, which only developed them at 700 days." ("Changing from GMO to Non-GMO Natural Soy, Experiences from Denmark," by Ib Borup Pederson, Institute of Science in Society, Sept. 10, 2014; http://www.i-sis.org.uk/Changing_from_GMO_to_non-GMO_soy.php. This article contains links to all studies that Pederson cites.)

Last year **rogue GE Roundup-resistant wheat** was found growing in a commercial field in Oregon. The USDA closed its investigation into the contamination without being able to determine the origin of the GE wheat. Now a similar incident has occurred at a University of Montana research center next to fields where Roundup-resistant wheat was tested from 2000 to 2003. The wheat in Montana has not been approved for sale or commercial production in the United States. NBC News quoted Andrew Kimbrell of the Center for Food Safety: "Just as the USDA closes one fruitless investigation, it tries to bury the story of yet another contamination. USDA cannot keep treating these as isolated incidents; contamination is the inevitable outcome of GE crop technology. It's time for Congress to take definitive action." ("Mystery of Runaway Biotech Wheat Called Unsolvable as New Incident is Reported," by Mike Bruner, Sept. 26, 2014, NBC News; www.nbcnews.com/news/investigations/mystery-runaway-biotech-wheat-called-unsolvable-new-incident-reported-n21288)

The median cost to label GE foods is \$2.30 per person per year. That's what Consumers Union says after it had ECONorthwest review published research on the cost of labeling foods containing GE ingredients. Relevant cost estimates presented in the studies ranged from \$0.32 to \$15.01. ("GE Foods Labeling Cost Study Findings," Sept. 12, 2014;

https://consumersunion.org/wp-content/uploads/2014/09/GMO_labeling_cost_findings_Exe_Summ.pdf)

An insecticidal protein (Cry1Ac) in GE crops was taken up and transferred to butterfly eggs and descendants. The toxin had no adverse effects on the parent generation, but first-generation larvae had higher mortality and longer development time than larvae of parents that did not ingest the toxin. ("Uptake and transfer of a Bt toxin by a Lepidoptera to its eggs and effects on its offspring," by D.P. Paula et al.,

PLoS One, April 18, 2014;

www.ncbi.nlm.nih.gov/pubmed/?term=Uptake+and+Transfer+of+a+Bt+Toxin+by+a+Lepidoptera+to+Its+Eggs+and+Effects+on+Its+Offspring)

Researchers reviewing published long-term feeding **studies of GE crops** containing one or more of three common GE traits – herbicide tolerance via the EPSPS gene and insect resistance via cry1Ab or cry3Bb1 genes – found the studies to be **lacking**. They found 21 studies for nine of the 47 crops approved for human and/or animal consumption and no studies on the other 38. Fourteen of the 21 studies were general assessments of the GE crop on rat health. Most studies were performed after the crop had been approved for human and/or animal consumption; half were published at least nine years after approval. The review found inconsistent methods and a lack of defined criteria for outcomes that would be considered toxicologically or pathologically significant. Also, methods and results lacked transparency, so comparing studies was difficult. This demonstrates an incomplete picture of the toxicity (and safety) of GE products consumed by humans and animals, say the researchers. Each GE product should be assessed properly, they add, to indicate its level of safety, and guidelines should be developed so that studies are comparable and reproducible. The GE plants should be assessed as a whole so that any pleiotropic effects (effects of single genes on multiple traits) can also be assessed. And long-term animal feeding studies should be included in risk assessments of GE crops, along with histopathological investigations to detect subtle changes or the beginning or presence of pathologies. ("GM crops and the rat digestive tract: A critical review," By I.M. Zdziarski et al., Environment International, Volume 73, Dec. 2014, Pages 423–433;

www.sciencedirect.com/science/article/pii/S0160412014002669

Consumer Reports found **GE presence in many common products**, including breakfast cereals, chips and infant formula – **even in products labeled "natural."** And a Consumer Reports survey of 1,000 American adults found that 64 percent mistakenly equate "natural" with no GE ingredients. The same survey also showed that nearly three-quarters of Americans are seeking foods produced without GE organisms.

All tested products labeled as organic or Non-GMO Project Verified (both third-party-certified labels) qualified as non-GE. Most products tested that claimed to be non-GE but were not certified also met non-GE standards. Nearly all samples of products that did not make any non-GE-related claim on the package did contain substantial amounts of GE corn or soy, and virtually

all samples with only a "natural" claim had a substantial amount of GE content. The government does not formally define the “natural” label on processed foods.

“Until GMO labeling becomes mandatory, consumers who want to avoid GMOs should look for 'organic' or 'Non-GMO Project Verified' labels. We also believe that since consumers are being misled by the ‘natural’ label: it is yet one more reason ‘natural’ should be banned on food,” said Urvashi Rangan, Ph.D., executive director of Consumer Reports Food Safety and Sustainability. (“Where GMOs hide in your food,” Consumer Reports, Oct. 2014; <http://consumerreports.org/cro/2014/10/where-gmos-hide-in-your-food/index.htm>)

Midwestern corn farmers have sued Syngenta, accusing the company of recklessly selling GE Agrisure Viptera corn seed in the United States in 2011 without obtaining import approval from China. The farmers, who did not plant Agrisure Viptera corn, allege losses due to lower crop prices when China began rejecting shipments that contained Viptera. Court documents say Viptera was grown on only about 3 percent of U.S. corn acreage over the last two years, but the industry says the trait exists throughout the corn supply, as varieties are difficult to segregate. Cargill Inc. also sued Syngenta over Viptera, after China refused to accept ships Cargill loaded that were filled with corn grown from GE Syngenta seed. Cargill claims that Syngenta failed to obtain import approval before selling the new product. Syngenta denied the accusation. The Viptera seed is widely used in the United States, effectively closing China as an export market for U.S. corn, says Cargill. (“Cargill sues Syngenta Seed over China shipments,” by Jim Spencer, Minneapolis Star Tribune, Sept. 13, 2014; www.startribune.com/business/274975281.html; “U.S. farmers latest to sue Syngenta over GMO corn rejected by China,” by Tom Polansek, Reuters, Oct. 6, 2014; www.reuters.com/article/2014/10/07/us-syngenta-seed-farmers-idUSKCN0HW02I20141007)

Pesticides

Maine Board of Pesticides Control Continues with Rulemaking

By Katy Green

At meetings held throughout late summer and fall, Maine’s Board of Pesticides Control (BPC) continued its rulemaking process for proposed changes to several chapters of board regulations. The BPC was not overwhelmed with comments on several chapters, and many proposed changes are anticipated to move forward as drafted.

Proposed changes in Chapter 28, requiring public notification for certain types of pesticide applications, may be the most noticeable exception. The proposed rule would have required both public and private owners of rights-of-way to provide public notice, via a newspaper, of pesticide applications. MOFGA testified that newspaper notice is not effective enough at reaching potentially impacted citizens and encouraged the BPC to consider options that would reach the widest possible interested audience. Applicators testified that newspaper notification was too cumbersome and would lead to undue worry among those reading the notice.

The board acknowledged that requiring private landowner applicators to provide notice was an unintended consequence of the drafted rules and that it is primarily concerned in this regard with

areas open to the public. As such, the BPC reached a consensus to require notice of spraying that will be done on sidewalks and trails that are open to the public. Also, rather than requiring a notice in newspapers, board policy will require other types of notice - likely including recommending that towns post notices on their websites. MOFGA still believes the methods discussed will not reach all interested parties; we will encourage the board to go further in its policy.

Board members also noted that the revised rule will not cover power line rights-of-way, because they are privately owned, but they are often used by members of the public for recreation.

Other chapters under development include 20, 22, 31, 32, 33 and 41. Board discussion at its September meeting suggests each of these chapters will be advanced as drafted.

Licensing Reminder

In the spring of 2011, the Maine Legislature passed a law mandating that any grower who annually sells more than \$1,000 worth of plants or plant products intended for human consumption and who uses any general use pesticides, including those approved for use in organic production, be licensed by April 1, 2015. To clarify who will need a license, the BPC recently developed a policy to address common questions. Note that growers who do not use any pesticides on their crops in the field but do use a sanitizer in wash water will need to go through the licensing process.

There are two ways to obtain a license. Growers can attend a training and testing session and then apply for the license after passing the test. Upcoming training opportunities are listed on the BPC website (www.thinkfirstspraylast.org). Alternatively, growers can obtain a training manual from their local Cooperative Extension office, study on their own at home and then return to the Cooperative Extension office to take the test. Direct questions about testing options to Gary Fish (gary.fish@maine.gov or 207-287-2731). If you are an organic grower who is having difficulty obtaining a license, please let MOFGA know by contacting Katy Green (kgreen@mofga.org or 207-568-4142).

Consent Agreements

During its September meeting the BPC reached a consent agreement with Maine Organic Therapy of Ellsworth, a licensed medical marijuana growing facility. Maine Organic Therapy had purchased pesticides through a pesticide retailer in another part of Maine. A joint inspection of the facility by the BPC and Maine Department of Health and Human Services uncovered violations of law, including use of pesticides inconsistent with the label and violations of worker protection standards. The fine imposed for these violations was \$5,500. Note that despite having “organic” in the company name, this facility is not certified organic by MOFGA or any other organic certification agency, as marijuana is still deemed illegal at the federal level, preventing certification according to USDA National Organic Standards.

[End of BPC news]

If a rat fetus is exposed to the insecticide **Methoxychlor** during the first trimester of pregnancy, three generations of its progeny have an elevated chance of having kidney disease, ovary disease and obesity, according to Michael Skinner and coworkers at Washington State University. So the descendants of a woman exposed to this insecticide years ago may be more likely to have such diseases as well. (Methoxychlor was banned in the United States in 2003 but is still used in Mexico and South America.) Skinner previously found similar **epigenetic disorders** (disorders related to which genes are turned on or off, sometimes by environmental conditions) across generations from PCBs and DEET. He explained to Newsweek that if sperm or eggs have epigenetic changes, they can transfer those changes to the embryonic stem cell, which can give rise to every other cell in the body – with altered genes. (“Exposure to Pesticides When Pregnant Linked to 3 Generations of Disease,” by Zoë Schlanger, Newsweek, July 24, 2014; <http://www.newsweek.com/pesticide-diseases-pesticide-exposure-pesticide-poisoning-pesticides-and-pregnancy-261181>)

The phenomenon of antibiotic-resistant bacteria is well known and of increasing concern. We need to think about **resistant fungi**, too. Jianping Xu and coworkers at McMaster University in Ontario plan to sample fungi from southern Ontario’s farms and compare them with fungi in hospital patients. He says triazole fungicides, used on conventional corn, canola and many other crops in Canada, may cause cross resistance to medical triazoles. Triazole-based drugs, for example, are used against *Aspergillus fumigatus*, which can harm lungs and which is common in soils and compost. (“Fungicides linked to resistance in life-threatening fungus,” by Margaret Munro, Postmedia News, July 24, 2014; www.canada.com/Fungicides+linked+resistance+life+threatening+fungus/10059890/story.html)

Some **pesticides** used in the United States are occurring at concentrations that **pose a concern for aquatic life**, says the U.S. Geological Survey based on its study “Pesticides in U.S. Streams and Rivers: Occurrence and trends during 1992-2011.” The study monitored fewer than half of the 400 pesticides used in agriculture, due to resource constraints, and found insecticides and herbicides in virtually all waterways tested. It did not monitor glyphosate, the active ingredient in Roundup and other herbicides, widely used with genetically engineered crops.

The proportion of streams with one or more pesticides that exceeded an aquatic-life benchmark was similar between the two decades for streams and rivers draining agricultural and mixed-land use areas, but much greater during the 2002-2011 for streams draining urban areas. Fipronil, an insecticide that disrupts the central nervous system of insects, was the pesticide most frequently found at levels of potential concern for aquatic organisms in urban streams during 2002-2011.

Neonicotinoid insecticides occurred in all watersheds tested and throughout the growing season in six states and nine Midwestern rivers. The results raise questions about possible threats to insects in the food chain of aquatic ecosystems. Another study found sharp declines in birds wherever neonicotinoids were widely used in Holland. Neonicotinoids (synthetic nicotine insecticides that are toxic to the nervous system) are the most widely used insecticides in the world. The water-soluble toxicants, which are taken up by plants, are manufactured by Bayer CropScience and Syngenta. (“20-Year Study Shows Levels of Pesticides Still a Concern for Aquatic Life in U.S. Rivers and Streams,” U.S. Geological Survey, Sept. 11, 2014; <http://usgs.gov/newsroom/article.asp?ID=3997>; “Pesticide Levels in Waterways Have Dropped,

Reducing the Risks to Humans,” by Michael Wines, The New York Times, Sept. 11, 2014; www.nytimes.com/2014/09/12/us/pesticide-levels-in-waterways-have-dropped-reducing-the-risks-to-humans.html?_r=1; “Pesticides in U.S. Streams and Rivers: Occurrence and Trends during 1992–2011,” by Wesley W. Stone et al., Environmental Science & Technology, Sept. 11, 2014; <http://pubs.acs.org/doi/abs/10.1021/es5025367>; “Powerful insecticide turns up in major Midwest rivers,” by Josephine Marcotty, Star Tribune, July 25, 2014; <http://www.startribune.com/lifestyle/health/268650562.html>

The **Vermont Law School** is the first higher-education U.S. campus to receive **neonicotinoid-free** designation. It received the recognition from the BEE Protective Campaign, a national campaign established by the Center for Food Safety and Beyond Pesticides that works with municipalities, campuses and homeowners to adopt policies that protect pollinators from bee-toxic pesticides. (“Center for Food Safety Congratulates Vermont Law School, the Nation's First Official Bee-Friendly, Neonic-Free Campus,” Center for Food Safety, Aug. 7, 2014; www.centerforfoodsafety.org/press-releases/3374/center-for-food-safety-congratulates-vermont-law-school-the-nations-first-official-bee-friendly-neonic-free-campus#)

An EPA analysis found **little or no increase in soybean yields using most neonicotinoid seed treatments** when compared to using no pest control at all. (“EPA Finds Neonicotinoid Seed Treatments of Little or No Benefit to U.S. Soybean Production,” EPA, Oct. 16, 2014; <http://yosemite.epa.gov/opa/admpress.nsf/bd4379a92ceceec8525735900400c27/aa78c4812c2c7a5785257d7300721da0!OpenDocument>)

When researchers measured **neonicotinoids in foods common to human consumption**, all produce samples (except nectarine and tomato) and 90 percent of honey samples tested positive for at least one neonicotinoid; and 72 percent of fruits, 45 percent of vegetables and 50 percent of honey samples contained at least two different neonicotinoids in one sample. Imidacloprid had the highest detection rate among samples. All pollen samples from New Zealand contained multiple neonicotinoids, and five of seven pollens from Massachusetts tested positive for imidacloprid, a neonicotinoid. (“Quantitative Analysis of Neonicotinoid Insecticide Residues in Foods: Implication for Dietary Exposures,” by Mei Chen et al., Journal of Agricultural and Food Chemistry, June 16, 2014; <http://pubs.acs.org/doi/abs/10.1021/jf501397m>)

Syngenta has asked the EPA to increase the allowable levels of its neonicotinoid insecticide thiamethoxam on alfalfa, corn, barley and wheat so that it can be used as a mid- to late-season foliar spray on those crops, in addition to its current use as a seed treatment on those crops. Beyond Pesticides calls the request a “step backward for pollinator health.” The EPA announced in late August that it would require that manufacturers label neonicotinoid products to prohibit their use when bees are foraging or plants are flowering. (“Syngenta Stands Firm On Neonicotinoids,” by Britt E. Erickson, Chemical & Engineering News, Sept. 12, 2014; <http://cen.acs.org/articles/92/i37/Syngenta-Stands-Firm-Neonicotinoids.html>)

All organs or tissues of 38 day-old **piglets** tested in Denmark had **glyphosate residues**, possibly causing **congenital anomalies** seen in all 38 animals. The researchers call for more study of effects of this herbicide (the active ingredient in Monsanto’s Roundup herbicide), the use of

which has increased along with planting of genetically engineered crops. Glyphosate is taken up by plants, and residues occur in feed and foods. (“Detection of Glyphosate in Malformed Piglets,” by Monika Krüger et al., Journal Environmental & Analytical Toxicology, 2014, 4:5, <http://omicsonline.org/open-access/detection-of-glyphosate-in-malformed-piglets-2161-0525.1000230.pdf>)

The **cancer death rate** in the "pampa gringa" area of Argentina, where **more genetically engineered crops** and their associated chemicals are used, is double the national average. The frequency with which doctors have seen rural patients with anomalies as phocomelia (defects of the arms), syndactyly, shortened limbs, arm bones aplasia, imperforate anus, and others, has led to increased study of pesticides and their metabolites in the population and of genetic defects. (“Argentine researcher confirms scientific evidence on harmful effects of agrochemicals,” GMWatch, Sept. 17, 2014; www.gmwatch.org/index.php/news/archive/2014/15649-argentine-researcher-confirms-scientific-evidence-on-the-harmful-effects-of-agrochemicals)

The incidence of **Parkinson's disease** in Colorado is strongly **correlated with levels of the common herbicide atrazine** in groundwater, according to epidemiologist Katherine James of the University of Colorado School of Medicine. Jones studied data of 330,000 Medicare patients in 2007, matching their ZIP codes with their potential exposure to atrazine – one of the most widely used herbicides in the United States. Every 0.01 milligram of atrazine per liter of water was correlated with a 4 percent increase in the risk for Parkinson's disease. Agricultural areas, where atrazine concentrations can reach 0.1 mg/l, were correlated with a 40 percent increase in Parkinson's. (“Colorado researchers probe Parkinson's disease causes, treatments,” by Electa Draper, The Denver Post, Sept. 1, 2014; www.denverpost.com/news/ci_26445243/colorado-researchers-probe-parkinsons-disease-causes-treatments)

Ecologist Michelle Boone of Miami University of Ohio is among the scientists who have found that the herbicide **atrazine harms reproductive development of amphibians**. She was surprised during EPA's reassessment of rules governing use of atrazine that only one study, done by atrazine manufacturer Syngenta, was being considered. All other studies presented, most of which found adverse effects on amphibians, were disqualified as not meeting EPA's methodological criteria. In reviewing EPA's reassessment of atrazine, researchers found that “the best predictor of whether the herbicide Atrazine had significant biological effects in a study was the funding source.” Studies funded by Syngenta were more likely to find no effect or only small effects of the chemical. (“Does the EPA Favor Industry When Assessing Chemical Dangers?” by Zoë Schlanger, Newsweek, Sept. 3, 2014; www.newsweek.com/does-epa-favor-industry-when-assessing-chemical-dangers-268168)

Recent **research correlates long-term use of pesticides with higher rates of depression and suicide**. A heavy dose of pesticide in a short time, suggests research, doubles the risk of depression. Epidemiologist Freya Kamel and colleagues reported that among 19,000 studied in the Agricultural Health Study led by the National Institute of Environmental Health Sciences, those who used two classes of pesticides and seven individual pesticides were more likely to have been diagnosed with depression. Those who used organochlorine insecticides were up to 90

percent more likely to have been diagnosed with depression than those who hadn't used them. For fumigants, the increased risk was up to 80 percent. Environmental Health News cites other epidemiological studies linking pesticide use with depression and lab studies showing possible neurological mechanisms of the pesticides that could explain the depression. ("Pesticide use by farmers linked to high rates of depression, suicides," by Brian Bienkowski, Environmental Health News, Oct. 6, 2014;
www.environmentalhealthnews.org/ehs/news/2014/oct/pesticides-depression/)

Country of Origin Labeling

The Obama administration should appeal an October 20 **ruling by a World Trade Organization (WTO) compliance panel against U.S. country-of-origin meat labeling (COOL)** policies, says Public Citizen. The WTO says the U.S. COOL policy is a technical barrier to trade. But weakening this label would deprive U.S. consumers of access to critical information about where their meat comes from at a time when consumer interest in such information is at an all-time high.

"Many Americans will be shocked that the WTO can order our government to deny U.S. consumers the basic information about where their food comes from and that if the information policy is not gutted, we could face millions in sanctions every year," says Lori Wallach, director of Public Citizen's Global Trade Watch. "Today's ruling spotlights how these so called 'trade' deals are packed with non-trade provisions that threaten our most basic rights, such as even knowing the source and safety of what's on our dinner plate."

Other recent WTO rulings against U.S. consumer and environmental policies include a 2012 ruling against voluntary "dolphin-safe" tuna labels and a 2012 ruling against a U.S. ban on clove-, candy- and chocolate-flavored cigarettes, enacted to curb youth smoking.

These rulings spur the growing public and congressional concerns about the Pacific and European trade deals the administration is now pushing and the Fast Track authority to railroad through Congress more agreements that undermine basic consumer rights, said Wallach. ("World Trade Organization Rules Against Popular U.S. Country-of-Origin Meat Labels on Which Consumers Rely," Public Citizen, Oct. 20, 2014;
www.citizen.org/pressroom/pressroomredirect.cfm?ID=4293)

Spring 2015

The Good News

A systematic overview by UC Berkeley researchers of 115 **studies comparing organic and conventional farming** found that crop yields of organic agriculture are about 19.2 percent lower than conventional – a smaller difference than in previous estimates.

The researchers pointed out that the available studies comparing farming methods were often biased in favor of conventional agriculture, so this yield gap is likely overestimated. They also found that taking into account methods that optimize the productivity of organic agriculture

could minimize the yield gap. Two practices, multi-cropping (growing several crops together on the same field) and crop rotation, would substantially reduce the organic-to-conventional yield gap to 9 percent and 8 percent, respectively.

Yields also depended on the type of crop grown. No significant differences occurred in organic and conventional yields for leguminous crops, such as beans, peas and lentils, for instance.

“Our study suggests that through appropriate investment in agroecological research to improve organic management and in breeding cultivars for organic farming systems, the yield gap could be reduced or even eliminated for some crops or regions,” said the study’s lead author, Lauren Ponisio. “This is especially true if we mimic nature by creating ecologically diverse farms that harness important ecological interactions like the nitrogen-fixing benefits of intercropping or cover-cropping with legumes.”

The researchers suggest that organic farming can be a very competitive alternative to industrial agriculture for food production.

“It’s important to remember that our current agricultural system produces far more food than is needed to provide for everyone on the planet,” said one author, Claire Kremen, professor of environmental science, policy and management and co-director of the Berkeley Food Institute. “Eradicating world hunger requires increasing the access to food, not simply the production. Also, increasing the proportion of agriculture that uses sustainable, organic methods of farming is not a choice, it’s a necessity. We simply can’t continue to produce food far into the future without taking care of our soils, water and biodiversity.” (“Can organic crops compete with industrial agriculture?” by Sarah Yang,

UC Berkeley News Center, Dec. 9, 2014;

<http://newscenter.berkeley.edu/2014/12/09/organic-conventional-farming-yield-gap/>;

“Diversification practices reduce organic to conventional yield gap,” by Lauren C. Ponisio et al., Proceedings of the Royal Society B, Dec. 20, 2014;

<http://rspb.royalsocietypublishing.org/content/282/1799/20141396>)

A Nielsen's Global Health and Wellness Survey of 30,000 consumers in 60 countries suggests that **younger consumers are far more concerned about healthy foods than are their parents and grandparents**. Of consumers under age 20, 41 percent said they would willingly pay a premium for "healthier" products; of those ages 21 to 34, 32 percent; and of those from about 50 to mid-60s, about 21 percent. However, 63 percent of consumers globally are skeptical about food health claims, the study says. Still, almost 80 percent of respondents said they use foods to forestall health issue. Sales of so-called "all natural" products have grown 24 percent over the past two years; of organic products, 28 percent, according to Nielsen. [Ed. note: The term “natural” has little to no definition, depending on the product. Products labeled as “natural” may have been grown with synthetic pesticides, made from genetically engineered crops, and subject to other methods that are not allowed in organic production.] (“Younger folks want healthier food - and will pay for it,” By Bruce Horowitz, USA Today, Jan. 19, 2015.

www.usatoday.com/story/money/2015/01/19/healthy-food-nielsen-global-health--wellness-study/22000167/)

University of New Hampshire researchers have successfully grown bulbing onions planted in fall under inexpensive low tunnels for a spring harvest. Becky Sideman, extension professor of sustainable horticulture production at UNH, and UNH and UMass colleagues evaluated the survival, bolting and bulbing of several cultivars of fall-planted onion in two N.H. sites over two growing seasons. Plants were seeded in August and September and transplanted in September and October into raised beds covered with black plastic mulch. Low tunnels were installed over the plants in late fall. Onions were harvested from mid-April to early June 2012 and late May to early July 2013.

All tested cultivars showed high percentages of survival, between 65 and 100 percent. Cultivar, planting date and the interaction between the two significantly affected the percentage of bolting and bulb diameter at harvest. In general, those planted later had lower percentages of bolting and slightly smaller bulbs at harvest.

All plants that survived the winter and did not bolt produced a marketable bulb. In particular, for ‘Bridger,’ ‘T420,’ ‘Top-Keeper,’ and ‘Keepsake’ yellow cultivars, 85 to 100 percent of plants met these criteria, corresponding to a potential yield of 37,000 to 43,500 bulbs per acre. “While this is considerably lower than expected yields for major onion production regions, these yields may be commercially viable in a high-value, direct-market situation,” the researchers said. (“UNH Scientists Successfully Grow Onions Overwintered in Low Tunnels,” by Lori Wright, University of N.H., Jan. 7, 2015; <http://colsa.unh.edu/aes/article/onions>)

In September, **researchers in Kentucky harvested a hemp crop** – for the first time in almost 70 years. The 2014 Farm Bill allows growing *Cannabis sativa* for research in the 20 states (including Maine) that permit hemp farming, if the crop contains 0.3 percent or less THC, the active ingredient in the plant. Kentucky Agriculture Commissioner James Comer had to sue the federal government to get the seeds, after the federal Drug Enforcement Administration initially seized seeds en route from Italy. The 13 varieties were managed for fiber or seed production and were harvested with a sickle bar mower. (“Kentucky Harvests Hemp for First Time in Decades,” by Ben Potter, AgWeb, Oct. 29, 2014; www.agweb.com/article/kentucky-harvests-hemp-for-first-time-in-decades-video-ben-potter/; Press release, Jeremy Koosed, Plant Kingdom Baker [Ohio], Oct. 27, 2014)

The Environmental Working Group’s (EWG) “Food Scores: Rate Your Plate” database rates more than 80,000 foods found in U.S. supermarkets, based on nutritional value; health concerns about ingredients (including additives and preservatives) and contaminants (such as mercury, arsenic and BPA); and the degree and type of processing. Scores range from 1 (best) to 10 (worst). Of the 80,000-plus products, 18 percent scored 1 to 3.5; 57 percent scored 4 to 7; and 25 percent scored 8 to 10. Certified organic foods get a boost in the scoring system because organic products cannot be grown with toxic synthetic pesticides, growth hormones or antibiotics, and because only a small fraction of the thousands of synthetic ingredients and additives used in conventional food are legal for organic. Consumers who pick organic food from EWG’s Food Scores database are more likely to select products that score better for nutrition and have fewer ingredients overall (9 ingredients vs. 14 for conventional). Organic items that are high in sugar or salt or that fare poorly by EWG’s nutrition standards were downgraded.

(“EWG's Food Scores Gives Snapshot of the State of America's Food Landscape,” by Ken Cook, Oct. 27, 2014; <http://www.ewg.org/foodscores/content/ewg-food-scores-state-of-americas-food-landscape>)

The United States needs a food policy to manage its agriculture and the food system as a whole, say four leaders in the food movement: Mark Bittman, Michael Pollan, Ricardo Salvador and Olivier De Schutter. Instead, “The food system and the diet it’s created have caused incalculable damage to the health of our people and our land, water and air. If a foreign power were to do such harm, we’d regard it as a threat to national security, if not an act of war, and the government would formulate a comprehensive plan and marshal resources to combat it.” A national food policy, they say, would guarantee all Americans access to healthful food; farm policies that support U.S. public health and environmental objectives; a food supply free of toxicants; fair wages for those working in the food industry; humane treatment of animals; a reduced carbon footprint and more carbon sequestration in soils; and sufficient resilience to withstand effects of climate change. Instead, we have contradictory policies, such as the MyPlate recommendation to eat a diet of 50 percent produce while less than 1 percent of farm subsidies support research, production and marketing of produce; and the government subsidizes soda while fighting Type 2 diabetes. (“How a national food policy could save millions of American lives,” by Mark Bittman, Michael Pollan, Ricardo Salvador and Olivier De Schutter, The Washington Post, Nov. 7, 2014; www.washingtonpost.com/opinions/how-a-national-food-policy-could-save-millions-of-american-lives/2014/11/07/89c55e16-637f-11e4-836c-83bc4f26eb67_story.html)

Pollinator services to crops on organic farms increased as habitat heterogeneity increased but did not increase on conventionally farmed land, based on a study comparing pod development in beans. Also, as habitat heterogeneity increased, so did the number of beans in each pod. The increase on organic over conventional farms may have occurred because organic farms do not use synthetic herbicides or fertilizers. (“Effects of farming intensity, crop rotation and landscape heterogeneity on field bean pollination,” by Georg K.S. Andersson et al., Agriculture, Ecosystems & Environment, Feb. 2014. <http://www.sciencedirect.com/science/article/pii/S0167880913004234>)

Maggots and maggot meal are good alternatives to fish meal in organic poultry, according to Danish research. The lack of a locally grown protein feed with sufficient sulfur-containing amino acids challenges organic poultry production, which relies on such animal protein as fish meal for this purpose – but fish meal is a limited resource.

Aarhus University worked with organic growers in a study of 450 Hisex white chickens divided into three groups. For eight weeks chickens received feed with different protein sources: fish meal, maggot meal, or maggot meal plus live maggots (2 to 3 g of maggots per day). Maggots (*Musca domestica*) were a species found in compost. Chickens were weighed during the experiment, and at the end of the experiment, an individual fear test was performed on the chickens.

“The chickens relished the maggots,” says Aarhus University, “and the group fed live maggots

achieved the highest growth rate. They ate roughly 6 g less of the mixed feed per day, although they were only allocated 2-3 g fresh larvae.” Chickens fed live maggots were less fearful than those in the two other groups, as well.

Because some risk of infection is associated with using maggots from composting manure, a sanitizing method should be developed to minimize this risk, says the University. (“Maggots a good source of protein for organic poultry,” by Ricarda M. Engberg, Aarhus University, Nov. 18, 2014; <http://dca.au.dk/en/current-news/news/show/artikel/fluelarver-er-et-godt-proteinfoder-til-oekologisk-fjerkræ/>)

Ontario is strengthening bird, bee, butterfly and other pollinator health to ensure healthy ecosystems, a productive agricultural sector and a strong economy. The federal Pest Management Regulatory Agency has linked planting corn and soybean seeds treated with neonicotinoid insecticides with bee deaths in Ontario. The province will work toward **reducing by 80 percent the number of acres planted with neonicotinoid-treated corn and soybean seed** by 2017. If approved, new rules on the use of neonicotinoids will be in place by July 1, 2015. According to the Ontario Provincial Winter Loss Survey, in 2013-14, bee deaths in the province reached their highest recorded level, 58 percent. Scientific evidence, says the Ministry of the Environment and Climate Change, shows that neonicotinoids disrupt bees’ ability to feed, navigate and reproduce, making them more susceptible to bacteria, virus or other disease microorganisms. (“Reducing Pesticide Use and Protecting Pollinator Health – Ontario Sets Goal to Reduce Neonicotinoid Use by 80 Per Cent,” Ministry of the Environment and Climate Change, Nov. 25, 2014; <http://news.ontario.ca/ene/en/2014/11/reducing-pesticide-use-and-protecting-pollinator-health.html>)

Seeds

The continued growth of **sustainable and organic U.S. agriculture** and local, healthy food systems – along with farmers’ ability to meet the challenges of climate change and food security – **depends on access to regionally adapted seeds.**

In proceedings from the Summit on Seeds and Breeds for 21st Century Agriculture, published by Rural Advancement Foundation International (RAFI), eight well known plant breeders and researchers from the agricultural community express increased concerns about farmers’ limited access to seed, the narrowing of the U.S. agricultural plant and animal genetic diversity, consolidation within the seed industry, the decline in public cultivar development (i.e. developing new crop varieties for the public good that can continue to be shared and improved by farmers and researchers), and how these trends are impacting farmers’ abilities to confront the unprecedented challenges of climate change and global food security.

The proceedings cover a March 2014 summit held in Washington, D.C., that brought together more than 35 breeders, researchers, farmers, academics and representatives of germplasm banks and nonprofits to discuss the U.S. seed supply.

Seven major challenges have contributed to the decline in the supply of publicly available and regionally adapted seed varieties and animal breeds, according to the report:

- shrinking public funding for developing better seeds;
- fewer seeds means less biodiversity and resiliency;
- concentrated seed ownership by a handful of giant chemical companies limits farmer and consumer choice; three firms now control more than half the global seed market, up from 22 percent in 1996;
- restrictive patents and licensing agreements prevent seed saving and sharing and strip farmers of control;
- almost no public seed developers remain; over the past 20 years, we have lost over a third of U.S. public plant breeding programs, leaving farmers with fewer and fewer seed choices; only five public corn breeders are left, down from 25 in the 1960s;
- few regional partnerships exist to address regionalized and farmer-driven approaches to developing new varieties;
- the U.S. public seed stocks are stored in “germplasm collections” that have been critically underfunded and understaffed, forcing triage decision-making regarding which seeds will be kept viable for planting.

The proceedings make these recommendations:

- develop a comprehensive national plan to restore funding and institutional capacity and support for public breeding programs at U.S. land grant institutions;
- encourage and reward biodiversity on farms and in commercial seed choices, in order to increase resilience to climate change;
- empower farmers to save and share seeds; encourage development of more independent regional seed companies that can help farmers respond to local and regional market demand and climate conditions; and address the negative impacts of consolidation and concentration in the ownership of seeds, including the enforcement of antitrust laws;
- reform patent and licensing laws in order to increase access to and development of improved varieties;
- increase the number of public breeders in each U.S. climate region with a focus on renewed institutional capacity to support the next generation of public plant breeders;
- develop new partnerships and models to address more regionalized and participatory approaches that more deeply involve farmers in the breeding process;
- strengthen U.S. seed collection and storage systems by revitalizing long-term funding; increase germplasm access and sharing nationally and internationally;
- develop a national campaign to educate the public and policymakers about the importance of public plant breeding.

MOFGA is participating in this effort through the National Sustainable Agriculture Coalition.

The full report and an executive summary are available for free download.

(“New Report Finds Farmers Harmed by Decline in Nation’s Public Seed Supply,” by Juli Obudzinski, National Sustainable Agriculture Coalition, Oct. 31, 2014;

[http://sustainableagriculture.net/blog/release-seeds-breeds-](http://sustainableagriculture.net/blog/release-seeds-breeds-proceedings/)

[proceedings/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29](http://sustainableagriculture.net/blog/release-seeds-breeds-proceedings/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29)

9. Full report at <http://rafiusa.org/publications/seeds/>)

Antibiotics

Hospitals participated in Food Day (October 24, 2014) with Health Care without Harm by **servicing meat raised without non-therapeutic antibiotics**. Throughout the United States, 352 hospitals spent a total of \$146,345 on 31,647 pounds of meat raised without the use of non-therapeutic antibiotics – including 51 facilities from New England and five from Maine. (“Hospitals Serve Over 126,000 Meals that Feature Meat and Poultry Raised Without Unnecessary Antibiotics,” Health Care Without Harm, Oct. 23, 2014; www.healthyfoodinhealthcare.org)

Six of the largest U.S. school districts, in New York City, Los Angeles, Chicago, Dallas, Miami-Dade County and Orlando County, **are switching to antibiotic-free chicken** over the next several years. Combined as a coalition called the Urban School Food Alliance, the districts serve almost 2.9 million students daily. (“Big U.S. school districts plan switch to antibiotic-free chicken,” by Tom Polansek, Reuters, Dec. 9, 2014; <http://in.reuters.com/article/2014/12/10/antibiotics-chicken-education-idINL1N0TT1P620141210>; “Largest School Districts Going With Antibiotic-Free Chicken,” Food Safety News, Dec. 9, 2014; http://www.foodsafetynews.com/2014/12/largest-u-s-school-districts-going-antibiotic-free/#.VIOMWTF_z2)

Arsenic in Foods

Consumer Reports (CR) issued guidelines for consumers based on its latest analysis of data from the FDA and its own testing for **arsenic** levels, particularly inorganic arsenic (IA), a carcinogen, **in rice and other grains**. Children, says CR, should rarely eat hot rice cereal or rice pasta, and those under age 5 should not replace milk with rice drinks, based on elevated arsenic levels.

White basmati rice from California, India and Pakistan, and sushi rice from the United States, on average have half the IA concentration of most other types of rice. Brown rice has 80 percent more IA on average than white rice of the same type; brown basmati from California, India or Pakistan is the best choice because it has about one-third less IA than other sources of brown rice.

All types of rice (except sushi and quick-cooking) with a label indicating that it’s from the United States, Arkansas, Louisiana or Texas had the highest levels of IA in CR tests. White rice from California had 38 percent less IA than white rice from other parts of the country. Organic rice takes up arsenic the same way conventional does, so is not likely to have less arsenic.

Grains with much lower arsenic concentrations included amaranth, quinoa, buckwheat, millet, polenta (or grits), bulgur, barley and farro. (“Consumer Reports Issues New Consumption Guidelines Based on Analysis of Arsenic Levels in Rice Products & Other Grains,” Consumer Reports press release, Nov. 18, 2014)

Good and Bad Yogurt

A new report, **Culture Wars: How the Food Giants Turned Yogurt, a Health Food, into Junk Food**, issued by The Cornucopia Institute, accuses Dannon, Yoplait, Chobani and other major

marketers of misleading those looking for healthier foods into purchasing yogurts loaded with sugar and containing artificial sweeteners, colors and emulsifiers.

Cornucopia's buyer's guide rates 114 brands, separating healthful options from those to avoid.

Cornucopia found that flavored varieties of certain brands contain no actual fruit and include total sugars that rival those in candy bars. Others are sweetened artificially with such substances as aspartame (also marketed as NutraSweet®). Some manufacturers even add nanoparticles, currently unregulated, which interact with cells in unknown ways.

The industry's labeling campaign, "Live and Active Cultures," purports high levels of probiotics – microorganisms thought to improve digestion in the intestinal tract. When Cornucopia had yogurt purchased from grocery stores tested, many top-rated organic brands – not part of the industry's Live and Active Cultures campaign – contained higher levels of beneficial bacteria than some of the most popular brands displaying the seal. Also, organic yogurt had more advantageous ratios of omega-3 to omega-6 fatty acids and higher levels of beneficial fats, including conjugated linoleic acid, than conventional.

Cornucopia filed a formal complaint asking the FDA to investigate whether certain yogurt on the market, manufactured by such companies as Yoplait, Dannon and store brands including Walmart's Great Value, violate the legal standard of identity for products labeled as yogurt. Cornucopia alleges that some ingredients manufacturers use in yogurt, such as milk protein concentrate (MPC), typically imported from countries such as India, do not meet yogurt's current legal standard of identity.

Finally, Cornucopia found that many organic yogurts can often be purchased for less, on a price-per-ounce basis, than conventional.

In another investigation, Cornucopia alleges, based on aerial photos, that 14 large organic egg, meat and dairy operations in nine states do not provide sufficient outdoor access or pasture to their animals to meet USDA National Organic Program rules. Cornucopia filed formal legal complaints against the operations.. ("New Report Criticizes Yogurt Industry," The Cornucopia Institute, Nov. 19, 2014; www.cornucopia.org/yogurt/ "Investigation: 'Factory Farms' Producing Massive Quantities of Organic Milk and Eggs," The Cornucopia Institute, Dec. 11, 2014; <http://www.cornucopia.org/2014/12/investigation-factory-farms-producing-massive-quantities-organic-milk-eggs/>)

Forestry

While studies estimate that at least half of global deforestation in the past decade was for commercial agriculture, the proportion for tropical deforestation was higher – 71 percent between 2000 and 2012; and **49 percent of tropical deforestation** between 2000 and 2012 was due to **illegal conversion for commercial agriculture**, including 24 percent for illegal agro-conversion for export markets. Seventy percent of all soy in international trade, 32 percent of the beef and all of the palm oil originate in tropical forested countries. Consumer demand in overseas markets resulted in the illegal clearance of more than 77,000 square miles of tropical forest during those 12 years – an average of five football fields every minute. ("Consumer Goods

and Deforestation: An Analysis of the Extent and Nature of Illegality in Forest Conversion for Agriculture and Timber Plantations,” by Sam Lawson et al., Forest Trends, Sept. 2014; www.forest-trends.org/documents/files/doc_4719.pdf)

Mitch Lansky, founder of the Maine Low-Impact Forestry Project and author of “Low-Impact Forestry: Forestry as if the Future Mattered,” recently submitted a paper called “**Irving Certification Valuation**” to the Forest Stewardship Council (FSC), a global, multi-stakeholder forestry organization with a mission to “promote environmentally sound, socially beneficial and economically prosperous management of the world's forests.” Certification by FSC of wood products, traced through chain of custody to “sustainable” forest practices, is required for many “green” building and paper programs. Yet, says Lansky, J. D. Irving Ltd. – whose forestry practices in Maine are FSC certified – uses short rotations on thousands of acres “that look suspiciously like plantations” rather than natural forests; uses more herbicides than all other forest landowners in Maine combined; is managing for stand structures that are vulnerable to spruce budworm; was cutting more than its forests were growing; and was not treating its contractors in socially responsible ways. Lansky’s in-depth analysis is posted at <http://www.meeipi.org/lif/Irvingrecertification.doc>.

Drugs in the Environment

The drugs we release into the environment are likely to significantly impact plant growth, even at the very low concentrations found in the environment, finds a study led by the University of Exeter Medical School and Plymouth University. The research tested the **effects of several commonly prescribed drugs, including diclofenac and ibuprofen, on lettuce and radish plants**. Waste management systems cannot remove many such compounds from sewage. Drugs for human use make their way into soil through a number of routes, including the use (on non-organic farms) of sewage sludge as fertilizer and waste water for irrigation. Each drug studied affected the plants in specific ways, with marked differences between drugs that are closely related. For example, drugs from the fenamic acid class affected the growth of radish roots, while ibuprofen significantly influenced early root development of lettuce plants. (“Drugs in the environment affect plant growth,” University of Exeter, Dec. 5, 2014; www.exeter.ac.uk/news/featurednews/title_425231_en.html; “Evaluation of biological endpoints in crop plants after exposure to non-steroidal anti-inflammatory drugs (NSAIDs): Implications for phytotoxicological assessment of novel contaminants,” by Wiebke Schmidt et al., Ecotoxicology and Environmental Safety, Vol. 112, Feb. 2015, Pages 212–222; www.sciencedirect.com/science/article/pii/S0147651314005132)

Environmental Hero Dies

Theo Colborn died at age 87 in December. The retired pharmacist who returned to school to get a Ph.D. at age 58 used her broad view of biology and environmental sciences to discover that very low concentrations of a variety of synthetic chemicals could disrupt animals’ endocrine systems. She coauthored “Our Stolen Future,” which covered this new science. Colborn was quoted in Grist as saying, “There is a reductionism in scientists, in the scientific community. I have never been a reductionist. I am always thinking about the big picture. My thesis committee for my Ph.D. will tell you that. They had trouble with me.” (“Remembering the genius who got

BPA out of your water bottles, and so much more,” by Heather Smith, Grist, Dec. 16, 2014; <http://grist.org/business-technology/remembering-the-genius-who-got-bpa-out-of-your-water-bottles-and-so-much-more/>)

Genetic Engineering (GE)

In November, voters in Maui County approved a ballot initiative for a **moratorium on planting GE seeds on Maui and Molokai** until the county conducts a thorough public health and environmental assessment and deems the crops safe. The law also fines anyone who cultivates GE foods without conducting a health and environmental review first \$10,000 to \$50,000 daily. Crops already growing are exempt. The initiative passed by a 50.2 to 47.9 percent vote, even though opponents spent about \$8 million compared with \$60,000 by supporters. Monsanto and Dow Chemical have sued to block the moratorium.

Supporters worry that chemical companies developing seed in Hawaii are spraying potentially dangerous chemicals near neighborhoods, schools and waterways. Hawaii’s climate, which allows for three crops per year, and permissive U.S. regulations for GE research make the state attractive to the GE industry. Currently Monsanto, Pioneer, Syngenta, Dow and BASF occupy about 25,000 of Hawaii’s 280,000 acres of agricultural land. Other islands are considering similar measures. A law in Kauai that did not fully ban GE farming but required mandatory notification of pesticide applications and buffer zones for crops and pesticide spraying in certain areas was invalidated by federal court last August.

The same federal judge who invalidated the Kauai ban (and who is handling a lawsuit against Maui County’s ban) has also ruled that a Hawaii County law banning planting of new GE crops and testing of GE crops (except in enclosed spaces, and except for papayas) is invalid as it is preempted by state and federal law. Kauai County Councilman Gary Hooser said the judge has not “taken into account the state constitution and the public trust doctrine. Neither has he taken into consideration that the State Health Department presently holds regulatory authority over GMO permitting and state law also expressly grants counties the authority to enforce health department regulations.” Kauai County is appealing the judge’s ruling on its ban. (“Judge tosses Big Island GMO law,”

The Garden Island, by Chris D’Angelo, Nov. 27, 2014; http://thegardenisland.com/news/local/govt-and-politics/judge-tosses-big-island-gmo-law/article_d9bc31d0-7601-11e4-8c0b-bf7f34cf80a6.html; “Voters adopt GMO ban,” by Robert Shikina, Star Advertiser (Honolulu), Nov. 6, 2014; www.staradvertiser.com/elections/20141104_GMO_Charter.html?id=281546631; “Maui just banned GMO farming. Will it hold up in court?” by Brad Plumer, Vox, Nov. 8, 2014; www.vox.com/2014/11/7/7170993/maui-just-banned-gmo-farming-will-it-hold-up-in-court; “Election Day Rundown on Pesticide Restrictions and GE Labeling: Victories and Setbacks,” Beyond Pesticides, Nov. 6, 2014; www.beyondpesticides.org/dailynewsblog/?p=14431)

Voters in Humboldt County, California, voted to ban GE crops from being grown in the county. The Humboldt County Genetic Contamination Prevention Ordinance (Measure P) was approved by 59 percent of county voters. Four other California counties – Marin, Santa Cruz, Mendocino and Trinity – and several cities, as well as two counties in Oregon and one in Washington state, have similar bans. (“Genetically Engineered Crops Banned in Humboldt County! 7th County to Vote for Ban,” Center for Food Safety, Nov. 5, 2014;

www.centerforfoodsafety.org/press-releases/3588/genetically-engineered-crops-banned-in-humboldt-county-7th-county-to-vote-for-ban)

Three days before **Los Angeles** lawmakers voted on a **proposal to ban GE crops**, the Biotechnology Industry Organization allegedly hired lobbyists to oppose the ban. Before the lobbying, the council supported the ban; after the lobbying, three of five members opposed it. (“City Council panel backs away from GMO ban it previously supported,” by Soumya Karlamangla, Los Angeles Times, Dec. 28, 2014; www.latimes.com/local/cityhall/la-me-gmo-ban-20141229-story.html)

In November, **Colorado voters rejected labeling GE foods**, while the vote on **Oregon’s Measure 92 for labeling GE foods** lost by just 812 out of 1.5 million votes, triggering an automatic recount. The second tally shifted 25 votes against the initiative. A judge ruled that the state did not have to count 4,600 votes that election officials threw out, because, said election officials, signatures on ballot envelopes didn’t match those on the voters’ registration cards. (All Oregon voters vote by mail.) Oregon Right to Know said, “Given the razor-thin margin in this race, and the failure to count every valid ballot, we believe that Oregonians will never know for sure what the true outcome of this race was.”

Opponents spent more than \$16 million in Colorado, while supporters raised at least \$700,000. In Oregon, Monsanto donated some \$6 million to defeat Measure 92, while other opponents raised that to \$20 million – the most expensive ballot measure campaign in the state’s history. Dr. Bronner’s Magic Soaps donated \$1.1 million to support labeling in Oregon, and other supporters brought that figure to more than \$8 million.

Almost 90 bills were introduced in 29 states in 2014 to address GE labeling. From 2012 to 2014, opponents spent more than \$100 million to defeat labeling measures in California, Washington and Oregon. (“GMO food measure fails in Colorado; Oregon initiative uncertain,” by John M. Glionna, Los Angeles Times, Nov. 4, 2014; www.latimes.com/nation/politics/politicsnow/la-pn-gmo-food-20141104-story.html; “Measure 92, GMO-labeling initiative, fails narrowly: Oregon election results 2014,” by Dana Tims, Oregonian, Nov. 5, 2014; www.oregonlive.com/politics/index.ssf/2014/11/measure_92_gmo-labeling_initia.html; “Oregon GMO Labeling Proponents Concede Defeat,” by Jonathan J. Cooper, ABC News, Dec. 11, 2014; <http://abcnews.go.com/Health/wireStory/oregon-gmo-labeling-proponents-concede-defeat-27536290>; “Oregon’s GMO labeling initiative narrowly defeated by record chemical and junk food company spending,” Friends of the Earth Action press release, Dec. 11, 2014; <http://foeaction.org/news-release/oregons-gmo-labeling-initiative-narrowly-defeated/>; <http://oregonrighttoknow.org/challenge-ballots/>)

In November, **USDA approved for planting the GE Innate potato**, developed by the J. R. Simplot Company. The potato produces less acrylamide, a suspected carcinogen produced when potatoes are fried, and it resists bruising. Acrylamide also occurs in some baked goods and coffee. Simplot supplies frozen french fries to McDonald’s, but McDonald’s says it does not source GE potatoes. Simplot believes the fresh potato market will buy Innate.

Innate was engineered using “RNA interference,” inserting fragments of potato DNA to silence four Innate genes. Scientist Doug Gurian-Sherman of the Center for Food Safety told The New York Times that RNA interference is not well understood and is not adequately regulated, so approving Innate was premature. One suppressed substance in Innate, he said, seems important for metabolizing nitrogen and protecting the plant from pests. (“U.S.D.A. Approves Modified Potato. Next Up: French Fry Fans,” by Andrew Pollack, The New York Times , Nov. 7, 2014; www.nytimes.com/2014/11/08/business/genetically-modified-potato-from-simplot-approved-by-usda.html?_r=1; “McDonald’s isn’t lovin’ new GMO potato,” CBS News, Nov. 15, 2014; www.cbsnews.com/news/mcdonalds-says-no-to-gmo-potato/)

Scotts Miracle-Gro Company is developing a **Roundup Ready GE grass** that also requires less mowing and is deeper green. The grass will not need federal approval before release, as it is being developed by genome editing – i.e., it does not have genes from unrelated organisms inserted into its DNA. The government does not regulate this fairly new technique. The same unregulated technique is being used to create herbicide-resistant canola, switch grass for biofuel and other plants. Scotts uses a gene gun, rather than bacteria, to insert genetic material. Critics say genome editing can create unintended changes. (“‘Editing’ Plant Genes, Companies Avoid Regulation,” by Andrew Pollack, The New York Times, Jan. 1, 2015; www.nytimes.com/2015/01/02/business/energy-environment/a-gray-area-in-regulation-of-genetically-modified-crops.html?_r=1)

Monsanto reached a settlement with U.S. wheat farmers who sued the company over market disruption in South Korea and Japan after unapproved GE Roundup Ready wheat was found growing without oversight in Oregon. Monsanto said it stopped testing the variety – never approved by U.S. regulators – a decade ago. Monsanto agreed to pay \$250,000 to wheat growers' associations and \$2.125 million into a settlement fund for affected farmers. Another unapproved Monsanto wheat variety was found growing in Montana in September. And in December, **16 Iowa farmers and companies sued Syngenta AG**, claiming they suffered financial losses when China rejected corn shipments containing a GE seed developed by Syngenta but not approved for use by China. (“Monsanto settles farmer lawsuits over experimental GMO wheat,” by Carey Gillam, Reuters, Nov. 12, 2014; www.reuters.com/article/2014/11/12/usa-monsanto-wheat-idUSL2N0T22O820141112; “Iowa lawsuits accuse Syngenta over GMO seeds,” by Grant Rodgers, The Des Moines Register, Dec. 30, 2014; <http://www.desmoinesregister.com/story/money/agriculture/2014/12/30/lawsuits-filed-syngenta-iowa/21051903/>)

The European Patent Office revoked a Monsanto patent on conventionally bred tomatoes after the international coalition No Patents on Seeds! and Nunhems/Bayer CropScience opposed it. Monsanto patented this as an invention, although the tomatoes used for this patent came from an international gene bank in Germany and were known to be naturally resistant to botrytis. (“Europe Revokes Monsanto’s ‘Fraudulent’ GMO Tomato Patent,” Sustainable Pulse, Dec. 22, 2014; <http://sustainablepulse.com/2014/12/22/europe-revokes-monsantos-fraudulent-tomato-patent/#.VKJp9V4AC>)

Many genes inserted into GE crops are controlled by the cauliflower mosaic virus promoter (CaMVP35S). Researchers have found **transgenic DNA** from the CaMV35S promoter sequence

in rat brain, liver and blood cells after rats received GE-feed-containing diets for three months, showing horizontal transfer of transgenic DNA from GE plants to animal tissues. The longer that rats received GE feed, the more GE target sequences were transferred. (“Addressing the issue of horizontal gene transfer from a diet containing genetically modified components into rat tissues,” by Hanaa A. S. Oraby et al., African Journal of Biotechnology, Nov. 26, 2014; <http://www.academicjournals.org/journal/AJB/article-abstract/BE5331948800>)

Armyworms are increasingly resistant to the Cry1F insecticidal protein engineered into many GE corn products developed by Dow AgroSciences and DuPont, according to research by Louisiana State University. Such resistance is “a great threat” to sustainability of GE crops, said LSU entomologist and lead researcher for the study, Fangneng Huang. (“Armyworm resistance to GMO crops seen in U.S. – study,” by Carey Gillam, Reuters, Nov. 17, 2014; www.reuters.com/article/2014/11/17/agriculture-gmo-armyworms-idUSL2N0T719V20141117)

Canadian company **Okanagan Specialty Fruits used gene silencing (manipulating RNA molecules) to engineer an Arctic apple** so that it doesn't brown after it's bruised or sliced. Molecular biologist Dr. Margaret Mellon says concern exists about this technology because “RNA manipulations may end up turning down, or off, genes other than those that were targeted,” such as similar or identical stretches of DNA in unrelated genes in the genome. The polyphenoloxidase genes that are turned off in the Arctic apple have several closely related genes with multiple functions, such as boosting pest and stress resistance in some plants. The GE apple may affect wild pollinators, honeybees, human nutrition and weediness, says Mellon, adding that USDA’s analysis of such risks was stunningly inadequate. “The USDA and the FDA should convene their own expert panels on gene silencing” and how they “might misfire in the environment and food safety arenas,” she concludes. (“Gene-Silencing and the 'Arctic' Apple (Op-Ed),” by Margaret Mellon, Live Science, Nov. 22, 2014; www.livescience.com/48870-genetically-engineered-arctic-apple.html)

The incidence and prevalence of **chronic diseases** has increased in the United States and globally over the last 20 years. A recent study found highly significant **correlations between the increased use of glyphosate** (the active ingredient in Roundup herbicide) and the incidences of several diseases, including hypertension, diabetes, various cancers and more. The percentage of GE corn and soy planted in the United States was highly correlated with hypertension, stroke, diabetes, kidney failure, various cancers and more. “[T]he effects of glyphosate and GE crops on human health should be further investigated,” say the study authors. (“Genetically engineered crops, glyphosate and the deterioration of health in the United States of America, by Nancy L. Swanson et al., Journal of Organic Systems, 9(2), 2014; www.organic-systems.org/journal/92/JOS_Volume-9_Number-2_Nov_2014-Swanson-et-al.pdf)

The European Union has agreed to give its individual nations the option to ban GE crops that are approved by the EU for cultivation. Previously such national bans tended to face court challenges. Only Monsanto’s MON810 GE corn is approved for cultivation there now. Other GE crops can be imported and are used primarily for animal feed. (“EU deal gives countries opt-out on growing approved GM crops,” by Barbara Lewis, Reuters, Dec. 4, 2014; www.reuters.com/article/2014/12/04/us-eu-gmos-idUSKCN0JI16P20141204)

Activists gathered in Washington, D.C., in December to protest Rep. Mike Pompeo's (R-KS) bill, H.R. 4432, which would preempt state laws requiring labeling of GE foods. Dubbed the **"DARK Act" (Deny Americans the Right to Know)**, Pompeo's bill **would give FDA authority over labeling requirements for GE foods** and would let food manufacturers label as "natural" products containing GE ingredients. Opponents say the U.S. Constitution, states and municipalities have the right to pass food-labeling laws to protect their citizens' health and that the large packaged food and biotech industries have used their financial influence to block such local initiatives. Rep. Chellie Pingree said at the protest, "This bill is a desperate attempt by Monsanto and their supporters to keep the public from knowing when they are buying a GMO product." Scott Faber of the Environmental Working Group and Kate Webb of the Vermont House of Representatives said labeling would benefit consumers and producers alike; they defended state-level labeling initiatives in the absence of federal leadership. "This is not just a question of (consumer) right to know, it's also a question of consumer confusion," Faber said. "Sixty percent of consumers believe all natural foods are GMO-free. We believe that informative, factual, nonjudgmental disclosure on the back of the package could help reduce that confusion." Congress did not have time to move on the bill before its session ended.

Meanwhile, a National Research Council study, *Genetically Engineered Crops: Past Experience and Future Prospects*, funded in part by the National Academy of Sciences and USDA, is looking at GE effectiveness and safety. ("Farmers, Consumers Challenge Monsanto-Backed GMO Bill Designed to Keep Public in the 'DARK'," *Common Dreams*, by Deirdre Fulton, Dec. 10, 2014; www.commondreams.org/news/2014/12/10/farmers-consumers-challenge-monsanto-backed-gmo-bill-designed-keep-public-dark; "House Holds Hearing on Bill To Block State GE Labeling Laws," *National Sustainable Agriculture Coalition*, Dec. 11, 2014; http://sustainableagriculture.net/blog/pompeo-ge-labeling-hearing/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29)

The expression of transgenes in stacked GE corn (corn engineered to express more than one trait) approved for use in Brazil was significantly reduced about 34 percent compared to the single trait GE corn. This may impact pest control and herbicide tolerance in stacked GE corn plants. The overall expression of the plant's native genes was affected, also. Pathways related to metabolizing energy/carbohydrates and to detoxification were significantly altered, and protein levels in stacked GE corn did not fall within the range of natural variability found in the landrace variety used in this study. These changes may affect the safety of this corn, but the Brazilian regulatory authority did not analyze the protein profile of this corn before approval. Results of this first study to compare the proteomic profile of a stacked GE event with the single parental GE events suggest that **stacking herbicide and insecticide transgenes induces synergistic and antagonistic effects in the proteome (the set of expressed proteins) of such plants**. ("Stacking traits in a GMO is found to cause unexpected synergistic effects," *GM Watch*, Dec. 17, 2013; <http://gmwatch.org/index.php/news/archive/2014/15820-stacking-traits-in-a-gmo-is-found-to-cause-unexpected-synergistic-effects>; Original study: "Effect of stacking insecticidal cry and herbicide tolerance epsps transgenes on transgenic maize proteome," by Sarah Zanon Agapito-Tenzen et al., *BMC Plant Biology* 2014, 14:346, Dec. 10, 2014; <http://www.biomedcentral.com/1471-2229/14/346/abstract>)

Pesticides

Maine Board of Pesticides Control News

Rule Changes Move Toward Legislative Approval

In October the Maine Board of Pesticides Control (BPC) adopted changes to several rules that have been underway for a number of months. Proposed changes to Chapter 22, Standards for Outdoor Application of Pesticides by Powered Equipment in Order to Minimize Off-Target Deposition, and Chapter 28, Notification Provisions for Outdoor Pesticide Applications, are considered major substantive and will go to the legislature for final approval. Changes to Chapter 28, which focus on notification provisions for outdoor pesticide applications, have received a good deal of attention, primarily focused on notification requirements when applications take place on sidewalks and trails. The board ultimately agreed to changes that require public notice of outdoor commercial applications of pesticides to sidewalks and trails via provisions approved in board policy. Board policy, approved at the December meeting, defines sidewalks and trails and appropriate methods of public notification, including posting at kiosks, websites or in publications, and signs as possible methods of notification. The definition of trails used in this policy covers public foot and bicycle trails but not other trails that may be used by the public where the primary purpose is for automobiles or off-road vehicles. This rule change will go to the legislature for final approval.

School IPM Compliance Low

At its October meeting the BPC received an update on activities surrounding Integrated Pest Management (IPM) requirements for schools, which dictate that schools report the name of their IPM coordinator to the BPC and complete initial and comprehensive training within a specified period of time. Overall, compliance with these requirements among schools is very low. These standards were developed to help ensure that pesticide applications at schools are performed and coordinated by individuals who have a high level of information about safety and requirements. The board discussed the low level of compliance among school districts and what it believed was great outreach by the Maine Department of Agriculture, Conservation and Forestry, and suggested that noncompliant schools begin to be assessed penalties.

Variance Requests

Variance requests were approved for Boyle Associates of Gorham and The Lawn Dawg Inc. of Portland. Both variances will allow pesticides to be used within 25 feet of water to control invasive species.

Consent Agreements

The board considered a number of enforcement actions during the fall and early winter. All decisions for consent agreements and potential enforcement actions were unanimously approved.

In October the board discussed options considering enforcement action against Dan Brown, owner of Gravelwood Farm in Blue Hill. A routine retail inspection showed that Brown purchased Gramoxone Inteon herbicide, a restricted use pesticide carrying a “Danger” warning that requires a license for purchase and use. Brown does not have the required restricted use

pesticide applicators license, so this purchase and use violated law. The board proposed a consent agreement with a settlement amount of \$100, which Brown refused to sign. Attending a meeting to state his case, he maintained that he should not face punitive damages because he did not realize Gramoxone was restricted; he suggested that the policy be changed so that violators are given a warning. At the October meeting the board considered sending this case to the Attorney General's office for further action, but instead decided to allow the staff time to continue to try to reach an agreement with Brown. (Brown has received a great deal of press in Maine, including in the spring 2012 issue of The MOF&G, for being sued by the state for selling unlicensed raw milk. His case helped give rise to several local food sovereignty initiatives.)

The board reached a consent agreement with Province Lake Golf Club of Parsonsfield for making unlicensed pesticide applications throughout 2012 and 2013. Since this golf course is an area open to the public, pesticide applications must be performed or supervised by an appropriately licensed individual. A \$400 fine was imposed.

Also in October the board reached a consent agreement with Penobscot Cleaning Services Inc. of Brewer for making unlicensed pesticide applications throughout 2012. This company performs cleaning and mold remediation services, and mold remediation work requires a commercial pesticide applicators license. A \$350 fine was levied.

At its December meeting the board penalized Servicios Sanchez Inc. of East Boston, Massachusetts, \$3,000 for improper pesticide applications made at a two-unit apartment building in Sanford, Maine. This company was hired to eradicate a bedbug infestation. The board became aware of occupants' concerns about the application and discovered egregious violations of law that included use of Malathion inside (where it is not registered for use) and unlicensed pesticide applications. Servicios Sanchez Inc. has notified the board that it no longer intends to do business in Maine.

Mosquito Squad of Southern Maine was fined \$400 for applying pesticides to the wrong property. When the company was hired to apply pesticides to one property, the applicator crossed to the adjacent property during the application. The owner of the inadvertently sprayed property observed that application and notified the board, which verified the improper application.

Petro's Ace Hardware of Auburn is a distributor of general use pesticides. As such, the company must be licensed as a general use pesticide dealer. A board inspector, via a marketplace inspection, determined that this company did not have the appropriate license from 2011 through 2014. At its December meeting the board agreed to a consent agreement in which the company was fined \$200 for these violations. Board chair Deven Morrill, disappointed with what he believed was a small fine given that violations occurred over several years, suggested the staff consider higher punitive amounts for similar violations in the future.

Meeting dates of the Maine Board of Pesticides Control are posted at <http://www.maine.gov/dacf/php/pesticides/meetings.shtml>. The next meetings are scheduled for March 13, April 24 and June 5.

[End of BPC news]

In November, residents of **Ogunquit, Maine**, voted 444 to 297 in favor of an ordinance **banning the use of synthetic pesticides and fertilizers on privately owned lawns and landscapes**. This was the second time voters approved the initiative. In June 2014, they passed a nearly identical ordinance, but because the town did not notify the Maine Board of Pesticides Control (BPC) first, and because the ordinance lacked agricultural exemptions, an amended ordinance was created. The law expands on existing pesticide use restrictions on town-owned property. It helps protect public health and supports the Ogunquit Conservation Commission goal of ensuring that beaches are clean and healthy.

The ordinance, available at http://ogunquitconservation.org/Pesticide_Ordinance.html, generally prohibits use of synthetic chemical pesticides in all “turf, landscape and outdoor pest management activities conducted within the Town of Ogunquit, on both public and private land.” Commercial agriculture is exempted, as are pet treatments, swimming pool supplies, aerosol products, and wood preservatives and sealants. It permits use of synthetic pesticides to control poison ivy, oak and sumac, invasive species, venomous or disease-carrying insects, and where “mandated by state or federal law.”

Jay Feldman of Beyond Pesticides and Katherine Paul of the Organic Consumers Association wrote in the Bangor Daily News, “Of the 30 most commonly used lawn pesticides, 17 are linked to cancer, 18 are endocrine disruptors, 19 are reproductive toxicants, 11 are linked to birth defects, 14 are neurotoxic, 22 cause kidney [or] liver effects and 25 are irritants. The U.S. Geological Survey has linked lawn pesticide use to runoff into waterways.” They said the ordinance is timely given the link between the decline in bee populations and pesticide use, especially neonicotinoid insecticides, which move through plants and occur in pollen, nectar and guttation (drops of water exuded from plants). They recommended organic turf management instead.

The BPC says 24 Maine municipalities have ordinances regulating the use of pesticides, but only Ogunquit bans their use on private property. (“Election Day Rundown on Pesticide Restrictions and GE Labeling: Victories and Setbacks,” Beyond Pesticides, Nov. 6, 2014; www.beyondpesticides.org/dailynewsblog/?p=14431; “Ogunquit leads the way with ordinance banning pesticides,” by Jay Feldman and Katherine Paul, Bangor Daily News, Nov. 16, 2014; <http://bangordailynews.com/2014/11/16/opinion/contributors/ogunquit-leads-the-way-with-ordinance-banning-pesticides/>; “Voters back a ban on the use of synthetic pesticides, herbicides and fertilizers,” Portland Press Herald, Nov. 4, 2014; www.pressherald.com/2014/11/04/ogunquit/)

Warren Anderson, head of Union Carbide when a 1984 poisonous gas leak at the company’s insecticide-producing plant in **Bhopal**, India, killed thousands and injured more than half a million, **died** on Sept. 29 at age 92. Anderson never returned to India to face trial, despite requests for his extradition by the Indian government. Union Carbide paid \$470 million to the Indian government to settle litigation in the matter. In November 2014, Dow Chemical, which acquired Union Carbide in 2001, failed to comply with an Indian court

summons over the Bhopal disaster. The summons related to Dow’s responsibility toward victims and survivors of the catastrophe. Many Bhopal residents continue to suffer serious health problems related to the event, and pollution from the abandoned site continues to threaten people’s health in the area. (“Dow Chemical a no-show in court hearing over Bhopal disaster,” by P. Naveen, The Times of India, Nov. 13, 2014; <http://timesofindia.indiatimes.com/india/Dow-Chemical-a-no-show-in-court-hearing-over-Bhopal-disaster/articleshow/45132288.cms>; “Warren Anderson, 92, Dies; Faced India Plant Disaster,” by Douglas Martin, The New York Times, Oct. 30, 2014; www.nytimes.com/2014/10/31/business/w-m-anderson-92-dies-led-union-carbide-in-80s-.html?_r=0)

The FDA does not perform enough pesticide residue tests on imported or domestic foods to say whether the American food supply is safe, according a Government Accountability Office report. In 2012, FDA tested less than one-tenth of 1 percent of all imported produce, and less than 1 percent of domestic produce is tested, so the agency’s testing program is not statistically valid. The report also critiques FDA and USDA’s decision not to test for many commonly-used pesticides, including glyphosate, and for failing to disclose this limitation in their annual reports. (“Pesticide levels on food unknown due to poor government testing,” by Kimberly Kindy, The Washington Post, Nov. 7, 2014; www.washingtonpost.com/blogs/federal-eye/wp/2014/11/07/pesticide-residue-levels-on-food-is-unknown-due-to-poor-government-testing/; “FDA and USDA Should Strengthen Pesticide Residue Monitoring Programs and Further Disclose Monitoring Limitations,” GAO-15-38, Oct. 7, 2014; www.gao.gov/products/GAO-15-38)

More than half of food tested by USDA last year for pesticide residues showed detectable levels of pesticides – almost all within “tolerance levels” the government considers safe, according to a USDA report. The USDA did not test for glyphosate residues, although glyphosate (the active ingredient in Roundup) is the most used herbicide in the world. Foods tested included fresh and processed produce, infant formula, butter and salmon. (“Pesticides in your food? Don't worry, says USDA,” Carey Gillam, St. Louis Post-Dispatch, Dec. 19, 2014; www.stltoday.com/business/local/pesticides-in-your-food-don-t-worry-says-usda/article_934aebbd-ccc7-509a-86b1-9fca959cfac2.html)

Glyphosate use in the United States correlates well with sleep disorders associated with autism, dementias and other **neurological disorders** – possibly through its toxic effects on the pineal gland. A recent paper by Stephanie Seneff et al. proposes that impaired sulfate supply to the brain mediates the damage induced by the synergistic action of aluminum and glyphosate on the pineal gland and related midbrain nuclei. Glyphosate disrupts gut bacteria, leading to an overgrowth of Clostridium difficile, which produces p-cresol, which is linked to autism. Also, p-Cresol enhances aluminum uptake, and aluminum and glyphosate impair the heme compound, leading to low oxygen in the body and to anemia. Glyphosate itself combines with aluminum, enabling the metal to bypass the gut barrier, and this, too, contributes to anemia-induced hypoxia, which promotes neurotoxicity and damages the pineal gland. Glyphosate and aluminum can also disrupt melatonin metabolism. (“Aluminum and Glyphosate Can Synergistically Induce Pineal Gland Pathology: Connection to Gut Dysbiosis and Neurological Disease,” By Stephanie Seneff, Nancy Swanson and Chen Li, Agricultural Sciences, Jan. 2015; www.scirp.org/journal/PaperInformation.aspx?paperID=53106&#.VLkHLWTF_z1)

Glyphosate residues have been found in Pediasure Enteral Nutritional Drink. Microbe Inotech lab detected glyphosate in 6 out of 20 Pediasure samples at concentrations higher than those shown to destroy gut bacteria in chickens or affect livers, kidneys and sex hormones in rats. A Moms Across America supporter sent the samples to the lab; she says the same brand of liquid is used in feeding tubes for babies and children with cancer at the pediatric rehabilitation hospital where she worked. The Pediasure Enteral Nutritional Drink tested contains corn syrup, soy and sugar. (“Glyphosate Found in Feeding Tube Liquid,” by Zen Honeycutt, Moms Across America, Jan. 5, 2015; www.momsacrossamerica.com/blog)

Monsanto Co. has received final USDA approval for GE cotton and soy that tolerate both glyphosate and dicamba herbicides, dubbed “Roundup Ready Xtend crop system.” The second herbicide tolerance was added to counter weeds that have become resistant to glyphosate (in Roundup) due to overuse of that herbicide with GE crops. Use of dicamba has been widely opposed by consumer and environmental groups, and by produce growers who fear that dicamba will drift onto and damage their crops. As we went to press, the EPA still had to give final approval for the herbicide product to be used with the crops. (“USDA approves Monsanto’s new GMO soybeans, cotton,” by Carey Gillam, Bangor Daily News, Jan. 15, 2015; <https://bangordailynews.com/2015/01/15/news/nation/usda-approves-monsantos-new-gmo-soybeans-cotton/>)

To detect chronic, **sublethal effects of glyphosate** (the active ingredient in Roundup herbicide), adult earthworms (*Eisenia fetida*) were randomly assigned to three glyphosate treatments: control (no glyphosate), regular dose for perennial weeds, and double dose. Six earthworms were placed in each pot. Two random pots were taken weekly from each treatment, and the number of adults, individual weight, number of cocoons and presence and number of young earthworms were recorded. Modeling showed that the control population had a positive growth rate, but both glyphosate treatments resulted in negative growth rates, suggesting that under sublethal effects, non-target populations risk local extinction. (“Glyphosate Sublethal Effects on the Population Dynamics of the Earthworm *Eisenia fetida* (Savigny, 1826),” by Marina Santadino et al., *Water, Air, & Soil Pollution*, Nov. 12, 2014; <http://link.springer.com/article/10.1007/s11270-014-2207-3>)

More than 400 consumer products contain nanosilver – materials that are billionths of a meter in size and can kill microorganisms. The EPA considers nanosilver a pesticide and requires products that contain or are treated with it to be registered and approved for use, yet it has not reviewed or approved most nanosilver products on the market. In December, the Center for Food Safety, the Center for Environmental Health, Clean Production Action, the Institute for Agriculture and Trade Policy and other nonprofits sued the EPA for failing to respond to their 2008 petition asking the agency to regulate all products containing nanosilver as pesticides. (“Nanosilver in Your Soup? EPA Sued For Failing to Regulate Tiny Pesticides,” by Elizabeth Grossman, *Civil Eats*, Dec. 30, 2014; <http://civileats.com/2014/12/30/nanosilver-in-your-soup-epa-sued-for-failing-to-regulate-tiny-pesticides/>)

Chlorpyrifos, an organophosphate insecticide commonly used on corn and other U.S. crops, **poses health risks to workers who mix and apply it and can contaminate drinking water**, according to a recent EPA report. “We are concerned about some workers who mix, load and apply chlorpyrifos to agricultural and other non-residential sites,” said the EPA. “We are also concerned about workers who work around areas that are treated with chlorpyrifos, even if they are not using chlorpyrifos products as part of their jobs.” Chlorpyrifos is a neurotoxin that has been linked to birth defects, low birth weights and impaired brain development problems, and endocrine disruption. (“EPA report finds pesticide poses risk to workers, spurs calls for ban,” by Brian Bienkowski, Environmental Health News, Jan. 8, 2015; www.environmentalhealthnews.org/ehs/news/2015/jan/epa-report-finds-pesticide-poses-risks-to-workers-spurs-calls-for-bans)

Summer 2015

The Good News

A team of international scientists found that assigning a dollar value to the benefits nature provides agriculture improves the bottom line for farmers while protecting the environment. The study confirms that **organic farming systems do a better job of capitalizing on nature’s services**. The scientists quantified the economic value of biological control of pests and release of nitrogen from soil organic matter into plant-accessible forms in 10 organic and 10 conventional fields on New Zealand grain farms. The values of the two ecosystem services averaged \$146 per acre per year for the organic fields and \$64 for conventional fields. Combining the market value of the crops and the non-market value of the two ecosystem services, organic systems averaged \$1,165 per acre per year; conventional, \$826. Also, the value of the two ecosystem services on the organic farms exceeded the combined cost of traditional pesticide and fertilizer inputs on the conventional farms. (“Study puts a price on the help that nature provides agriculture,” by Sylvia Kantor, Washington State University News, April 14, 2015; <https://news.wsu.edu/2015/04/14/study-puts-a-price-on-the-help-that-nature-provides-agriculture/#.VS61PmRViko>; original paper: Sandhu et al. (2015), Significance and value of non-traded ecosystem services on farmland. PeerJ 3:e762; DOI 10.7717/peerj.762)

The **Maine legislature** was the first in the nation to pay tribute to soils during the United Nations International Year of Soils when it **adopted the Joint Resolution Recognizing the Importance of Soils to Maine’s Future Prosperity** (HP-584). The resolution sheds light on all the ways soils impact our lives – e.g., clean water, abundant forests, productive agriculture and a way of life rooted in natural resources and the outdoors. Representative Joan Welsh (D-Rockport) sponsored and introduced the resolution, which was co-sponsored in the Senate by Tom Saviello (R-Franklin). Ivan Fernandez, professor of soil science at the University of Maine, has highlighted the role of Maine’s soils in combating and adapting to climate change. Maine’s forest soils, for example, have approximately twice as much carbon as the trees themselves. Healthy soils can act as a carbon sink, facilitating productive forestry and farming. Degraded soils, on the other hand, release carbon into the atmosphere and lead to decreased productivity over time. Healthy soils can also help mitigate the impacts of extreme storm events by efficiently storing and filtering

water. (“Maine is the first state to pay tribute to soils during the International Year of Soils,” by Natalie Lounsbury, No-till vegetables (blog), March 12, 2015; <http://notillveggies.org/2015/03/12/maine-is-the-first-state-to-pay-tribute-to-soils-during-the-international-year-of-soils/>)

The UN Food and Agriculture Organization says the world on average has just 60 more years of growing crops, given the rate at which soil is being degraded. But UK researchers have shown that **soil in allotments** – small plots in towns and cities that people cultivate by hand – **contains one-third more organic carbon than agricultural soil and 25 percent more nitrogen and produces four to 11 times more food** per unit area than do farmers. (“We’re treating soil like dirt. It’s a fatal mistake, as our lives depend on it,” by George Monbiot, The Guardian, March 25, 2015; <http://www.theguardian.com/commentisfree/2015/mar/25/treating-soil-like-dirt-fatal-mistake-human-life>; Referenced article: “Urban cultivation in allotments maintains soil qualities adversely affected by conventional agriculture,” by Jill L. Edmondson et al., Journal of Applied Ecology, April 24, 2014; <http://onlinelibrary.wiley.com/doi/10.1111/1365-2664.12254/full>)

Danish and Colombian researchers tested whether improved **weed suppression by corn** can be achieved by increased crop density and spatial uniformity. Three varieties of corn were sown at three densities (5, 7 and 10.5 seeds per square meter) and in a grid or row pattern under very high weed pressure from *Brachiaria brizantha* (a tropical grass) in 2012 and 2013. At the highest density in the grid pattern, average weed biomass was reduced by 72 percent (2012) and 58 percent (2013), and average grain yield increased by 48 percent and 44 percent, compared with the standard practice of planting at medium density in rows. A significant density × variety interaction affected weed suppression. A variety with the lowest variation in the angle of insertion of the oldest living leaf at harvest (leaf 6) suppressed weeds best at high density. (“Effects of density and sowing pattern on weed suppression and grain yield in three varieties of maize under high weed pressure,” by C. Marín and J. Weiner, Weed Research, Oct. 2014; <http://onlinelibrary.wiley.com/doi/10.1111/wre.12101/abstract>)

Due to the increased numbers of Maine’s quality restaurants, community supported agriculture farms, women-owned farms and artisan food businesses, Harvard researchers are analyzing Maine’s food economy in the **Maine Food Cluster Project**. A cluster is a particularly powerful segment of an economy. (“Harvard researchers dig into Maine’s growing food economy,” by Meredith Goad, Portland Press Herald, Jan. 25, 2015; www.pressherald.com/2015/01/25/harvard-researchers-dig-into-maines-growing-food-economy/)

The Cornell Small Farms Program has announced that **insurance policies are now available to outdoor forest mushroom farmers** in temperate regions of the United States. Growers interested in cultivation have sometimes found that insurance companies would deny or drop coverage upon learning the farm was planning on mushroom cultivation, mostly over fears of the liability incurred with wrongful identification of a mushroom species or with the sanitary conditions associated with cultivation. Steve Gabriel, agroforestry specialist for Cornell Small Farms, and Lindsay Wickham, area field supervisor for New York Farm Bureau, discussed the issue with Michael Reisinger of Nationwide Insurance. They learned that insurance carriers were unfamiliar with the crop, and once informed of the process could see that forest mushroom

cultivation is no riskier than any other produce crop. Further, any concerns about incorrect identification of a species can be alleviated easily with a simple test called spore printing. (“Mushroom growers able to get insured in 2015,” Cornell University, April 15, 2015; <http://blogs.cornell.edu/mushrooms/2015/04/15/mushroom-growers-able-to-get-insured-in-2015/>)

Sales of organic food and non-food products in 2014 in the United States totaled \$39.1 billion, up 11.3 percent from 2013, according to the latest survey on the organic industry from the Organic Trade Association (OTA). Organic food sales in 2014, at \$35.9 billion, posted an 11 percent rise, while organic non-food sales, at \$3.2 billion, jumped almost 14 percent for the biggest annual increase in six years.

The majority of American households in all regions of the country now make organic a part of their supermarket and retail purchases – from 68 to almost 80 percent of households in southern states, to nearly 90 percent on the West Coast and in New England, according to new market research released Wednesday at OTA’s Annual Policy Conference. Organic sales are nearing a 5 percent share of the total food market and have consistently outshone the 3 percent growth pace for the total food industry.

Organic fruits and vegetables, with \$13 billion in sales in 2014, were up 12 percent from the previous year and made up more than 36 percent of all organic food sales. Of all the produce now sold in the United States, 12 percent is organic and has more than doubled over the past 10 years. Organic dairy posted an almost 11 percent jump in sales in 2014 to \$5.46 billion. Sales of organic non-food products, at 8 percent of the total organic market, posted the biggest percentage gain in six years, with sales of organic fiber and organic personal care products the stand-out categories. (“U.S. consumers across the country devour record amount of organic in 2014 Organic Trade Assoc., April 2015; <https://ota.com/news/press-releases/18061>)

The **USDA says the organic industry continues to show remarkable growth** domestically and globally, with 19,474 certified organic operations in the United States and a total of 27,814 certified organic operations around the world. According to data released by the Agricultural Marketing Service National Organic Program, the number of domestic certified organic operations increased by more than 5 percent over the last year. Since the count began in 2002, the number of domestic organic operations has increased by more than 250 percent. The certified operations list is available at apps.ams.usda.gov/nop. (“USDA Announces Record Number of Organic Producers in U.S.,” USDA, April 15, 2015; www.usda.gov/wps/portal/usda/usdahome?contentid=2015/04/0097.xml&contentidonly=true)

In January the USDA Economic Research Service (ERS) released the **Trends in U.S. Local and Regional Food Systems: A Report to Congress** – an overview and analysis of the growth, changes and challenges to local and regional food systems. The report also summarized current literature on the connections among local and regional food systems and consumers, the environment and the economy, and policies and programs supporting these systems.

The report defines “local” based on such direct marketing channels as farmers’ markets, roadside stands and u-pick, and such intermediated marketing channels as restaurants, institutions or regional food aggregators.

The report says farmers’ markets have grown by 180 percent since 2006, regional food hubs by 288 percent since 2006-2007, and school district participation in farm to school programs by 430 percent since 2006.

In 2012, 7.8 percent of U.S. farms sold food through local food marketing channels, with 70 percent selling solely through direct-to-consumer (DTC) channels. The other 30 percent combined DTC and intermediated channels or used only intermediated channels. DTC sales and farms with intermediated sales in 2012 were most heavily concentrated in counties in the Northeast, Mid-Atlantic and the West Coast.

The report says the number of farms with DTC sales increased by 17 percent and DTC sales increased by 32 percent between 2002 and 2007; between 2007 and 2012, the number of farms with DTC sales increased by 5.5 percent, but with no change in total DTC sales. The discrepancy may mean that DTC outlets are competing for the same consumer dollar as increasingly popular farmers’ markets, while consumer interest may be plateauing, and/or growing consumer demand for local food may have been met by retailers or food hubs.

The ERS estimates \$6.1 billion in local food sales. Local food farms with less than \$75,000 in gross cash farm income (GCFI) accounted for 85 percent of all local food farms but generated only 13 percent of all local food sales, while the 5 percent of local food farms that have \$350,000 or more in GCFI generated 67 percent of the value of total local food sales. Local food farms of all sales classes marketing at least some food through intermediated marketing channels appear to earn disproportionately larger shares of local food sales.

Produce (vegetable, fruit, and nut) farms accounted for 51 percent of all local food sales and 29 percent of all local food farms, while farms selling livestock and their products represent nearly 50 percent of all local food farms.

Produce farms using DTC sales exclusively generated 45 percent of the \$1.2 billion in exclusive DTC food sales. Produce farms using DTC and intermediated marketing channels generated 64 percent of the \$1.6 billion in total sales by local food farmers using both marketing channels. And produce farms using exclusively intermediated marketing channels earned 46 percent of the \$3.3 billion in sales among farms solely using this channel. Among all U.S. produce farms, 34 percent sold food through local food marketing channels.

In 2012, livestock farms reported \$648 million in earnings from DTC sales, nearly half the value of all DTC sales. While the number of livestock farms with DTC sales increased by 1,349 (1.2 percent) between the 2007 and 2012 Census, the number of total U.S. livestock farms declined by 269,833 (18.6 percent) over the same period. The report cites high average costs of compliance with food safety regulations for small meat processors and the dwindling number of small, federally inspected meat processing plants as two main challenges for producers marketing meat locally.

More farmers (including beginning farmers) using DTC marketing reported positive sales in consecutive censuses than those who marketed through traditional channels, but DTC farms expand at a slower rate, possibly because of labor required. (“Got local food? A new report highlights trends,” National Sustainable Agriculture Coalition, Feb. 5, 2015; http://sustainableagriculture.net/blog/local-food-trends-report/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29)

A USDA report shows that **New England farm cash receipts for 2013 rose 4 percent** over 2012. Vermont, the highest, had \$836 million in receipts, with milk the top earner; and Maine had \$740 million, with potatoes leading. The other New England states trailed. (“New England farm receipts up; Vermont, Maine lead,” AP, Concord Monitor, Feb. 21, 2015; http://hosted2.ap.org/NHCON/c26bcf5af6bd4fda84f3e73888f72aef/Article_2015-02-21-NH--Farm%20Cash%20Receipts-2013/id-4c75f3e5cd7042d7a4faa774bfbe3803)

According to the Vermont-based Strolling of the Heifers 2015 Locavore Index, which shows how states support their local food movements, national and state policies that encourage local food programs are having measurable results. Data on farmers' markets, CSAs, farm-to-school programs, food hubs and direct sales show that **Vermont leads the the country in locavore sales**, with more farmers' markets, CSAs and food hubs per capita than any other state. Vermont farmers received \$43.78 per capita through direct sales. Maine ranked second in the index; its farmers took in \$18.64 per capita. (“Locavore Index: Vermont leads in local food,” Brattleboro Reformer, April 6, 2015; www.reformer.com/news/ci_27860929/locavore-index-vermont-leads-local-food; The index is posted at www.strollingoftheheifers.com.)

The **USDA** has invested in agricultural research since the late 1800s but only began funding organic-specific projects in 2002. Since then it **has invested more than \$142 million into 188 organic farming studies**, successfully targeting issues of vital concern to organic farmers, according to a preliminary analysis conducted by the Organic Farming Research Foundation (OFRF). Organic research has emphasized soil nutrient management, soil quality and management of weeds, insect pests and diseases – issues identified as top priorities in multiple surveys of organic and sustainable farmers. The agency has also made significant research investments in crop breeding for organic systems, another top issue for farmers.

However research funding for livestock issues has lagged, and a number of important organic crops, including rice, cotton, tree nuts, medicinal herbs, cut flowers and peanuts, were either under-represented or entirely overlooked.

The analysis also found that newly-emerging issues were addressed, including pollinator conservation, food safety and the increasing need for organic-friendly seed sources.

Some of the earliest projects appear to have produced substantial practical outcomes with modest budgets, while some of the most expensive research lagged in farmer-ready results. (“USDA

Organic Research Tackles Vital Issues, Report Says,” Organic Farming Research Center, Feb. 18, 2015;

www.ofrf.org/news/usda-organic-research-tackles-vital-issues-report-says)

Small farmers hold up to 75 percent of the seeds needed to produce the world's diverse food crops, and growers with farms smaller than 7 acres preserve diversity through networks of seed and knowledge exchanges, says Penn State geography professor Karl Zimmerer, who studied the issue in 11 countries in Asia, Africa and Latin America. Maintaining this diversity is critical, as about 75 percent of the world's plant genetic diversity has been lost since the 1900s, and about 75 percent of the world's food is generated from only 12 plants and five animal species. (“Small farmers hold the key to seed diversity: researchers,” by Chris Arsenault, Reuters, Feb. 16, 2015; www.reuters.com/article/2015/02/16/us-food-aid-climate-idUSKBN0LK1PO20150216)

The government of El Salvador can buy **better seed at lower prices from Salvadoran farmers than from multinational corporations such as Monsanto and Dupont**. Local corn seed has consistently outperformed the transnational product, says EcoViva. The Salvadoran Ministry of Agriculture’s Family Agriculture Program provides seed to Salvadoran subsistence farmers. Last year, more than 560,000 Salvadoran family farmers planted corn and bean seed as part of the government’s efforts to revitalize small scale agriculture and ensure food security in the rural marketplace. In 2015, rural cooperatives and national associations will produce nearly 50 percent of the government’s corn seed supply, with 8 percent being native (indigenous, heirloom) seed. Producing seed locally provides more than 4,000 local jobs, adds more than \$25 million to local economies and saves the Salvadoran government hundreds of thousands of dollars. (“Farmer Cooperatives, Not Monsanto, Supply El Salvador With Seeds,” by Nathan Weller, EcoViva, Feb. 27, 2015; <http://ecoviva.org/farmer-cooperatives-not-monsanto-supply-el-salvador-with-seed/>)

Delegates representing diverse organizations and international movements of small-scale food producers and consumers, including peasants, indigenous peoples and communities (including hunter and gatherers), family farmers, rural workers, herders and pastoralists, fisherfolk and urban people, produce some 70 percent of the food consumed by humanity. They are the primary global investors in agriculture, as well as the primary providers of jobs and livelihoods in the world, said delegates to the 2015 International Forum for Agroecology. The forum seeks **to challenge and transform structures of power in society so that the people who feed the world maintain control of seeds, biodiversity, land and territories, waters, knowledge, culture and the commons**. Understanding of agroecology as a key element in the construction of food sovereignty is critical, said the delegates, as is developing strategies to promote agroecology and defend it from co-optation. (“Declaration of the International Forum for Agroecology,” Feb. 27, 2015; www.foodsovereignty.org/forum-agroecology-nyeleni-2015/)

California Certified Organic Farmers (CCOF) now offers a **“Non-GMO & More” seal** for its certified members. The seal underscores the prohibition of ingredients from genetically engineered crops in organic and recognizes the many contributions of organic to a healthier world. Organic is more than non-GMO, says CCOF, because organic production has many other benefits to consumers, such as enhancing soil health and biodiversity, supporting animal welfare, and providing traceability of products produced without synthetic fertilizers or persistent

pesticides. (“New CCOF Certification Seal Highlights Non-GMO Status of Organic Food,” California Certified Organic Farmers press release, March 2, 2015; www.ccof.org/press/new-ccof-certification-seal-highlights-non-gmo-status-organic-food)

The Maine Department of Agriculture, Conservation and Forestry’s (DACF) Division of Quality Assurance and Regulations reports **increased interest in licensing dairy farms**. Currently, about 134 Maine farms are licensed to sell dairy products. The number of operations producing artisanal cheese and raw milk products has exploded, says the department.

For a \$25 annual license fee, the DACF provides an initial consult with a dairy inspector offering facility and set up advice; a packet of information; monthly analysis and reports of all products made; multiple facility inspections every year; equipment inspections for those who heat-treat or pasteurize; water testing; free lab testing to identify sanitation problems or quality issues (in addition to monthly product testing); access to Maine Cooperative Extension specialists and state veterinarians for additional assistance; and unlimited phone assistance from dairy inspectors.

The department reports that in 2006, 15 licensed facilities offered raw milk for sale. Today Maine has 54 licensed raw milk businesses. In Maine, consumers may purchase “not pasteurized milk” and cheeses from a farm, a farmers’ market or a retail establishment. The number of cheese businesses has tripled to 73 in the past six years. According to a University of Vermont study, Maine is the fastest growing artisan cheese producing state in the country, trailing only New York in number of licensed artisan cheese makers. Maine dairy goat farms increased from 17 in 2008 to 46 in 2014. (“Maine agricultural officials report record interest in obtaining licenses to sell dairy products,” Maine Department of Agriculture, Conservation and Forestry press release, March 4, 2015; <http://www.maine.gov/dacf>)

The University of Vermont Cooperative Extension Service is testing remote thermostat technology on nine farms so that **growers can use their cell phones to check cold storage conditions for their vegetables**. The project has already reduced by up to 50 percent the amount of produce that needs to be culled, adding an average of \$10,000 to each farm’s revenue. The university’s remote sensing device costs about \$500, with an estimated \$500 to install. (“Vermont farms monitor storage conditions by cellphone,” The Barre Montpelier Times Argus, March 8, 2015; www.timesargus.com/article/20150308/NEWS01/703089949)

Research by Montana State and North Dakota State University faculty shows that **sheep rather than farming equipment can terminate cover crops**, possibly enabling farmers who grow organic crops to save money, reduce tillage, manage weeds and pests, and reduce the risk of soil erosion. Using grazing during the two-year project reduced tillage by more than half, and the integrated cropping system using sheep was economically feasible. Lambs were sold for processing after grazing cover crops. (“MSU organic farming study finds diverse benefits using sheep,” by Jenny Lavey, Montana State University, March 18, 2015; www.montana.edu/news/15433/msu-organic-farming-study-finds-diverse-benefits-using-sheep)

Amanda Beal, a former MOFGA president, is the new Policy and Research Fellow at Maine Farmland Trust (MFT). A sustainable food policy advocate and consultant who grew up on a Maine dairy farm, Beal is widely respected within Maine’s agricultural community. She

previously served as president of Cultivating Community and now chairs the Eat Local Foods Coalition, serves on the boards of the Northwest Atlantic Marine Alliance and the Friends of the Presumpscot River and has been a force behind the early work of the Maine Food Strategy. Beal also co-authored A New England Food Vision, a 2014 report about how New England could grow up to two-thirds of its own food by 2060. Beal is completing her Ph.D. in the Natural Resources and Environmental Studies program at the University of New Hampshire. Her dissertation focuses on how to reclaim former farmland in ways that prevent environmental degradation. She received her M.S. from the agriculture, food and environment program at Tufts Friedman School of Nutrition Science and Policy. On most weekends Beal continues to help at her father's Rocky Ridge Organic Farm, a MOFGA-certified organic dairy farm in Litchfield. ("Maine Farmland Trust establishes new program, announces fellow," Maine Farmland Trust, March 2, 2015; www.maineFarmlandtrust.org/maine-farmland-trust-establishes-new-program-announces-fellow/)

Maine Farmland Trust will receive a \$249,816 federal Food Insecurity Nutrition Incentive Grant to increase access to produce for food insecure Mainers while also benefiting local small and mid-sized farmers. Also as part of a \$3.77 million grant with national nonprofit Wholesome Wave, MFT will work with other Maine partners, including MOFGA, to implement incentive programs at markets throughout Maine. ("Food grant will help farmers and hungry people," Sun Journal, April 3, 2015; www.sunjournal.com/news/weeklies/0001/11/30/food-grant-will-help-farmers-and-hungry-people/1678840)

Antibiotics

A new study reveals the **about 63,000 tons of antibiotics were used worldwide on cows, chickens and pigs in 2010** – about twice the amount prescribed for people. Excess use of antibiotics can contribute to emergence of drug-resistant bacteria. Humans' demand for animal protein is rising globally, and modern [non-organic] production practices (large-scale, intensive operations) are associated with regular use of antimicrobials. Antibiotic use is projected to increase by 67 percent by 2030. ("Global trends in antimicrobial use in food animals," by Thomas P. Van Boeckel et al., Proceedings of the National Academy of Sciences, Feb. 28, 2015; <http://www.pnas.org/content/early/2015/03/18/1503141112.abstract>)

Airborne particulate matter from U.S. cattle yards contains antibiotics, bacteria and antibiotic-resistant DNA and may be contributing to the emerging global health problem of antibiotic-resistant bacteria. Texas Tech University researchers collected airborne particulate matter for six months from 10 commercial cattle yards within 200 miles of Lubbock, Texas, and found significant numbers of samples with antibiotics, bacteria, and microbes with antibiotic-resistant genes. ("Antibiotic-Resistant Bacteria From American Cattle Become Airborne, But Is It Life-Threatening?" by Susan Scutti, Medical Daily, March 30, 2015; www.medicaldaily.com/antibiotic-resistant-bacteria-american-cattle-become-airborne-it-life-threatening-327472?rel=most_read3; Source: "Antibiotics, Bacteria, and Antibiotic Resistance Genes: Aerial Transport from Cattle Feed Yards via Particulate Matter," by McEachran et al., Environmental Health Perspectives, 2015)

Bees

Mycologist Paul Stamets, who owns Fungi Perfecti in Shelton, Washington, noticed that honeybees feed on mushroom mycelium growing in wood chips in his garden. He then showed that polypore mushrooms contain substances that counter some viruses in humans, break down pesticides and boost bees' immune systems. Now Stamets and Washington State University entomologist Steve Sheppard have found that **extracts from some mushrooms growing on Douglas fir, birch and willow trees significantly reduce the virus load in honeybees** and that treated honeybees live longer. They are now studying the *Metarhizium anisopliae* fungus, which can kill *Varroa* mites without harming bees. Potential delivery methods include incorporating fungal mycelium into compressed sawdust hive panels and placing mycelium-containing cardboard in hives. ("Can mushrooms save the honeybee?," by Sylvia Kantor, Crosscut, Feb. 16, 2015; <http://crosscut.com/2015/02/can-mushrooms-save-honeybee/>)

Researchers have found **the rate at which a bee colony collapses seems to be related to a change in younger workers' foraging behavior:** They leave the hive to seek food early, when they are inexperienced, and are more likely to die prematurely than workers that begin foraging later in life. Early foraging may be an adaptation to the reduced number of older foraging bees, speculate the researchers. One symptom of Colony Collapse Disorder is disappearance of worker bees. ("Bees in danger: Epidemic of colony collapses is linked to stressed out honeybees," by Steve Connor, The Independent, Feb. 11, 2015; www.independent.co.uk/environment/bees-in-danger-epidemic-of-colony-collapses-is-linked-to-stressed-out-honeybees-10034491.html)

In February, the **Environmental Protection Agency**, without allowing public comment, **granted Florida citrus growers a 2 1/2-year emergency exemption to use the bee-killing pesticide clothianidin** to control Asian citrus psyllid, a pest that causes "citrus greening," a devastating citrus plant disease. Clothianidin, not currently registered for use on citrus, is in a class of neurotoxic, systemic insecticides called neonicotinoids, which have been implicated in global honey bee declines.

"EPA needs to assist in stopping the deadly use of pesticides that harm bees, butterflies, and birds with sustainable practices, rather than imperil pollinators with its decisions," said Jay Feldman, executive director of Beyond Pesticides. He continued, "We understand the immediate chemical needs of chemical-intensive agriculture for increasingly toxic and persistent chemicals, but urge EPA to help stop the treadmill, lest it allow irreversible harm to the environment, biodiversity, and human health."

Beyond Pesticides is urging EPA to require that growers adopt a management plan in order to apply clothianidin. "Ultimately, EPA should be requiring growers to adopt integrated organic systems to manage pests, as a part of an emergency permit," said Feldman. According to the University of Florida, there are approximately 6,000 acres of certified organic citrus in Florida on which neonicotinoid pesticides, including clothianidin, are not permitted. ("As EPA Approves Emergency Use of Bee-Killing Pesticide for Florida Citrus, Group Urges Heightened Efforts to Stop Toxic Pesticide Dependency, by Nichelle Harriott and Jay Feldman, Beyond Pesticides press release, Feb. 25, 2015)

Research at the Universities of St. Andrews and Dundee confirms that **low levels of neonicotinoid insecticides** accepted to exist in agriculture and found in the nectar and pollen of plants are sufficient to **impair bumblebees' brain cells and performance by bee colonies**. Very low levels of neonicotinoids caused bumblebee colonies to have an estimated 55 percent reduction in live bee numbers, a 71 percent reduction in healthy brood cells and a 57 percent reduction in total bee mass of a nest. The researchers suggest that neonicotinoids no longer be used on any bee-friendly garden plants or on land that is or will be used by crops visited by bees or other insect pollinators. ("Bee brains," University of St. Andrews, Feb. 4, 2015; <http://www.st-andrews.ac.uk/news/archive/2015/title,254117,en.php>)

Two studies published in Nature add to the research showing that **neonicotinoid insecticides harm bees**. Researchers at Newcastle University found that honeybees and bumblebees offered a choice of sugar water or a sugar solution containing very low doses of neonics drank more from the latter – even though neonics impair bees' motor function and ability to forage and collect food. The bees may be responding to the "buzz" from the nicotine-related pesticides, say the researchers. Another study, by Swedish researchers, found that oilseed rape grown from neonic-coated seeds reduced wild bee density, solitary bee nesting and bumblebee colony growth. ("Bees may get hooked on nicotine-linked pesticides," by Ben Hirschler, Reuters, April 22; www.reuters.com/article/2015/04/22/us-environment-bees-pesticides-idUSKBN0ND24220150422)

In April, the **EPA** announced that it "**will likely not be in a position to approve most applications for new uses of these chemicals [neonicotinoids]** until new bee data have been submitted and pollinator risk assessments are complete." The Agency "must complete its new pollinator risk assessments, which are based, in part, on the new data, before it will likely be able to make regulatory decisions on imidacloprid, clothianidin, thiamethoxam, and dinotefuran that would expand the current uses of these pesticides." (April 2015 Letter to Registrants Announcing New Process for Handling New Registrations of Neonicotinoids, EPA, April 2, 2015; www2.epa.gov/pollinator-protection/april-2015-letter-registrants-announcing-new-process-handling-new)

Food Additives

When researchers at Georgia State University added the **emulsifiers** carboxymethylcellulose and polysorbate-80 (common in processed Western foods) to diets of mice, the **makeup of bacteria in the colon was altered** and the mice became obese and developed such metabolic problems as glucose intolerance. Strains of mice prone to inflammatory gut diseases had more, and more severe, inflammatory bowel disease. Affected mice had less diverse bacteria in their colons, and bacteria were closer to cells lining the gut. Researchers think emulsifiers may break down the mucus lining of the gut, which otherwise keeps bacteria from contacting gut cells and causing inflammation. The FDA classifies emulsifiers as "generally regarded as safe" due to their apparent lack of carcinogenicity or other toxicity. The researchers recommend eating less processed food to avoid emulsifiers. ("Food preservatives linked to obesity and gut disease," by Sara Reardon, Nature, Feb. 25, 2015; www.nature.com/news/food-preservatives-linked-to-obesity-and-gut-disease-1.16984)

Food Waste

Reducing consumer food waste could save \$120 to \$300 billion U.S. per year by 2030 according to a report by The Waste & Resources Action Programme (WRAP) for the Global

Commission on the Economy and Climate. Achieving this would require a 20 to 50 percent reduction in consumer food waste. One-third of all food produced in the world – worth more than \$400 billion per year – is wasted. Reducing food waste can help tackle climate change, as 7 percent of all global greenhouse gas emissions are due to food waste. Reducing food waste may enable an increasing population as well as the food insecure to be fed from the same amount of land as currently used, says the report. Changes such as lowering the average temperatures of refrigerators or designing better packaging, can make a big difference in preventing spoilage. About 25 percent of food waste in the developing world could be eliminated with better refrigeration equipment.

WRAP's Love Food Hate Waste consumer program, which advises consumers on how to waste less and save more, helped British householders reduce avoidable food waste by 21 percent, saving a total of 13 billion pounds, between 2007 and 2012. ("Reducing food waste could save the global economy \$300 billion a year," The Waste & Resources Action Program, Feb. 26, 2015; <http://www.wrap.org.uk/content/reducing-food-waste-could-save-global-economy-300-billion-year>)

Lawns

While lawns do remove some carbon dioxide from the atmosphere, the energy used to mow, fertilize and water lawns means they produce more greenhouse gases than they remove. Dr. Chuanhui Gu and coworkers at Appalachian State University found that a hectare of lawn in Nashville, Tennessee, produced greenhouse gases equivalent to 697 to 2,443 kg of carbon dioxide per year. **Urban turfgrass systems contribute about two-thirds as much C emissions as agricultural fields** in the same area, say the researchers. Mowing every other week instead of weekly and minimizing watering can reduce emissions by up to 70 percent, they say. Using fertilizer sparingly and leaving grass clippings on the lawn can add to the savings. ("Keep off the grass: Research confirms that highly manicured lawns produce more greenhouse gases than they soak up," by Ian Johnston, The Independent, Jan. 18, 2015; www.independent.co.uk/environment/climate-change/keep-off-the-grass-research-confirms-that-highly-manicured-lawns-produce-more-greenhouse-gases-than-they-soak-up-9985720.html)

Monarchs

In February, the Obama administration and conservation groups launched a plan to halt the **decline of monarch butterfly** populations, which have fallen 90 percent over the past two decades. The U.S. Fish and Wildlife Service will spend \$2 million and will work with the National Wildlife Federation and the National Fish and Wildlife Foundation to grow milkweed and other butterfly-friendly plants along monarchs' main migration routes from Minnesota to Mexico. They also plan to promote wildflower growth along pipeline and power lines. ("US launches plan to halt decline of monarch butterfly, by Suzanne Goldenberg, The Guardian, Feb. 9, 2015; www.theguardian.com/environment/2015/feb/09/us-launches-plan-to-halt-decline-of-monarch-butterfly)

Organic

The USDA Agricultural Marketing Service (AMS) is seeking comments on a **proposed rule to clarify the requirements for transitioning dairy animals into organic production.**

The proposed rule is based on recommendations of the National Organic Standards Board, an advisory committee of organic community representatives. The rule would update USDA's organic regulations by requiring that milk or milk products labeled, sold or represented as organic be from dairy animals that have been organically managed since the last third of gestation, with a one-time allowance for a producer to convert conventional dairy animals to organic milk production after a one-year transitional period.

By clarifying the manner in which producers can transition dairy animals into organic milk production and by promoting consistency among certifying agents, the USDA establishes a level playing field that protects all organic farms and businesses and maintains consumer confidence in organically labeled products.

The organic community, stakeholders and consumers may submit written comments on the proposed rule by July 27, 2015, by visiting www.regulations.gov. Comments may also be submitted by mail, as instructed in the proposed rule, to Scott Updike, Agricultural Marketing Specialist, National Organic Program, USDA-AMS-NOP, Room 2646-So., Ag Stop 0268, 1400 Independence Ave., SW, Washington, DC 20250-0268. ("USDA Clarifies Requirements for Transitioning Dairy Animals into Organic Production; Invites Comments on Proposed Rule," by Sam Jones-Ellard,

USDA press release, 4/27/2015;

[www.ams.usda.gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateU&navID=&page=Newsroom&resultType=Details&dDocName=STELPRDC5111247&dID=211426&wf=false&description=USDA+Clarifies+Requirements+for+Transitioning+Dairy+Animals+into+Organic+Production%3B+Invites+Comments+on+Proposed+Rule&topNav=Newsroom&leftNav=&rightNav1=&rightNav2=\)](http://www.ams.usda.gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateU&navID=&page=Newsroom&resultType=Details&dDocName=STELPRDC5111247&dID=211426&wf=false&description=USDA+Clarifies+Requirements+for+Transitioning+Dairy+Animals+into+Organic+Production%3B+Invites+Comments+on+Proposed+Rule&topNav=Newsroom&leftNav=&rightNav1=&rightNav2=)

Organic stakeholders, including MOFGA, have filed a lawsuit in federal court, maintaining that the **USDA violated the federal rulemaking process** when it changed established procedures for reviewing synthetic and prohibited natural substances used in producing organic food. The organic food producers and farmer, consumer, environmental and certification groups asked the court to require USDA to reconsider its decision on the rule change and reinstitute the agency's customary public hearing and comment process.

Previously the national organic law's "sunset provision" was interpreted to require all listed materials to cycle off the National List of Allowed and Prohibited Substances every five years unless the National Organic Standards Board (NOSB) voted by a two-thirds majority to re-list them. The NOSB was charged with considering public input, new science and new information on available alternatives.

In September 2013, in a complete reversal of accepted process, USDA announced a definitive change in the rule it had been operating under since the inception of the organic program, without any public input. Now materials can remain on the National List in perpetuity unless the NOSB takes initiative to vote them off the list. FMI:

<http://www.mofga.org/Programs/PublicPolicyInitiatives/GroupsChallengeMajorUSDACHangetoOrganicRule/tabid/2966/Default.aspx>

The Organic Trade Association (OTA) wants an **organic “checkoff”** fund to promote the organic industry and to let shoppers know what “organic” means – i.e., that a third party inspects the farm annually to see that it meets federal rules governing organic production. The proposed checkoff would assess farmers who bring in more than \$250,000 a year one-tenth of one percent of their gross revenue annually. Those who gross \$1 million could be assessed more. Some farmers object, saying the promotion would benefit large companies over small and mid-sized, and national brands over local. The OTA is expected to submit a proposal for a checkoff to USDA soon. More than two-thirds of organic producers would have to vote for the checkoff before it could go into effect. (“Checkoff debate stirs clash within organic food industry,” Harvest Public Media, March 19, 2015; <http://harvestpublicmedia.org/article/checkoff-debate-stirs-clash-within-organic-food-industry>)

Nature’s Path and other **organic-food purveyors are buying farmland in order to boost their supply ingredients** and overcome limited supplies that hamper their growth during a time of increasing consumer demand. Other efforts include financing farmers, offering training, recruiting organic growers, supplying plans for henhouses and promising to buy crops for up to five years. (“Organic-Food Firms Tackle Supply Constraints,” Wall Street Journal, April 3, 2015; www.wsj.com/articles/organic-food-firms-tackle-supply-constraints-1428081170)

Seed Saving

Seed saving, a thousand-year-old practice that forms the basis of farming, **is fast becoming criminalized** due to corporate pressure. Two organizations, La Via Campesina and GRAIN, are countering this issue by educating people about strategies of secrecy that governments and companies use when they privatize seed ownership; by blocking bills relating to seed privatization; and by supporting the work of organizations and individual seed savers. Seed laws do not guarantee quality, say La Via Campesina and GRAIN; on the contrary, they give companies more opportunities to sell junk seeds and to maintain other mechanisms of control. Around the world, communities and grassroots organizations understand that the best way to defend seeds – and to defend the practices of using and sharing that keep seeds alive – is to continue to grow them, look after them and exchange them, in every locality. Keeping farming systems alive is the best way to keep seeds alive, they say. (“Seed laws that criminalise farmers: resistance and fightback,” La Via Campesina/GRAIN, April 8, 2015; www.grain.org/article/entries/5142-seed-laws-that-criminalise-farmers-resistance-and-fightback)

Genetic Engineering (GE)

A report called “**Who benefits from GM crops**” looks at how the U.S. government, its sponsored programs and projects (such as U.S. AID), funders such as Bill and Melinda Gates, and companies such as Monsanto are collectively attempting to force unwilling African countries to accept expensive and inappropriate GE technologies. This, despite reports that in South Africa, where GE crops have been grown for more than 16 years, food security is declining, with almost half the nation currently categorized as food insecure. There, the technology is seen as elite, with only well-off, large-scale farmers being able to afford it (and often growing crops for export).

The report also finds that public research institutions are shifting from research driven by demand and needs to channeling public resources into private agendas and inappropriate solutions. However, “small-scale farmers’ movements and African civil society still have an opportunity to steer governments back to policies that truly support food sovereignty and the uplifting and protection of the millions of small-scale food producers that currently feed the continent,” says the report. It recommends stopping promotion of GE crops and corporate interests in Africa, since Africa can feed itself without GE crops; ensuring compliance with the Cartagena Protocol [for biosafety] and supporting people’s rights; facilitating access to information and inclusive decision-making procedures; and stopping the flow of public resources and goods to private interests. (“Who benefits from gm crops?” by Haidee Swanby, Friends of the Earth International, Feb. 2015. <http://www.foei.org/wp-content/uploads/2015/02/Who-benefits-report-2015.pdf>)

Traditional plant breeding has been far more successful in developing drought-resistant corn than has GE technology, according to a report by the Institute of Science in Society (ISIS) and an article in Nature. The Drought Tolerant Maize for Africa Project has developed 153 new varieties, says the report. In field trials, these have performed at least as well as existing commercial seeds when rainfall is adequate and yielded up to 30 percent more during drought. The new varieties will, estimates the report, help reduce the number of people living in poverty in 13 African countries by as much as 9 percent.

In addition, the pro-GM International Service for the Acquisition of Agri-biotech Applications says that it generally takes about 10 times more money and 10 years longer to bring a biotech crop to market compared with a conventional crop and that this high cost precludes participation of public research institutions in developing biotech crops, ISIS relates. “Drought tolerance is a complex trait that involves multiple genes. Transgenic techniques, which target one gene at a time, have not been as quick to manipulate it,” reports Nature.

Similarly, the Improved Maize for African Soils project has developed, with traditional plant breeding, 21 varieties that can produce more than existing varieties on nitrogen-poor soils, while project researchers say they’re at least 10 years away from that same goal with a GE variety.

Add to this the hazards of GE crops – increased use of synthetic pesticides, development of resistant pests, concentration of control of the world’s food supply among a small number of corporations, laws preventing farmers from saving seed – and the conclusion of ISIS makes sense: “All that might conceivably be worth risking if we actually needed GM crops, but the plain fact is that we don’t.” (“Cross-bred crops get fit faster,” by Natasha Gilbert, Nature, Sept. 16, 2014; http://www.nature.com/news/cross-bred-crops-get-fit-faster-1.15940?WT.mc_id=TWT_NatureNews “Genetic Modification Trails Conventional Breeding By Far,” Institute for Science in Society, Oct. 15, 2014; http://www.isis.org.uk/Genetic_Modification_Trails_Conventional_Breeding_By_Far.php)

Open-pollinated corn varieties have better prospects than GE Bt corn for increasing and stabilizing smallholders’ corn yields in South Africa in economically sustainable ways, say agricultural scientists there. They cite the high cost of GE seed; the inability to save seed from GE varieties; the fact that the Bt insecticidal trait is not always needed, as corn pests vary from year to year and with location; the fact that Bt varieties often don’t yield as well as open-

pollinated varieties on smallholders' soil, as the engineered varieties are bred for high soil fertility and water availability; and the fact that seed companies and providers do not give adequate information about planting refuges of non-GE corn to slow development of resistance to Bt. ("Is Bt maize effective in improving South African smallholder agriculture?" by Klara Fischer et al., South African Journal of Science, Jan.-Feb. 2015; www.sajs.co.za/sites/default/files/publications/pdf/Fischer_Commentary.pdf)

Kids born from goats fed non-GE soybean meal, compared with those from goats fed GE soy, **weighed more** at day 30 and at slaughter; were taller at the withers and wider in the chest; received colostrum that was higher in protein and fat and that showed no transgenic fragments – unlike kids from goats fed GE soy. ("Genetically modified soybean in a goat diet: Influence on kid performance," by R. Tudisco et al., Small Ruminant Research, January 31, 2015; [http://www.smallruminantresearch.com/article/S0921-4488\(15\)00052-8/abstract](http://www.smallruminantresearch.com/article/S0921-4488(15)00052-8/abstract))

A study conducted **in South Africa** looked for transgenes in leaves of 796 individual corn plants and in 20 seed batches collected in a village where GE insect resistant (Bt) corn was grown from 2001 to 2008. The researchers also surveyed varieties of corn grown and farmers' seed saving and sharing practices in the community. The commonly used transgene promoter p35s occurred in one of 796 leaf samples and in five of the 20 seed samples. Farmers were unaware of the presence of these transgenes. The researchers conclude that **transgenes have spread without control** in stored and shared seed. ("Detection of Transgenes in Local Maize Varieties of Small-Scale Farmers in Eastern Cape, South Africa," by Marianne Iversen et al., PLoS One, Dec. 31, 2015; www.ncbi.nlm.nih.gov/pmc/articles/PMC4281112/)

Monsanto has reached a settlement with wheat farmers in seven southern states over the 2013 **contamination** of an Oregon wheat farm with the company's GE wheat. Monsanto did not admit liability but will give \$50,000 to land grant universities in each of the seven states to advance the interests of wheat farmers and the wheat industry and will also reimburse plaintiffs and their counsel for a portion of their litigation costs.

("Monsanto settles with farmers over GMO wheat," by Ben Unglesbee, St. Louis Business Journal, March 18, 2015; www.bizjournals.com/stlouis/news/2015/03/18/monsanto-settles-with-farmers-over-gmo-wheat.html)

In March the **FDA approved six varieties of GE Innate potatoes** (including a Ranger Russet, a Russet Burbank and an Atlantic) developed by J. R. Simplot Co. of Idaho to bruise less or to contain less acrylamide (allegedly a potential carcinogen) when cooked at high temperatures and two varieties (a Granny Smith and a Golden Delicious) of non-browning **GE Arctic apples** from Okanagan Specialty Fruits Inc. of Canada. ("FDA approves genetically engineered potatoes, apples as safe," by Mary Clare Jalonick and Keith Ridler, AP, March 20, 2015; <http://bigstory.ap.org/article/1f2a6eb01c0f4dc385d265562be81fe7/fda-approves-genetically-engineered-potatoes-apples-safe>)

Pesticides

The International Agency for Research on Cancer (IARC), the specialized cancer agency of the World Health Organization, says that the most popular herbicide in the United States, **glyphosate**

(the active ingredient in Roundup), is a probable carcinogen in humans based on sufficient evidence of carcinogenicity in experimental animals. It based its statement on a year of review by 17 experts from 11 countries.

Beyond Pesticides says that EPA and industry tout glyphosate as a “low toxicity” chemical and “safer” than other chemicals. It is widely used in food production and on lawns, gardens, parks and children’s playing fields. The IARC based its conclusion on an EPA Scientific Advisory Panel report and several recent studies. The IARC also noted that glyphosate caused DNA and chromosomal damage in human cells and that there was some limited evidence of carcinogenicity in humans for non-Hodgkin lymphoma. The evidence in humans is from studies of exposures, mostly agricultural, in the United States, Canada and Sweden published since 2001.

“With the cancer classification on top of the documented weed resistance to glyphosate and water contamination resulting from its use, continued reliance on glyphosate is irresponsible from a public health and environmental perspective,” said Jay Feldman, executive director of Beyond Pesticides. “We have effective sustainable organic management systems that do not utilize glyphosate and it’s time that EPA and USDA recognized its responsibility to move away from hazardous and unnecessary pesticides,” he continued.

Most corn and soybeans grown in the United States are genetically engineered to tolerate the chemical, so glyphosate is widely applied to fields where they grow. This has led to weeds that have developed resistance to the herbicide and to widespread water contamination with the chemical, which is toxic to aquatic organisms and lethal to amphibians.

The same IARC report classified the insecticides malathion and diazinon as probably carcinogenic to humans and the insecticides tetrachlorvinphos and parathion as possibly carcinogenic to humans. Tetrachlorvinphos is used in the United States on livestock and on companion animals, including in pet flea collars. It is banned in the European Union, as is parathion.

Monsanto, which makes Roundup, said the report was biased and contradicts regulatory findings that glyphosate is safe when used as labeled.

David Schubert of the Salk Institute for Biological Studies in LaJolla, Calif., told Reuters, "There are a number of independent, published manuscripts that clearly indicate that glyphosate ... can promote cancer and tumor growth. It should be banned."

In other glyphosate news, this and the herbicides 2,4-D and dicamba were found, when applied at recommended concentrations, to create antibiotic-resistant bacteria, making the disease-causing bacteria stronger. And demand for testing foods for residues of glyphosate, the active ingredient in Monsanto’s Roundup, have spiked since the World Health Organization classified the popular herbicide as a probable human carcinogen. Reuters reports that glyphosate residues have been found in 41 of 69 honey samples, in 10 of 28 soy sauces, in three of 18 breast milk samples, in six of 40 infant formula samples and in several flour samples.

The EPA is scheduled to review glyphosate this year.

(“Glyphosate Classified Carcinogenic by International Cancer Agency, Group Calls on U.S. to End Herbicide's Use and Advance Alternatives,” Beyond Pesticides, March 20, 2015; www.beyondpesticides.org/dailynewsblog/?p=15245; “IARC Monographs Volume 112: evaluation of five organophosphate insecticides and herbicides,” World Health Organization International Agency for Research on Cancer, March 20, 2015; www.iarc.fr/en/media-centre/iarcnews/pdf/MonographVolume112.pdf; “Monsanto seeks retraction for report linking herbicide to cancer,” by Carey Gillam, Reuters, March 25, 2015; <http://in.reuters.com/article/2015/03/24/monsanto-herbicide-idINL2N0WP0UM20150324>; “Study Links Widely Used Pesticides to Antibiotic Resistance,” by Elizabeth Grossman, Civil Eats, March 24, 2015; <http://civileats.com/2015/03/24/study-links-widely-used-pesticides-to-antibiotic-resistance/>; “Sublethal Exposure to Commercial Formulations of the Herbicides Dicamba, 2,4-Dichlorophenoxyacetic Acid, and Glyphosate Cause Changes in Antibiotic Susceptibility in Escherichia coli and Salmonella enterica serovar Typhimurium,” by Brigitta Kurenbach et al., mBio, March 24, 2015; <http://mbio.asm.org/content/6/2/e00009-15>; “Fears over Roundup herbicide residues prompt private testing,” by Carey Gillam, Reuters, April 10, 2015; www.reuters.com/article/2015/04/10/us-food-agriculture-glyphosate-idUSKBN0N029H20150410)

To help consumers minimize pesticide exposure through produce, **Consumer Reports ranked 48 fruits and vegetables from 14 countries in five categories, from very low to very high risk for pesticide residues.** Risk assessment included the number of pesticide residues on each food, the frequency with which they were found and the toxicity of the pesticides. Results are posted in Consumer Reports.

Residues on produce have declined since 1996, when Congress passed the Food Quality Protection Act, says Consumer Reports. Still, the most recent USDA data found pesticide residues in more than half the samples taken – most below EPA tolerance levels. But tolerance levels do not consider effects of combinations of different pesticides on produce, and almost one-third of the samples had residues of two or more pesticides – after produce had been rinsed and/or peeled. All samples of organic produce were in the very low-risk or low-risk categories. Consumer Reports says its experts believe that organic is always the best choice because it is better for your health, the environment and the people who grow our food, but its guide can help decide which produce to eat when cost is a factor. (“Pesticides in produce,” Consumer Reports, March 19, 2015; www.consumerreports.org/cro/magazine/2015/05/pesticides-in-produce/index.htm)

Exposure to organophosphate (OP) pesticides in the U.S. population is dominated by dietary intake. When researchers assessed long-term dietary exposure to 14 OPs among 4,466 subjects over age 45, they found that those who reported rarely or never eating organic produce had significantly higher levels of urinary dialkylphosphate (DAP), a metabolite of OPs, than participants reporting more frequent consumption of organic produce. Also, participants who ate less produce overall, whether organic or not, had lower DAP levels than those who reported

eating more organic produce. The researchers did not determine where those OP metabolites came from – e.g., they may have come from non-organic produce that the subjects ate. Exposure to OPs has been linked to certain cancers, endocrine system disruption and to neurodevelopment issues in children. (“Estimating Pesticide Exposure from Dietary Intake and Organic Food Choices: The Multi-Ethnic Study of Atherosclerosis (MESA),” by Cynthia L. Curl et al., Environmental Health Perspectives, Feb. 5, 2015; <http://ehp.niehs.nih.gov/1408197/>; “Eat organic produce, and you end up exposed to less pesticide,” by Jason Best, Takepart, Feb. 5, 2015. www.takepart.com/article/2015/02/05/organic-produce-lower-pesticide-exposure)

Men who eat produce having the highest quantity of pesticide residues have sperm counts 50 percent lower than those who eat the smallest amount of these items. Those eating the most-contaminated produce also had 32 percent more abnormally shaped sperm, according to a recent study involving 155 men, published in the journal Human Reproduction. (“Pesticides on Vegetables and Fruit Linked to Lower Sperm Counts,” Newsweek, by Douglas Main, Newsweek, March 30, 2015; www.newsweek.com/pesticides-vegetables-and-fruit-linked-lower-sperm-counts-318164)

The EPA has agreed to regulate novel nanomaterial pesticides as a result of a lawsuit filed by the Center for Food Safety (CFS). In 2008, a coalition of nonprofits led by CFS petitioned the EPA to recognize the growing class of nano-silver consumer products and their risks and to regulate them as new pesticides. After EPA failed to respond to the petition for six years, some of the petitioner groups sued the agency, forcing it to respond.

Nanotechnology manipulates materials at the atomic and molecular levels and produces nanomaterials so small that they cannot be seen with an ordinary microscope. These materials can act in fundamentally novel ways. Nano-silver products are in many consumer products, commonly as antimicrobial agents. Products containing nanomaterials need not be labeled as such.

The EPA agreed that nano-silver products intended to kill microorganisms qualify as pesticides; that they are a novel type of pesticide with unknown risks; that developers of such products must seek EPA review and approval before the products are allowed in the marketplace; and that manufacturers must provide EPA with nano-specific data. The EPA did not commit, however, to the petitioners’ demand for enforcement actions against all currently commercialized products that have not undergone the EPA registration process.

(“EPA Agrees to Regulate Novel Nanotechnology Pesticides After Legal Challenge,” Center for Food Safety press release, March 24, 2015; www.centerforfoodsafety.org/press-releases/3817/epa-agrees-to-regulate-novel-nanotechnology-pesticides-after-legal-challenge#)

Portland, Oregon, has banned the use of neonicotinoid insecticides on city-owned property, and state officials there have banned neonicotinoids from use on some trees. Oregon officials blamed the 2013 deaths of tens of thousands of bees on the improper use of the pesticides. Spokane, Seattle and Eugene have similar bans. (“Portland bans use of insecticides believed to be harmful to bees on city property, by Andrew Theen, The Oregonian, April 1, 2015; www.oregonlive.com/portland/index.ssf/2015/04/portland_bans_use_of_specific.html)

A report by the **European Academies Scientific Advisory Council** urges **reassessment of neonicotinoid use**. The report says that focusing on honeybees has distorted the debate around neonicotinoids, which harm a range of organisms that provide ecosystem services such as pollination, natural pest control and biodiversity; that protecting honeybees is not enough to ensure sustainable agriculture; and that in some cases, neonicotinoid use has even made pest problems worse by eliminating insects that provided natural pest control. (“Ecosystem services, agriculture and neonicotinoids,” European Academies Scientific Advisory Council, April 8, 2015;

www.easac.eu/home/reports-and-statements/detail-view/article/ecosystem-se.html)

Following letters and petitions from environmental groups, **Lowe’s Home Improvement plans to phase out products containing neonicotinoid pesticides** as alternatives become commercially available. Lowe’s says it will “include greater organic and non-neonic product selections, work with growers to eliminate the use of neonic pesticides on bee-attractive plants it sells and educate customers and employees through in-store and online resources.” (“Lowe’s to eliminate ‘bee-killing pesticides’ over next four years,” by Katherine Peralta, The Charlotte Observer, April 9, 2015;

www.charlotteobserver.com/news/business/article17957330.html/)

Trouble at USDA?

The Public Employees for Environmental Responsibility (PEER) says **USDA scientists “routinely suffer retaliation and harassment” from managers and private industry** for research that conflicts with agribusinesses. As a result, the group petitioned USDA to strengthen its protection of departmental scientists from political and industry pressure and to improve its policies on scientific integrity. USDA said the allegations were incorrect. (“Group Questions USDA Science,” by Chris Clayton, The Progressive Farmer, March 26, 2015;

http://www.dtnprogressivefarmer.com/dtnag/common/link.do;jsessionid=2889D870F497AEFEE2D3F741CF49CBA1.agfreejvm1?symbolicName=%2Ffree%2Fagpolicy%2Fnews%2Ftemplate1&product=%2Fag%2Fnews%2Fagpolicy%2Ffeatures&vendorReference=0702DA74&paneContentId=70606&paneParentId=70601&pagination_num=1)

Fall 2015

BPC News

Change to BPC Reporting

By Katy Green

Longtime readers may have noticed our regular Maine Board of Pesticides Control (BPC) report was absent from the spring 2015 edition of this newspaper. We are still committed to attending each BPC meeting and updating our membership, but we’re changing how that occurs. The BPC calendar and our publishing schedule do not always line up in a way that ensures readers are receiving the most up-to-date picture of BPC activities. Actions by the board can stretched out over several months, so articles in the newspaper may give just a snapshot of the overall picture.

To provide more comprehensive and coherent reporting to our readers, we are changing to an annual BPC report in this newspaper. We hope this new format will allow us to give a full picture of what the BPC has (or has not) accomplished in any given year as well as where MOFGA stood throughout the process. Action alerts and more timely updates will be included in the public policy section of MOFGA's website, www.mofga.org, in our weekly email bulletins and on our Facebook page. Watch for our first comprehensive BPC report in the spring 2016 edition of The MOF&G!

The Good News

In July the Portland Press Herald announced the three \$1,500 winners of the first **Russell Libby Agricultural Scholar Awards**. Source, part of the Herald, partnered with MOFGA to grant the scholarships, which Lee Auto Malls generously supported, in honor of our late, much-loved executive director, Russell Libby. The awards were given for a Maine high school senior, a student at Kennebec Valley Community College and a MOFGA journey person. The recipients were Abigail Karter, who grew up on a small farm in Winslow, graduated from the Maine Academy of Natural Sciences and is now studying wildlife biology at Unity College; Abigail Smith, who grew up in Durham, started raising her own pigs when she was in fifth grade and is now studying sustainable agriculture at Kennebec Valley Community College; and Michael Hayden, who operates Folklore Farm in Milbridge and is a MOFGA journey person. (“Meet the winners of the first Russell Libby Agricultural Scholar Awards,” by Peggy Grodinsky, Portland Press Herald, July 16, 2015; www.pressherald.com/2015/07/17/meet-winners-first-russell-libby-agricultural-scholar-awards/)

Organic farms act as a refuge for wild plants, offsetting the loss of biodiversity on conventional farms, a study suggests. Organic farms and conventionally farmed fields around organic farms sown to winter wheat in France had more types of wild plants than those around conventional farms without nearby organic farms. This biodiversity benefits wildlife, say scientists. Even when only 25 percent of fields in an area were organically managed, nearby farmland had more biodiversity. (“Organic farming 'benefits biodiversity',” by Helen Briggs, BBC, May 20, 2015;

www.bbc.com/news/science-environment-32781136; “Organic fields sustain weed metacommunity dynamics in farmland landscapes,” by Laura Henckel et al., The Royal Society Proceedings B, May 20, 2015;

<http://rspb.royalsocietypublishing.org/content/282/1808/20150002.full>)

Washington State University researchers found **29 species of butterflies in “habitat-enhanced” vineyards** – those in which growers planted native shrubs in and around the vineyards to attract beneficial insects, such as parasitic wasps, to help control pest insects. By comparison, only nine species were found in vineyards where native shrubs had not been planted. (“Vineyard natural habitats assist with butterfly comeback,” by Scott Weybright, Washington State University, May 11, 2015; <http://cahnrs.wsu.edu/news-release/2015/05/11/vineyard-natural-habitats-assist-with-butterfly-comeback/>)

Maintaining a healthy and diverse soil community can buffer natural ecosystems against the damaging impacts of global warming, according to a long-term study. When soil

microorganisms decompose dead plant and animal material, CO₂ is released to the atmosphere – and warming can accelerate this release. But researchers found that small animals present in healthy and diverse soils can limit that carbon loss when they feed on the microbes. (“Diverse Soil Communities Can Help Offset Impacts of Global Warming,” By Kevin Dennehy, Yale School of Forestry & Environmental Studies; <http://environment.yale.edu/news/article/diverse-soil-communities-can-help-offset-impacts-of-global-warming/>; Original paper: Biotic Interactions Mediate Soil Microbial Feedbacks to Climate Change, by Thomas W. Crowther et al., Proceedings of the National Academy of Sciences, June 2, 2015; www.pnas.org/content/112/22/7033.abstract)

Washington State researchers David Crowder and John Reganold conducted a meta-analysis of studies on the financial performance of organic and conventional agriculture. The data spanned 40 years of studies of 55 crops grown on five continents. When organic premiums of 29 to 32 percent were applied, **organic agriculture was 22 to 35 percent more profitable and had benefit/cost ratios 20 to 24 percent greater than conventional agriculture.** Breakeven premiums necessary for organic profits to match conventional profits were only 5 to 7 percent, even with organic yields being 10 to 18 percent lower. Labor costs were 7 to 13 percent higher with organic farming practices, but total costs were not significantly different, since organic farmers did not have to buy synthetic fertilizers and pesticides. Neither environmental costs (negative externalities such as soil erosion, nitrate leaching and pesticide use) nor ecosystem services were considered in this study. The authors say these would likely favor organic agriculture. “With only 1% of the global agricultural land in organic production, our findings suggest that organic agriculture can continue to expand even if premiums decline,” say the researchers. “Furthermore, with their multiple sustainability benefits, organic farming systems can contribute a larger share in feeding the world.” (“Financial competitiveness of organic agriculture on a global scale,” by David W. Crowder and John P. Reganold, Proceedings of the National Academy of Sciences, June 1, 2015; www.pnas.org/content/early/2015/05/27/1423674112; “Can organic be profitable? If price is right,” by Miguel Otarola, The Seattle Times, June 2, 2015; www.columbian.com/news/2015/jun/02/can-organic-be-profitable-if-price-is-right/)

The National Young Farmers Coalition (NYFC) and a coalition of more than 100 other farming organizations, including MOFGA, are calling for Congress to **add farmers to the Public Service Loan Forgiveness Program.** An NYFC report, Farming Is Public Service: A Case for Adding Farmers to the Public Service Loan Forgiveness Program (www.youngfarmers.org/reports/FIPSReport.pdf), says that student loan debt is a key barrier preventing more would-be farmers and ranchers from entering agriculture. The report contains data from a new survey of more than 700 young farmers and data compiled from the USDA Census of Agriculture. According to the report, 30 percent of survey respondents said their student loans are delaying or preventing them from farming, while 48 percent said their loans are preventing them from growing their business or obtaining credit to invest in their farm.

MOFGA has signed on with the International Action Network “Organic can feed the planet,” which intends to position organic agriculture within the global debate on food security by providing evidence that the organic alternative is not just another way to produce commodities; it is an innovative food and agricultural system that can feed the planet while

safeguarding its biodiversity and resources. The Action Network was initiated by FederBio (Italian Federation for Organic farming) and is supported by IFOAM (International Federation of Organic Agriculture Movements) – Organics International, IFOAM EU, IFOAM AgriBioMediterraneo, ISOFAR, Navdanya International and the Italian organic and biodynamic movements. The network aims to involve organic and likeminded associations and individuals in an extensive discussion on the role of organic agriculture in the “feeding the planet” debate. FMI:
www.ifoam.bio/en/news/2015/06/24/action-network-organic-can-feed-planet

A new red meat and poultry slaughterhouse in Gardiner is the only USDA-inspected poultry slaughterhouse in Maine and one of six USDA-inspected red meat slaughterhouses in the state. USDA inspection enables meat to be sold across state lines. The poultry operation is operated by Gina Simmons and Ryan Wilson of Common Wealth Poultry Company and is already slaughtering birds for Maine’s largest poultry operator, Maine-ly Poultry. (Maine-ly Poultry owner John Barnstein mentored Simmons and Wilson through MOFGA’s journey person program.) Simmons and Wilson also planned to begin receiving chickens from MOFGA-certified organic Goranson Farm in Dresden and Straw’s Farm in Newcastle this summer. (“In Gardiner, a new slaughterhouse boosts Maine’s agriculture infrastructure,” by Paul Koenig, Kennebec Journal, May 30, 2015;
www.centralmaine.com/2015/05/30/in-gardiner-a-new-slaughterhouse-boosts-maines-agriculture-infrastructure/)

The U.N. reports that **795 million people were hungry in 2014 – down from an estimated 1 billion in 1990**, despite the 2 billion increase in world population since the ‘90s. Today, 12.9 percent of the population in developing regions is hungry, compared with 23.3 percent a quarter century ago. Increased production by small, family farms has enabled some of the decrease, allowing people to eat better and have surplus to sell in order to buy other, nutrient-rich foods. Government health and nutrition programs have also contributed. Unfortunately, obesity has become a problem in some places as hunger has decreased and more junk food has become available. (“There Are 200 Million Fewer Hungry People Than 25 Years Ago,” by Linda Poon, MPBN, June 1, 2015;
<http://news.mpbn.net/post/there-are-200-million-fewer-hungry-people-25-years-ago>)

A Spanish study of 2,593 children found that second-, third- and-fourth graders who spent **more time in green outdoor spaces** at their homes and schools and on their way to school had **greater increases in cognitive development** than those with less access to green spaces. “Contact with nature is thought to play a crucial and irreplaceable role in brain development,” wrote the researchers in the Proceedings of the National Association of Sciences. They attributed the improved cognitive development to increased “green exercise” available in green spaces and to reduced air pollution in and around schools with more green space around them. A similar study in Massachusetts found that third graders exposed to more outdoor green spaces preformed better in English and math. (“Green Spaces Linked to Kids' Cognitive Development,” by Tom Jacobs, Pacific Standard, June 16, 2015; www.psmag.com/health-and-behavior/green-spaces-linked-to-kids-cognitive-development)

Up to 90 percent of Americans could be fed entirely by food grown or raised within 100 miles of their homes, according to a study by Professor Elliott Campbell of the University of California, Merced. Campbell and his students mapped farms near every U.S. city, estimated how many calories they could produce and compared those numbers with the population in each city. New York City could feed only 5 percent of its population from farms within 50 miles but as much as 30 percent within 100 miles. The greater Los Angeles area could feed up to 50 percent within 100 miles. Switching to plant-based diets increased the number of people who could be fed on local food. The study calls for protecting farmland and for recycling nutrients, water and energy to farms. (“Most Americans Could Eat Locally, Research Shows,” Univ. of Calif., Merced, June 1, 2015, <http://snri.ucmerced.edu/news/most-americans-could-eat-locally-research-shows>)

On July 1, **Bingham became the sixteenth Maine town to pass the Local Food and Community Self-Governance Ordinance (LFCSGO)** when its citizens voted to adopt the LFCSGO by 59-8. Under the food sovereignty ordinance, local food producers can sell their products directly to consumers without licensing or inspection. MOFGA’s position statement on farmer autonomy, consumer choice and science-based regulation is posted at www.mofga.org/Programs/PublicPolicyInitiatives/MOFGAPositionStatements/FarmerAutonomyConsumerChoice/tabid/2780/Default.aspx. (“Sixteenth Maine Town Passes Food Sovereignty Ordinance,” Farm-to-Consumer Legal Defense Fund, July 10, 2015; www.farmtoconsumer.org/blog/2015/07/10/sixteenth-maine-town-passes-food-sovereignty-ordinance/)

In June our state Senate and House overrode by a wide margin Gov. LePage’s veto of LD4, **a bill to authorize hemp farming in Maine without federal permission**. The bill, introduced by Rep. Deborah Sanderson (R-Chelsea) and cosponsored by a bipartisan coalition of seven senators and representatives, amended the current hemp farming law in the state by removing a requirement that licenses are contingent on approval by the federal government. An earlier Maine law allowed hemp farming as long as the federal government also did so. The new law also allows growers to buy seed from any certified seed source, rather than from approved Canadian sources only. In 2014, President Obama authorized states to establish hemp farming research programs through academic institutions. Ann Gibbs, acting director of the animal and plant health division for the Maine Department of Agriculture, Conservation and Forestry, testified that since hemp is still classified as a drug under the Federal Controlled Substances Act, it cannot be grown legally without a permit from the U.S. Drug Enforcement Administration – which has issued permits only to the state Department of Agriculture or to universities for research. Gibbs also said DEA restrictions may make importing hemp seed difficult. The United States is the world’s top importer of hemp fiber, with China and Canada the top exporters. Maine’s new law went into effect immediately. (“Veto Override: Maine Legislature Rejects Governor, Approves Bill to Allow Hemp Farming Despite Federal Ban,” Tenth Amendment Center, June 16, 2015; <http://blog.tenthamentendmentcenter.com/2015/06/veto-override-maine-legislature-rejects-governor-approves-bill-to-allow-hemp-farming-despite-federal-ban/>; “Hemp cultivation OK in Maine with override of LePage veto,” by Jen Lynds, Bangor Daily News, June 22, 2015; <https://bangordailynews.com/2015/06/22/politics/state-house/hemp-cultivation-ok-in-maine-with-override-of-lepage-veto/?ref=moreInhomestead>)

Become an organic dairy farmer! Get paid to learn how to start your own organic dairy farm! Wolfe's Neck Farm offers a comprehensive program that teaches everything you need to know to begin a career in organic dairy farming – from soil management to securing financing and locating land. Applications are accepted on a rolling basis at www.wolfesneckfarm.org/organic-dairy-farmer-research-training-program.

Conventional dairy is in decline, and the average age of Maine dairy farmers is approaching 60, but the demand for organic milk is increasing dramatically, creating a nationwide shortage of organic milk.

To address these challenges Wolfe's Neck Farm has a two-year residential Organic Dairy Farmer Training Program to increase organic milk production in the Northeast while fostering the next generation of organic dairy farmers. It is partnering new and transitioning organic farmers with existing organic dairy farmers to improve their practices and ensure long-term sustainability and production in this region. MOFGA-certified organic dairy farmers are among the advisors for this program, which was launched with a major grant from the Danone Ecosystem Fund and Stonyfield.

The Wolfe's Neck Farm dairy will be a platform for forage-based research, experimentation, demonstration and training. The program will feature and study innovative approaches for new farmers to reduce the initial capital investment, reduce financial risks and build a viable operation. The pasture-based, low-grain, MOFGA-certified organic dairy uses biological farming practices, which encourage soil health in order to grow quality, mineralized feed – the key to supporting animal health and farm profitability.

Bees

In May, the White House Pollinator Health Task Force, headed by the EPA and USDA, released the **National Strategy to Promote the Health of Honey Bees and Other Pollinators**.

According to a recent USDA report, beekeepers reported managed honeybee losses of more than 40 percent between April 2014 and April 2015, and monarch butterflies suffered losses of around 90 percent.

The strategy targets honeybees, monarch butterflies and other important pollinators through a pollinator research education plan, public education and public-private partnerships. Its pollinator research action plan addresses many aspects of federally-supported pollinator health research.

The three main goals of the national strategy are to reduce honeybee colony losses during winter to economically viable levels of no more than 15 percent within 10 years; increase the monarch butterfly population to 225 million butterflies in the winter habitat of Mexico by 2020 (57 million were recorded there in 2015); and restore or enhance 7 million acres of land for pollinators over the next five years through federal actions and public-private partnerships.

The report calls for increasing pollinator habitat through federal facilities and public rights-of-way landscaping; funding greater areas of pollinator habitat on USDA conservation land; making pollinator-friendly seed mixes available to public and private groups; and other activities.

To mitigate harm to pollinators, the report calls on the EPA to act on certain pesticides without limiting the use of pesticides in controlling agricultural pests. The following actions proposed by the task force will be implemented over the next three to five years:

- Issue new toxicity study guidelines to more effectively protect adult and larval honey bees.
- Reevaluate the neonicotinoid family of pesticides and assess the risks and benefits of each neonicotinoid seed treatment for use in agricultural pest control.
- Restrict the use of pesticides that are acutely toxic to bees, using advisory hazard statements and enforceable language in label directions.
- Work with states and tribes to develop pollinator protection plans that will improve communication between growers and beekeepers.
- Reduce emissions of pesticide residues during planting through best management practices, developing more effective seed coatings and reducing dust generation.
- Mitigate pesticide impacts on monarch butterflies by conserving milkweed plants through regulatory decisions on pesticide application and voluntary programs to restore habitat.

Many environmental organizations say these measures inadequately address the hazards of pesticides to honeybees and other important pollinators. In March 2015, 125 farm and environmental groups signed a letter urging President Obama to take strong action against neonicotinoid pesticides. These are especially dangerous to honeybees and native pollinators because they are systemic (moving throughout the plant) and persistent in the plant, soil and surrounding waterways. The letter called for expedited review of the registration process, closing loopholes in the pesticide review process and ensuring EPA compliance with the Endangered Species Act.

The task force report did outline reevaluation of neonicotinoid pesticides but did not outline restrictions on treated seeds, one of the largest uses of neonicotinoids.

“While the Task Force has developed positive, far reaching goals for honey bees, monarch butterflies and other pollinators,” says the Center for Food Safety (CFS), “the plan is unfortunately far too weak to actually accomplish those goals. We think the White House can do better.” The plan focuses heavily on improving pollinator habitat, says CFS, but “is blind to the fact that new habitat will simply become contaminated by insecticides still heavily in use, ultimately harming pollinators.” The CFS adds, “the White House plan ignores several common sense solutions, include closing loopholes in the pesticide review process, suspending the use of neonicotinoids for seed coatings, and instituting a national pesticide use reporting system.”

The Organic Trade Association agrees that the White House plan “only minimally addresses the impact of agricultural production methods on pollinators.” It called on the White House to officially recognize organic farming practices as beneficial to the health of honeybees and other

pollinators and to emphasize agricultural production methods as a key solution to stopping disproportionate bee deaths.

A report released in June by The Organic Center says that organic farming requirements prohibit the use of harmful synthetic pesticides and toxic seed treatments while promoting abundant pollinator habitat and plentiful diverse pollinator food sources – actions that have resulted in higher pollinator abundance and diversity on organic farms. On the other hand, large-scale, chemically intensive agricultural production has been implicated as a major source of threats to pollinators. Many techniques used by organic growers can be adopted by all growers to support pollinator health, such as crop rotations, hedgerow planting, planting insectaries that provide habitat and season-long food sources for pollinators, and the use of integrated pest management techniques. Consumers can promote pollinator health and habitat by supporting sustainable organic farming, adds The Organic Center. (“White House Pollinator Strategy Released,” National Sustainable Agriculture Coalition, May 22, 2015; http://sustainableagriculture.net/blog/pollinator-strategy-report/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29; “Pollinator Plan Aims High but Falls Short,” Center for Food Safety, May 19, 2015; [http://salsa3.salsalabs.com/o/1881/p/dia/action3/common/public/?action_KEY=16790;](http://salsa3.salsalabs.com/o/1881/p/dia/action3/common/public/?action_KEY=16790) “The Role of Organic in Supporting Pollinator Health,” by Tracy Misiewicz, Ph.D., and Jessica Shade, Ph.D., The Organic Center, June 2015; www.organic-center.org/wp-content/uploads/2015/06/The-Role-of-Organic-in-Supporting-Pollinator-Health.pdf; “OTA urges White House to put Organic in pollinator policy,” by Maggie McNeil, The Organic Trade Assoc., June 10, 2015; www.ota.com/news/press-releases/18214)

Agricultural Research Service researchers have identified **a new species of bacteria, *Parasaccharibacter apium*, that benefits bee larvae.** An Acetobacteraceae so far found only in honeybees and their hives, it appears to give honeybee larvae a significantly better chance of surviving to become pupae. The bacteria are abundant in larvae and thrive in royal jelly – the protein-rich substance produced by adult bees. Nurse bees secrete and feed the jelly, which may contain *P. apium*, to young bee larvae. This jelly is the only food bee larvae eat during their first couple of days. Then they are fed increasingly more honey, which also contains *P. apium* in most bee hives.

When bee larvae were fed either *P. apium*-spiked jelly or sterile control jelly, the group fed *P. apium* had a 20 percent better survival rate in the first trial and a 40-percent better survival rate in the second trial. The researchers do not know yet how *P. apium* improves survival. *P. apium* found in honeybee hives has very close, naturally occurring relatives found in the nectar of many flowers. This research suggests that a community of bacteria that includes *P. apium* confers a generalized hygienic quality to the hive environment, so the researchers advise against unnecessary use of antibiotics by beekeepers. (“Bacteria Help Honey Bee Larvae Thrive,” by Kim Kaplan, USDA Agricultural Research Service, AgResearch, May 2015; <http://agresearchmag.ars.usda.gov/2015/may/honeybee/#printdiv>)

Losses of managed honey bee colonies were 23.1 percent for the 2014-2015 winter but **summer losses exceeded winter numbers for the first time**, making annual losses for the year

42.1 percent, according to the annual survey conducted by the Bee Informed Partnership (<http://beeinformed.org>), the USDA and the Apiary Inspectors of America. More than 6,100 U.S. beekeepers who managed almost 400,000 colonies in October 2014, representing nearly 15.5 percent of the 2.74 million U.S. colonies, responded to the survey.

The winter loss was about 0.6 percentage points less than losses reported for the 2013-2014 winter. This is the second year in a row that winter losses have been noticeably lower than the nine-year average winter loss of 28.7 percent.

However, beekeepers are not losing colonies only in the winter but also throughout the summer, sometimes at significant levels. Summer losses for 2014 were reported as 27.4 percent, exceeding 2014-2015 winter losses (October 2014 through April 2015) for the first time. In 2013 summer losses were reported as 19.8 percent compared with 23.7 percent for 2013-2014 winter losses, and 2012 summer losses were reported as 25.3 percent compared with 30.5 percent for 2012-2013 winter losses.

Total annual losses were 42.1 percent for April 2014 through April 2015 – up from 34.2 percent for 2013-2014.

"The winter loss numbers are more hopeful especially combined with the fact that we have not seen much sign of Colony Collapse Disorder (CCD) for several years, but such high colony losses in the summer and year-round remain very troubling," said Jeff Pettis of the USDA Agricultural Research Service Bee Research Laboratory in Beltsville, Maryland.

About two-thirds of the beekeepers responding to the survey reported losses greater than the 18.7 percent level that beekeepers reported is economically acceptable. ("Bee Survey: Lower Winter Losses, Higher Summer Losses, Increased Total Annual Losses," by Kim Kaplan, USDA Agricultural Research Service, May 13, 2015; www.ars.usda.gov/is/pr/2015/150513.htm)

Researchers analyzed 219 pollen samples and 53 honey samples from 62 hives in 10 Massachusetts counties. **More than 70 percent of the pollen and honey samples contained neonicotinoids insecticides.** ("Honeybees Show Evidence of Insecticide," by Sindya N. Bhanoo, The New York Times, July 23, 2015; www.nytimes.com/2015/07/28/science/honeybees-show-evidence-of-insecticide.html?_r=0)

On July 1, the province of **Ontario** become the first jurisdiction in North America **to begin reducing the number of acres planted with neonicotinoid-coated corn and soybean seeds.** The goal is to reduce acreage of such plantings by 80 percent by 2017, with those still using neonicotinoid seeds then proving they have pests. In the winter of 2013-14, Ontario beekeepers lost 58 per cent of their honey bees. ("Ontario first in North America to curb bee-killing neonicotinoid pesticides," by Robert Benzie, Toronto Star, June 9, 2015; www.thestar.com/news/queenspark/2015/06/09/ontario-first-in-north-america-to-ban-bee-killing-neonicotinoid-pesticides.html)

Entomology professor Bryan Danforth has shown that at the 37-acre Cornell Orchards in Ithaca, N.Y., **wild bees pollinated apples sufficiently** to provide enough fruitlets to support a full crop this year. Since 2008, Danforth and his coworkers have found more than 100 wild bee species when they surveyed 20 upstate orchards – 26 wild bee species at Cornell’s Ithaca orchard alone. “If you’re an apple grower and you want to make sure you can produce apples for the next 50 years, having the insurance that you have a diverse wild pollinator fauna in and around your orchard will be important,” Danforth said. (“Leap of faith proves pollination can be honeybee free,” by John Carberry, Cornell Chronicle, June 3, 2015; www.news.cornell.edu/stories/2015/06/leap-faith-proves-pollination-can-be-honeybee-free)

Researchers led by David Kleijn of the Center for Ecosystem Studies in The Netherlands reviewed 90 studies from five continents concerning bees on agricultural crops. They found that wild bees contribute more than \$3,000 per hectare to insect-pollinated crop production, while domesticated honeybees contribute \$2,913. But the studies looked at only 12.6 percent of known wild bee species at the study sites – missing almost 90 percent of bee diversity. The researchers say that **conservation policies that support the most economical ecosystem services benefit only the most dominant species** and neglect rare, more threatened species. A more complete approach, they say, would support more diverse bee species and could offer pollination “insurance effects.” (“Putting a Price on Pollinators,” by Jason G. Goldman, Conservation, June 17, 2015; <http://conservationmagazine.org/2015/06/putting-a-price-on-pollinators/>; Original article: “Delivery of crop pollination services is an insufficient argument for wild pollinator conservation,” by David Kleijn et al., Nature Communications, June 16, 2015; <http://www.nature.com/ncomms/2015/150616/ncomms8414/full/ncomms8414.html>)

When **bumblebees** in a tented experimental setting foraged on flowers sprayed with the common **fungicide** chlorothalonil, their colonies and workers were smaller, and their queens, if found, seemed ill. Another recent study found that New York orchards in nature-rich areas had more bees and more species of bees than orchards in agriculturally intensive areas, and that fungicides contributed significantly to the pesticide effects on bees. Fungicides may harm beneficial microbes, including fungi, that help maintain bees’ health, say the researchers. (“Bees feeding on fungicide-dosed flowers develop health issues, studies say,” by Brandon Keim, The Guardian, June 18, 2015; www.theguardian.com/environment/2015/jun/18/bees-fungicide-flowers-farm-insecticide)

The Norwegian environmental group Bybi is promoting a **"bee highway" in Oslo** to protect endangered pollinators. Grass in parks is being replanted with sunflowers, marigolds and other bee favorites; businesses are planting terraces and putting up bee hives; homeowners are planting pollinator-friendly gardens – all with the goal of providing the insects with a safe passage through the city. (“Oslo creates world's first 'highway' to protect endangered bees,” by Pierre-Henry Deshayes, AFP, June 25, 2015; <https://uk.news.yahoo.com/oslo-creates-worlds-first-highway-protect-endangered-bees-032733554.html#a2dmhA9>)

Organic

The 15-member **National Organic Standards Board (NOSB)** was created to convey to the USDA the organic community's position on critical organic industry positions. The USDA administers the federal National Organic Program. The NOSB has been **criticized increasingly** for supporting positions that favor "big organic" over local, smaller-scale organic. After a meeting of the NOSB this spring, MOFGA-certified organic farmer Jim Gerritsen said that rather than being an independent voice, as intended, "in reality, the practical relationship is that the NOSB acts as a very junior partner and errand boy for USDA." The Secretary of Agriculture appoints NOSB members; the USDA rather than the NOSB now creates NOSB meeting agendas; NOSB members are no longer allowed to offer independent motions; when several NOSB members requested formation of an "open docket" system to improve the ability of the organic community to offer written comments, the idea was rebuffed; the NOSB has created a task force to consider allowing "organic hydroponic" systems, even though such systems do not involve growing crops in soils (MOFGA does not certify organic hydroponic systems); and based on a vote of questionable legitimacy (i.e., allowing an absentee NOSB member to vote via Skype), the NOSB voted 10 to 5 in favor of allowing chicken producers to continue to use synthetic methionine (an amino acid), while natural sources of methionine are available to pastured chickens that eat insects. The USDA organic standard is still the gold standard, said Gerritsen, and it needs to be protected. Details of the spring NOSB meeting are posted at <http://www.cornucopia.org/2015/05/day-four-thursday-report-nosb-members-voting-while-not-at-the-meeting/>. The fall NOSB meeting will take place on October 26-29 in Stowe, Vermont. ("Protect Organic Integrity," by Jim Gerritsen, The Seed Piece, May 2, 2015; www.woodprairie.com/Newsletter_050215; USDA National Organic Program NOSB meetings, www.ams.usda.gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateJ&page=NOSBMeetings)

A referendum by the membership of the **Organic Seed Growers and Trade Association (OSGATA)** **unanimously opposed the organic check-off** proposed by the Organic Trade Association (OTA). "Significantly, not a single vote was cast in favor of the Organic Check-off and America's organic farmers and seed growers reject the OTA's mandatory tax on organics," says OSGATA. The OSGATA membership, which comprises certified organic farmers, seed companies, seed professionals and affiliate organizations, is concerned that the proposed organic check-off will be like other check-off programs, favoring large corporate businesses instead of small-scale family farmers and ranchers. Jim Gerritsen, a MOFGA-certified organic seed farmer and president of OSGATA, calls the check-off "industry's mandatory tax on our livelihoods."

The 2014 Farm Bill created the opportunity for a petition for an organic check-off; that petition is pending review by USDA for compliance with the Generic Research and Promotion Act. The OTA supports the check-off to promote the organic industry and fund gaps in organic research.

National Farmers Union (NFU) President Roger Johnson says the petition does not adequately represent producers on the board, does not appropriate enough money to agricultural research and provides for too high of an administrative cap. The proposed composition of the organic check-off board allows for a processor majority, a disproportionate representation of the organic industry. Johnson says producers should have a majority of board seats.

As we went to press, the USDA was soliciting alternative proposals for the check-off, and MOFGA was studying the issue. (“OSGATA Membership Overwhelmingly Votes To Oppose Industry’s Organic Check-off,” Organic Seed Growers and Trade Assoc., May 19, 2015; <http://archive.constantcontact.com/fs122/1104248386985/archive/1121119089930.html>; “NFU Voices Concerns with Petition for Organic Checkoff,” by Andrew Jerome, National Farmers Union, May 13, 2015; www.nfu.org/nfu-voices-concerns-with-petition-for-organic-checkoff/2206)

Certified organic farmers and various organizations (including MOFGA) sent a letter in June to CEO John Mackey of **Whole Foods Market** calling the company’s new **“Responsibly Grown” produce marketing scheme “onerous and expensive”** and stating that it **devalues the certified organic label**. Whole Foods’ labels produce as “Good,” “Better” or “Best,” based on a questionnaire growers complete and send to Whole Foods, along with payment (which can be thousands of dollars). No independent, third-party inspection is involved, as it is for certified organic products.

Under the Whole Foods program, conventionally grown produce, treated with toxic agrochemicals, can be rated higher than certified organic produce, which is grown under strict, legally enforced compliance overseen by USDA. This spring, for example, Whole Foods stores in California labeled conventionally grown asparagus from Mexico as “best” and locally grown, certified organic asparagus as “good.” Although the Whole Foods rating system bans a selected list of synthetic pesticides, most toxic agrochemicals are still available for their conventional growers to use based on the company’s “Responsibly Grown” protocols. For example, the USDA’s National Organic Program bans the spraying of synthetic mold and sprout inhibitors on potatoes after harvest, but these can be used on potatoes that receive Whole Foods’ “Best” rating.

The Cornucopia Institute has asked the Federal Trade Commission to investigate Whole Foods due to allegations of consumer fraud; and five farmers who supply Whole Foods wrote a letter to Mackey protesting the ratings system, with other suppliers and interested parties (including MOFGA) signing on to the letter.

Meanwhile, in July, Whole Foods announced changes to its “Responsibly Grown” rating system, including adjusting in-store signage to clearly label non-organic produce and floral items as “Conventional,” recognizing certified organic products with additional points, and automatically granting certified organic produce and floral products a minimum rating of “Good” until January 1, 2016. (“Whole Foods Markets: Throwing Organic Farmers Under the Bus?” Cornucopia Institute, June 12, 2015; www.cornucopia.org/2015/06/whole-foods-markets-throwing-organic-farmers-under-the-bus/?utm_source=eNews&utm_medium=email&utm_content=6.23.15&utm_campaign=WFBusArticle; “Whole Foods Faces FTC Mislabeling Investigation,” The Cornucopia Institute, June 24, 2015; www.cornucopia.org/2015/06/whole-foods-faces-ftc-mislabeling-investigation/; “An Update to our Responsibly Grown Ratings System Whole Foods,” by John Mackey, July 14, 2015; www.wholefoodsmarket.com/blog/update-our-responsibly-grown-ratings-system)

Friends of the Earth has found that **the food industry is spending millions** to shape media coverage and public perception through front groups such as the U.S. Farmers and Ranchers Alliance (partnering with Monsanto, DuPont, Dow, Syngenta and others) and the Coalition for Safe and Affordable Food in an attempt **to quell consumer concerns**. In a June report, FOE says 14 such groups, which often say they are independent despite industry funding, have spent \$126 million since 2011. The report argues that "[l]eft unchecked, the recent growth in industry-sponsored spin, misinformation and covert communications could succeed in misleading consumers and reducing demand for and access to safe, sustainable and organic food."

The report, "Spinning Food: How Food Industry Front Groups and Covert Communications are Shaping the Story of Food," documents unprecedented levels of spending from front groups, trade associations, anti-GMO labeling campaigns, federal check-off programs and vast corporate marketing budgets aimed at defusing public concern about the risks of chemical-intensive industrial agriculture and undermining the reputation of organic food.

The groups' tactics include efforts to disparage "organic moms," the growth of "native advertising" disguised to look like real news, stealth engagement on social media and use of third-party allies to echo industry talking points. Coordinated messages pushed by seemingly independent spokespeople are moving from PR firms to the pages of leading media outlets. The report details and debunks five of these key messages, including "organic food isn't worth the money" and "GMOs are needed to feed the world." ("Big food and chemical corporations spend millions to attack organic," by Kate Colwell, Friends of the Earth, June 30, 2015;

www.foe.org/news/archives/2015-06-big-food-and-chemical-corporations-spend-millions-to-attack-organic)

More than 300 leading **scientists have issued a statement calling on Congress and the USDA to prioritize agroecology** – the science of managing agricultural lands and minimizing their impact on the environment – when funding agricultural research. According to their statement, agroecology can increase land productivity while reducing the harm that conventional farming practices have had on public health, wildlife and air and water quality. ("Agroecology Practices Critical to Sustainable Agriculture, but Lack Funding," by Marcia DeLonge, Union of Concerned Scientists, June 30, 2015; www.ucsusa.org/news/press_release/scientist-call-for-increase-to-agro-research-funding-0508#.VZLGkWRVikp)

Genetic Engineering

(GE; aka Genetically Modified Organisms, or GMO. Note: Organic standards do not permit use of GE materials in organic farming.)

Dr. V.A. Shiva Ayyadurai and Prabhakar Deonikar, using computational systems biology, show how **genetically engineering soy** to be Roundup-resistant can disrupt the plant's natural ability to control stress. The work predicts "significant **accumulation of formaldehyde and concomitant depletion of glutathione** in the GMO, suggesting how a 'small' and single GM creates 'large' and systemic perturbations to molecular systems equilibria." Formaldehyde is a known carcinogen, and glutathione is an antioxidant needed for cellular detoxification. Ayyadurai says these effects invalidate FDA's current regulatory framework of "substantial equivalence" used to approve GE foods, adding, "The results demand immediate testing along with rigorous

scientific standards to assure such testing is objective and replicable. It's unbelievable such standards for testing do not already exist. The safety of our food supply demands that science deliver such modern scientific standards for approval of GMOs." In the United States, 94 percent of the soy grown is GE, and it is used widely in foods, including infant formula. ("Systems Biology Group, International Center for Integrative Systems: GMO Soy Accumulates Formaldehyde & Disrupts Plant Metabolism, Suggests Peer-Reviewed Study, Calling For 21st Century Safety Standards," PR Newswire, July 14, 2015; www.prnewswire.com/news-releases/systems-biology-group-international-center-for-integrative-systems-gmo-soy-accumulates-formaldehyde--disrupts-plant-metabolism-suggests-peer-reviewed-study-calling-for-21st-century-safety-standards-300112959.html?tc=eml_cleartime; Original study: "Do GMOs Accumulate Formaldehyde and Disrupt Molecular Systems Equilibria? Systems Biology May Provide Answers," by V. A. Shiva Ayyadurai and Prabhakar Deonikar, Agricultural Sciences, 6, 630-662, July 2015; <http://www.scirp.org/journal/PaperInformation.aspx?PaperID=57871#.VaZvO2RVikq>)

The USDA Agriculture Marketing Service has developed government certification and **voluntary "USDA Process Verified" labeling** for foods that are not made from GE ingredients. Companies must pay for the AMS to verify GMO-free claims. Companies can already put their own GMO-free labels on foods, and more than 31,000 products use the private Non-GMO Project label, the only third-party-verified label for foods made without GE ingredients. SunOpta Inc. was the first company to use the federal label, for its food-grade soybeans and corn.

Meanwhile, in July the U.S. House of Representatives passed, by 275 to 150, Rep. Mike Pompeo's bill for voluntary federal certification that would also prohibit state labeling laws. Monsanto Co. and other biotechnology giants supported Pompeo's Safe and Accurate Food Labeling Act of 2015, popularly called the "DARK Act" – "Denying Americans the Right to Know." Maine Representatives Chellie Pingree and Bruce Poliquin opposed Pompeo's bill.

Several amendments to the bill were struck down, including one to ensure tribal sovereignty to ban or restrict GE crop cultivation; one to prohibit use of the term "natural" on foods made with GE ingredients; Representative Peter DeFazio's amendment to require U.S. food companies that label their GE-containing products in other countries to do the same for U.S. consumers purchasing the same product; and one offered by Representatives Chellie Pingree, Jared Polis and Peter DeFazio that would have eliminated the majority of the bill and left only the USDA non-GMO certification program element of the legislation.

Supporters said the DARK Act would eliminate a patchwork of GE labeling laws. "If the seed, chemical, and food industry is truly concerned about the patchwork state-by-state approach, then it is unclear why supporters of this bill would not support a uniform federal standard for GMO labeling," said the National Sustainable Agriculture Coalition (NSAC). Such a bill, introduced by Senator Barbara Boxer and Representative Peter DeFazio, has languished without being considered by the relevant committees. "Clearly," said the NSAC, the House vote today is more about serving the interests of the food industry than it is about providing transparency to consumers and clearing up confusion in the marketplace."

As we went to press, no companion bill existed in the Senate. (“USDA creates new government certification for GMO-free,” by Mary Clare Jalonick, The Big Story, May 14, 2015; <http://bigstory.ap.org/urn:publicid:ap.org:8930f4ff0d214eaf93143df83cb6f15c>; “First company certified to use government-verified non-GMO seal,” by Joan Murphy, Produce News, May 20, 2015; www.producenews.com/news-dep-menu/test-featured/15903-first-company-certified-to-use-government-verified-non-gmo-seal; “Monsanto in the middle of upcoming congressional fight over GMO labeling,” By Chuck Raasch, St. Louis Post-Dispatch, June 15, 2015; www.stltoday.com/news/local/govt-and-politics/monsanto-in-the-middle-of-upcoming-congressional-fight-over-gmo/article_dd32e29e-208a-593c-9abc-b1452b4dedd1.html; “Congress Moves To Stop States From Requiring GMO Labeling,” by Michael McAuliff, Huffington Post, July 14, 2015; http://www.huffingtonpost.com/2015/07/14/gmo-labels_n_7794366.html; “DARK Act Approved in the House,” National Sustainable Agriculture Coalition, July 23, 2015; http://sustainableagriculture.net/blog/dark-act-passes-house/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29; Final Vote Results for Roll Call 462, <http://clerk.house.gov/evs/2015/roll462.xml>)

In April, a U.S. district court judge refused to block implementation of Vermont’s Act 120, which will require labeling of foods made from GE ingredients by July 1, 2016. The Grocery Manufacturers Association et al. had appealed Vermont’s law, saying labeling would violate the First Amendment. They sought to delay implementation of the law until their appeal had been decided, since they will have to begin making label changes soon to meet the July 1 date, and the appeal could take up to two years to be decided. (“What does the ruling in Vermont mean for GMO labeling?” by Elaine Watson, Food Navigator, April 30, 2015; www.foodnavigator-usa.com/Regulation/What-does-the-ruling-in-Vermont-mean-for-GMO-labeling)

Kashi has agreed to pay up to \$3.99 million to settle a Florida lawsuit charging the company with **false advertising for labeling its foods containing GE ingredients as “natural.”** The company settled a similar, 2014 case in California for \$5 million. Likewise, Karlin Foods has agreed to pay up to \$825,000 after being sued in Florida for labeling its cornstarch, which plaintiffs said was made from GE corn, as “all-natural,” and Campbell Soup is being sued for labeling its Prego sauces as “100% natural” when they contain GE canola. (“Kashi agrees to pay up to \$3.99m to settle 'all-natural' lawsuit; Campbell Soup under fire over Prego labels,” by Elaine Watson, Food Navigator, June 15, 2015; www.foodnavigator-usa.com/Regulation/Kashi-agrees-to-pay-up-to-3.99m-to-settle-all-natural-lawsuit)

A ban on growing GE crops in Jackson County, Oregon, took effect in June, but county commissioners will have to figure out how to enforce the ban. Meanwhile, a federal judge rejected farmers’ claim that the ordinance violated their “right to farm” under state law, but the GE farmers’ claim for \$4.2 million in compensation from the county is still pending. County officials won’t enforce the GE ban until that is resolved. (“Jackson County’s GMO ban taking effect: What happens next?” by Jacy Marmaduke, The Oregonian, June 6, 2015; www.oregonlive.com/politics/index.ssf/2015/06/jackson_countys_gmo_ban_taking.html)

A federal judge ruled in June that a **Maui County, Hawaii, ban on cultivating GE crops**, approved by voters last November, **was pre-empted by federal and state law** and invalid. Monsanto and Dow have research farms in the county. Citizens who sponsored the ballot initiative said they will appeal the judge's ruling. ("Federal judge rules Maui County ban on GMO crops invalid," by Audrey McAvoy, St. Louis Post-Dispatch, July 1, 2015; www.stltoday.com/news/science/federal-judge-rules-maui-county-ban-on-gmo-crops-invalid/article_016f788b-bc0c-50ab-a415-b2af74a44194.html)

Dozens of **consumer and food groups and businesses** filed recommendations with the USDA in June **seeking tighter regulation of GE crops** in order to protect the environment, economy, farmers, consumers and public health. After numerous problems related to GE crops arose, the USDA had proposed a regulatory rule in 2008 but never finalized the proposal and has now withdrawn it. Meanwhile, the Obama administration says it will update the way the government regulates GE crops, animals and microbes (but not pharmaceuticals). The current "coordinated framework," begun in 1986 and updated in 1992, split responsibility for regulating GE crops among the USDA, EPA and FDA. The update is intended, in part, to "prevent unnecessary barriers to future innovation and competitiveness," says the White House. ("Tighter controls urged as USDA eyes regulation of GMO crops," Reuters, St. Louis Post Dispatch, June 22, 2015; www.stltoday.com/business/local/tighter-controls-urged-as-usda-eyes-regulation-of-gmo-crops/article_81aa2338-23b2-524e-8056-b48a3b8fc1b5.html; "White House Orders Review of Rules for Genetically Modified Crops," by Andrew Pollack, The New York Times, July 2, 2015; www.nytimes.com/2015/07/03/business/white-house-orders-review-of-biotechnology-regulations.html?_r=0)

Pesticides

The IVL Swedish Environmental Research Institute, commissioned by Coop Sverige AB, studied the **effects of an organic diet on a family** that usually did not eat organic food. During the study, the two adults and three children first ate conventional, non-organically grown food for a week, then only organic food for two weeks. When the family ate conventionally grown food, 8 of 12 analyzed pesticide residues were found in at least one urine sample. In two of the children, the median level exceeded the detection limit for seven pesticide residues, and for one child and both adults, the median level exceeded the detection limit for five pesticide residues. When the family ate organic food, concentrations of pesticide residues in urine decreased on average by a factor of 9.5, and fewer individual pesticides were detected. The children in particular had lower concentrations during the period of organic food consumption. Levels of most tested pesticides fell in the adults. "Choosing organic foods," write the researchers, "not only reduces the levels of a number of pesticides that we are exposed to through what we eat, but also reduces the risk of a long-term impact and combination effects. We also help to reduce the spread of chemicals in the environment, and protect those who work in the cultivation of fruit and vegetables." ("Human exposure to pesticides from food," by Jörgen Magnér et al., IVL Swedish Research Institute, Jan., 2015; www.coop.se/PageFiles/430210/Coop%20Ekoeffekten_Rapport_eng.pdf)

Pyrethroid insecticides, commonly used in agriculture, residences, lice shampoos and mosquito repellents, **may harm children's cognitive development**. Increased urinary levels of the pyrethroid metabolites 3-PBA and cis-DBCA measured in children as infants and as 6-year-olds were associated with a significant decrease in cognitive performance, especially related to verbal comprehension and working memory. Children absorb these neurotoxic pesticides through the digestive system and through the skin. ("Insecticides May Affect Cognitive Development in Children," by Jenna Iacurci, Nature World News, June 12, 2015; www.natureworldnews.com/articles/15115/20150612/insecticides-may-affect-cognitive-development-in-children.htm; Original article: "Pyrethroid insecticide exposure and cognitive developmental disabilities in children: The PELAGIE mother-child cohort Jean-François Viel et al., Environment International, Sept. 2015; <http://www.sciencedirect.com/science/article/pii/S0160412015001245>)

Exposure to pyrethroid pesticides may make people with a common gene more susceptible to Parkinson's disease, based on a study of 962 participants from agricultural counties in California. Neither having the gene alone nor exposure to pyrethroids alone increased the risk of Parkinson's in this study. ("Gene brings higher risk of Parkinson's after pyrethroid exposure," The Organic Center, 7/2/2015; www.organic-center.org/hot-science/gene-brings-higher-risk-of-parkinsons-after-pyrethroid-exposure/; "Common genetic variant association with altered HLA expression, synergy with pyrethroid exposure, and risk for Parkinson's disease: an observational and case-control study," by G. T. Kannarkat et al., npj, April 22, 2015; www.nature.com/articles/npjparkd20152)

Swiss supermarket giants Coop and Migros and German retailer REWE Group say they **will no longer sell products that contain glyphosate**, after the World Health Organization reported that glyphosate is a probable human carcinogen. Glyphosate is the active ingredient in Roundup and some other herbicides (weed killers). French Ecology Minister Segolene Royal has **banned the sale of Monsanto's weedkiller Roundup** from self-service aisles at garden centers in France for the same reason. Other countries with bans in effect or in progress include El Salvador, the Netherlands (private sales), Sri Lanka, Colombia (on aerial spraying of illegal coca and poppy plants) and Bermuda; and other countries are considering bans. Meanwhile, a group of citizens in Los Angeles County has filed a class action lawsuit against Monsanto for its label claim that Roundup "targets an enzyme found in plants but not people and pets." (Glyphosate targets an enzyme called EPSP synthase that is present in the bacteria that live in the human gut). And three Chinese citizens are suing their government for not releasing a report used to permit Roundup use there, while hundreds of scientists, medical professionals and others have signed onto a campaign to stop local governments from spraying glyphosate. ("Swiss Supermarkets Stop Sales of Glyphosate over Health Concerns," Sustainable Pulse, June 4, 2015; <http://sustainablepulse.com/2015/06/03/swiss-supermarkets-stop-sales-of-glyphosate-over-health-concerns/#.VXBjY2RVikp>; "France Bans Sales of Monsanto's Roundup in Garden Centers, 3 Months After U.N. Calls It 'Probable Carcinogen'," by Zoe Schlanger, Newsweek, June 15, 2015; www.newsweek.com/france-bans-sale-monsantos-roundup-garden-centers-after-un-names-it-probable-343311; "Endgame for glyphosate? The global fallout of WHO's 'probable carcinogen' classification," by Dr. Eva Sirinathsinghji, Ecologist, June 12, 2015; www.theecologist.org/News/news_analysis/2904602/endgame_for_glyphosate_the_global_fallout_of_whos_probable_carcinogen_classification.html)

Daughters of women who had elevated concentrations of **DDT** in their blood while pregnant had almost a four-fold increased risk of **breast cancer**, independent of the mother's history of breast cancer. Those with higher levels of exposure were diagnosed with more advanced breast cancer. Possible explanations include the ability of DDT to interfere with the estrogen function and to activate a protein. Other studies have shown a slower ability to become pregnant or shorter pregnancies in daughters of women exposed to DDT and almost a three-fold risk of sons developing **testicular cancer**. DDT is banned in the United States but is used in parts of Africa and Asia to help fight malaria. (“DDT’s breast cancer legacy: Pregnant mother’s exposure linked to four-fold increase in daughter’s risk,” by Ariana Eunjung Cha, The Washington Post, June 16, 2015;

www.washingtonpost.com/news/to-your-health/wp/2015/06/16/ddts-breast-cancer-legacy-pregnant-mothers-exposure-linked-to-four-fold-increase-in-daughters-risk/)

In June the World Health Organization’s International Agency for Research on Cancer said that the insecticide **lindane**, once widely used in agriculture and to treat human lice and scabies, **causes cancer** and is specifically linked to non-Hodgkin lymphoma; and that **DDT probably causes cancer** and is linked to non-Hodgkin lymphoma (NHL), testicular cancer and liver cancer. The IARC also classified the herbicide **2,4-D** as **"possibly carcinogenic to humans."** (“WHO agency says insecticides lindane and DDT linked to cancer,” by Kate Kelland, Reuters, June 23, 2015; www.reuters.com/article/2015/06/23/us-health-cancer-insecticides-idUSKBN0P30UG20150623)

A new report by 174 researchers from 28 countries **questions the adequacy of testing chemicals for safety one at a time**, ignoring their synergistic effects on humans, and of using the philosophy that “the dose makes the poison” when chemicals that mimic hormones may be more dangerous at lower doses than at higher. The researchers reviewed the literature on effects of 85 hormone-mimicking chemicals found in the environment. Fifty, including BPA, triclosan and the commonly used herbicide atrazine, affected cancer-causing processes in the body, even at very low doses. Because the chemicals affect different biological processes, exposure to their combinations may be riskier than exposure to them individually. (“Combinations of 'safe' chemicals may increase cancer risk, study suggests,” by Sasha Harris-Lovett, Los Angeles Times, July 1, 2015; www.latimes.com/science/sciencenow/la-sci-sn-chemical-combinations-safety-cancer-20150626-story.html); Original study: “Assessing the carcinogenic potential of low-dose exposures to chemical mixtures in the environment: the challenge ahead,” by William H. Goodson III et al., Carcinogenesis (2015) 36 (Suppl 1): S254-S296; http://carcin.oxfordjournals.org/content/36/Suppl_1/S254.full?sid=db47f5ec-47a2-4879-bf30-6da9c076003d)

Women **exposed to phenols** (widely used in plastics, pesticides, cleaning products and personal care products) **and phthalates** (widely used in plastics, fragrances and vinyl products) while pregnant are more likely to have **altered gene expression in their placentas**, which may harm fetal growth by producing more or less of a protein. (“Chemicals may alter placenta genes, threaten fetuses,” by Brian Bienkowski, Environmental Health News, July 1, 2015; www.environmentalhealthnews.org/ehs/news/2015/jul/phthalates-phenols-endocrine-disruption-pregnant-women-health-fetus Original study: “Assessing the carcinogenic potential of low-dose exposures to chemical mixtures in the environment: the challenge ahead,” by William H.

Goodson III et al., Carcinogenesis (2015) 36 (Suppl 1): S254-S296;
http://carcin.oxfordjournals.org/content/36/Suppl_1/S254.full?sid=db47f5ec-47a2-4879-bf30-6da9c076003d]

Raw Milk

A Maine bill that would have allowed dairy farmers to sell unpasteurized milk directly to customers without a license **died in the Senate** in June. The bill would have allowed farmers to sell raw milk to consumers at their farm after they took a sanitation course. They would not have been allowed farmers to advertise the product.

(“Maine bill to loosen raw milk sales restrictions is dead,” AP, Portland Press Herald, June 19, 2015; www.pressherald.com/2015/06/19/maine-bill-to-loosen-raw-milk-sales-restrictions-is-dead/)

Food Safety

In a survey released by the Environmental Working Group (EWG) **of more than 250 brands of canned food, more than 44 percent use bisphenol-A (BPA)-lined cans** for some or all of their products. BPA is used to make polycarbonate plastics and is found in some canned foods and beverages, paper receipts and dental sealants. The compound, an estrogen mimic, can leach from can linings into food. Exposure to BPA has been linked to reproductive and developmental problems, obesity, cardiovascular disease, cancer and more. A substitute for BPA, bisphenol-S (found mostly in receipt paper), has exhibited similar health effects. The FDA says that amounts of BPA that may leach into canned food are not a human health risk, but the EWG says a national standard is needed to protect people’s health. (“BPA still a favorite among canned good brands,” by Brian Bienkowski, Environmental Health News, June 3, 2015; www.environmentalhealthnews.org/ehs/news/2015/jun/bpa-still-a-favorite-among-canned-good-brands)

Winter 2015

The Good News

Two new varieties of open-pollinated super-sweet corn will be available in limited quantities for the 2016 planting season, thanks to Oregon farmer and Organic Farming Research Foundation (OFRF) research partner Jonathan Spero.

The commercial release of ‘Top Hat’ and ‘Tuxana’ sweet corn seed, a milestone in reviving traditional crop breeding, increases the selection of organic-friendly varieties. Both were developed in hot, dry Southeast Oregon, with 2015 trials in Wisconsin and New York as well. Spero expects both will be broadly adapted but anticipates ongoing trials in other regions, and he expects the new varieties to improve as they are planted in new regions and as numerous farmers and gardeners save and replant the seed.

He began his research using the hybrid sweet corn ‘Tuxedo’ and a traditional, multicolored ‘Anasazi’ maize. ‘Top Hat’ is a stabilized version of ‘Tuxedo’, and ‘Tuxana’ is a white-hued blend of ‘Tuxedo’ and Anasazi parentage. Both were selected over seven generations for

sweetness, size and vigor, quick growth to outrace weeds, tightly-wrapped husks to deter pests, and ability to thrive in lower-fertility soils.

Spero's research report at www.ofrf.org details how farmers and gardeners can use low-tech breeding to continue improving the two varieties and other open-pollinated maize by selecting and saving their best seed. Techniques include thinning to favor the fastest-growing seedlings, choosing plants with the best husk coverage, marking matched pairs of ears on the most vigorous plants, and tasting ears in the field to identify the sweetest.

He also describes how to dry and store seed for the next season, and how corn seed without Anasazi genetics can be further sorted for sweetness while drying: The sweetest seeds are slowest to wrinkle as they dry. In Anasazi corn, the genes that determine sweetness are apparently more diverse, and slow wrinkling is not a good indicator of the sweetest seed. However, selecting for slow wrinkling in the corn with Anasazi parentage did result in a creamier-tasting ear.

Spero found that human taste buds judged sweetness better than a high-tech refractometer, which was fooled by soluble solids other than sucrose and was unable to perceive off-tastes that humans tasted immediately.

Limited amounts of 'Top Hat' and 'Tuxana' – both pledged as open source under the Open Source Seed Initiative (www.osseeds.org) – are available from FEDCO seeds, Siskiyou Seeds, Uprising Seeds, Bountiful Garden Seeds and Horizon Herbs.

“With some further refinement, open-pollinated corn finally begins to emerge as a real option for growers of sweet corn,” Spero reported. (“OFRF Research Partner Releases New Varieties of Open-Pollinated Sweet Corn,” Organic Farming Research Foundation, July 25, 2015; [http://www.ofrf.org/news/ofrf-research-partner-releases-new-varieties-open-pollinated-sweet-corn?utm_source=Media+Contacts+2015&utm_campaign=6c9008dccc-July+2015+Newsletter+-+media+2015&utm_medium=email&utm_term=0_988f01ee33-6c9008dccc-22500637&ct=t\(\)](http://www.ofrf.org/news/ofrf-research-partner-releases-new-varieties-open-pollinated-sweet-corn?utm_source=Media+Contacts+2015&utm_campaign=6c9008dccc-July+2015+Newsletter+-+media+2015&utm_medium=email&utm_term=0_988f01ee33-6c9008dccc-22500637&ct=t()))

Researchers managed strawberry production in the southeastern United States using conventional methods, a nonfumigated compost system with summer cover crop rotations and beneficial soil inoculants, and an organic production system. Net returns were estimated at \$14,979, \$11,100 and \$19,394 per acre, respectively. The nonfumigated compost system and organic system also considerably reduced negative impacts related to human health, groundwater pollution and fertilizer use. (“Economic Viability and Environmental Impact Assessment of Three Different Strawberry Production Systems in the Southeastern United States,” By Olya Rysin et al., HortTechnology, Aug. 2015; <http://horttech.ashspublications.org/content/25/4/585.abstract>)

A study published in Sustainable Agriculture Research reports that **organic farming methods can reduce water pollution in U.S waterways**. Nitrate leaching from farm soil into water drainage systems is a major source of water pollution in the upper Midwest. Three years of data from a USDA long-term study initiated in 2011 show that nitrate loss via water in conventional cropping systems was twice that of loss from the organic cropping system, and that the organic

pasture system lost the least nitrate. “Results of this study suggest that organic farming practices, such as the application of composted animal manure and the use of forage legumes and green manures with extended cropping rotations, can improve water quality in Midwestern subsurface-drained landscapes,” the authors concluded. (“Organic farming methods reduce water pollution,” The Organic Center, July 24, 2015; www.organic-center.org/hot-science/organic-farming-methods-reduce-water-pollution/; “Water Quality in Organic Systems,” by Cynthia A. Cambardella et al., Sustainable Agriculture Research, June 20, 2015; www.ccsenet.org/journal/index.php/sar/article/view/50106/26958)

Some organic honey has natural antimicrobial activity that can combat the growth of *Clostridium perfringens*, a bacterium known to cause food spoilage and illness in humans and animals and to be increasingly antibiotic resistant. Researchers investigated five organic honeys from Finland, one from Argentina and one from Hungary. Those with the highest antimicrobial activity were from Finland, with varying levels of antimicrobial activity likely determined by the plants on which bees collected pollen. One honey sample had no effect on *C. perfringens*; heating during processing may have destroyed the active antimicrobial compounds. (“Antimicrobial activity of organic honey fights food pathogenic bacteria,” The Organic Center, July 20, 2015; <https://www.organic-center.org/hot-science/antimicrobial-activity-of-organic-honey-fights-food-pathogenic-bacteria/>)

Results from six of the oldest grain-crop-based experiments comparing organic and conventional farming methods suggest that **conventional farmers can transition successfully to organic**. Long-term experiments analyzed include the Farming Systems Trial conducted by the Rodale Institute, the Sustainable Ag Farming Systems at the University of California at Davis, the Variable Input Crop Management Systems at the University of Minnesota, the Wisconsin Integrated Cropping Systems Trials at the University of Wisconsin in Madison, the Beltsville farming systems project at USDA-ARS in Beltsville, and Long-term Agroecological Research at Iowa State University. All showed an increase in soil health, productivity, water quality and economic benefits for farmers when they employed organic systems. “These results suggest that organic farming practices have the potential to reduce nitrate leaching, foster carbon sequestration, and allow farmers to remain competitive in the marketplace,” the authors concluded. (“Long-term studies support benefits of organic farming,” The Organic Center, July 14, 2015; www.organic-center.org/hot-science/long-term-studies-support-benefits-of-organic-farming/; “A Review of Long-Term Organic Comparison Trials in the U.S.,” by Kathleen Delate et al., Sustainable Agriculture Research, June 20, 2015; <http://www.ccsenet.org/journal/index.php/sar/article/view/50095/26951>)

Traditional farming systems are repositories of a wealth of principles and measures that **can help modern agricultural systems become more resilient to climatic extremes**. Agroecological strategies that reduce vulnerabilities to climate variability include crop diversification, maintaining local genetic diversity, animal integration, soil organic management, water conservation and more. (“Agroecology and the design of climate change-resilient farming systems,” by Miguel A. Altieri et al., *Agronomy for Sustainable Development*, 2015; http://www.zalf.de/de/forschung/institute/lse/publ/Documents/2015_Publication%20Lana%20et%20al.pdf)

Scientists studying insect diversity in cornfields on 53 South Dakota farms found that **fields with a lot of diversity had fewer pests**. Even where pesticides were not used, fields with many different insects had fewer crop-damaging insects. Cropping systems designed to foster diversity can help reduce insecticide use – and reducing insecticide use, planting cover crops and reducing tillage help build a healthy insect community. (“Study finds bug diversity cuts down on crop pests,” by Dan Gunderson, MPR News, July 31, 2015; www.mprnews.org/story/2015/07/31/bug-diversity; “Trading biodiversity for pest problems,” by Jonathan G. Lundgren and Scott W. Fausti, Science Advances, July 31, 2015; <http://advances.sciencemag.org/content/1/6/e1500558>)

Hedgerows of native California flowering shrubs planted along the edge of a crop field **help control crop pests** by increasing the activity of natural enemies, providing economic benefits. A two-year study of hedgerows planted adjacent to processing tomatoes showed more natural enemies such as lady beetles and fewer crop pests compared with conventionally managed field crops edged with residual weeds. The increase in natural enemy activity in the hedgerows extended 600 feet into adjacent tomato crops and resulted in fewer aphid pests and more stink bug egg predation by parasitoid wasps. Tomato fields adjacent to hedgerows required fewer pesticide treatments than the tomato fields without hedgerows.

Many natural enemies in the adult stage need nectar and pollen to survive and reproduce. For example, syrphid fly larvae prey voraciously on aphids, but adult syrphids feed entirely on flowers. Therefore a hedgerow planted on a field edge needs to include a seasonal range of flowering plants so that flowers are always or usually available for natural enemies.

Additional research has shown that hedgerows are important for pollinators, such as native wild bees, that feed on flowers and nest in the ground or in holes in plant stems. More wild bees are present on farms with hedgerows than with conventionally farmed field edges.

Hedgerows also provide wildlife habitat, especially for migratory songbirds.

Hedgerows cost about \$4 per linear foot to plant and manage for the first three years for a single row of shrubs and native grasses about 15 feet wide. The Natural Resources Conservation Service (NRCS) offers cost-share programs through USDA's Environmental Quality Incentives Program (EQIP) to cover about 50 percent of the establishment costs. Due to reduced pesticide use, a hedgerow can pay off in about 15 years. Adding pollination services in areas without enough honeybees can significantly reduce that time. (“Hedgerows next to crops can enhance pest control,” University of California, Aug. 18, 2015; <http://ucanr.edu/news/?blogpost=18708&blogasset=2578>)

Crop rotations, in isolation from other management factors, **can increase the functions performed by soil microbial communities that benefit plant growth**, according to research at the University of New Hampshire Agricultural Experiment Station. Researchers tested five combinations of three crops – soy, wheat and corn – and two cover crops – red clover and rye. They also planted a crop of corn only, while minimizing the effects of other management practices such as variable fertilizer and pesticide inputs that interfere with the crop rotation effect. Researchers observed a 33 percent increase in soil carbon by increasing rotational

diversity. An indication of soil organic matter, the carbon content of soil is a major factor in its overall health and improves the physical properties of soil. Researchers also found that as crop diversity increased, so did total nitrogen concentrations, a sign of soil fertility. (“Crop Rotation Boosts Soil Microbes, Benefits Plant Growth,” University of New Hampshire, Sept. 2, 2015; <http://colsa.unh.edu/aes/croprotaion>)

The USDA **National Agricultural Statistics Service** (NASS) released in September the results of its **2014 Organic Survey**, which provides information reported from certified organic farms and from organic farms with sales under \$50,000 which are not required to be certified and are classified as “exempt” from certification (but must still adhere to USDA National Organic Program standards in order to use the term “organic”). In Maine, the number of organic farms increased from 379 in 2008 to 517 in 2014 – more new organic farms than any other state in this period. (MOFGA Certification Services LLC certifies about 472 organic farms.) Organic acreage in Maine rose 107 percent, from 28,265 acres to 29,980 acres. Sales of Maine organic products increased 74 percent, from \$31 million to \$54 million. Sales of value-added Maine organic products increased from \$1.1 million to \$2.5 million.

In Maine, 457 organic farms raised crops, including greenhouse and nursery crops, while 123 raised livestock.

Nationally the survey reports a 72 percent increase in sales from 2008, reaching \$5.5 billion in 2014 from 14,093 farms and ranches using 3,670,560 acres – slightly less acreage than in 2008. Milk sales were about \$1.1 billion; eggs, \$420 million. The total number of U.S. organic farms reported dropped 3 percent, from 14,540 in 2008 to 14,093 in 2014 – possibly because of different survey methods; because some farmers chose not to report, as they have less than \$5,000 in annual sales and thus do not need to be certified; because farms may be intensifying production and/or adding value; or because some small farms became bigger. The number of larger certified organic farms increased 15 percent from 2008 to 2014. Sales at natural and organic retailers rose 9 percent in the past year, compared with 1.3 percent at conventional retailers, according to market research firm Spins.

California has the largest number of organic farms, acres and sales – generating 41 percent of U.S. organic agricultural sales, according to the NASS.

While most organic farms rely on wholesale markets, almost half also sell directly to consumers, such as through a community supported agriculture enterprise or farmers’ market. Over 46 percent of organic sales occur within 100 miles of the farm. A much larger share of organic than conventional farmers sell to both wholesale and local markets. (“New Farm Data Shows Strong and Growing Organic Sector in Maine,” MOFGA press release, Sept. 17, 2015; “Maine led nation for organic farm gains since 2008,” By Darren Fishell, Bangor Daily News, Sept. 18, 2015;

<https://bangordailynews.com/2015/09/18/homestead/maine-led-nation-for-organic-farm-gains-since-2008/>;

“New Data Shows Organic Farmers Continue to Expand Markets and Increase Sales,” National Sustainable Agriculture Coalition, Sept. 17, 2015;

<http://sustainableagriculture.net/blog/2014-org-production-survey/>; 2012 Census of Agriculture – Organic Survey (2014), Volume 3, Special Studies, Part 4, AC-12-SS-4, USDA National Agricultural Statistics Service, September 2015;

www.agcensus.usda.gov/Publications/Organic_Survey/; “Sales from organic U.S. farms reached

\$5.5 bln last year –USDA,” by Tom Polansek, Reuters, Sept. 17, 2015;
www.reuters.com/article/2015/09/17/usda-organic-sales-idUSL1N11N33D20150917)

A law to encourage **food self-sufficiency in Maine** went into effect on October 15, 2015.

“It is the policy of the state to be food self-sufficient. This law strengthens that policy by encouraging people to grow, process and preserve their own food to feed themselves, their families and their communities,” said Rep. Craig Hickman, D-Winthrop, sponsor of the measure. “It also addresses the current shortage of available farm workers for the many new and expanding small-scale family farms that are taking advantage of the growing local foods movement.”

The law directs the Department of Agriculture, Conservation and Forestry to develop and administer an agricultural jobs network. It links farms and facilities that process agricultural products grown in Maine with available workers involved in farming or a local food industry, or with those required to perform community service. It directs the department to develop an educational marketing campaign to promote food self-sufficiency by encouraging the public to grow gardens, raise farm animals and preserve garden-grown food. The new law also requires the department of agriculture to purchase food that is grown, harvested, prepared, processed and produced in Maine when purchasing food for an emergency or supplemental food program for elderly or low-income people whenever possible. The full text of the law appears at <http://www.mainelegislature.org/legis/bills/getPDF.asp?paper=HP0877&item=7&snum=127>. (“Food self-sufficiency law goes into effect Oct. 15,” by Ann Kim, press release, Maine Legislature House Democratic Office, Oct. 9, 2015; www.maine.gov/legis/housedems/)

In October the USDA announced **awards totaling \$17 million through the Beginning Farmer and Rancher Development Program (BFRDP)**, the only USDA program exclusively dedicated to training new farmers and ranchers, particularly in sustainable production practices. The program supports training, technical assistance and education to new farmers to ensure they have the business, production and marketing skills to build successful and viable farming operations.

This year **MOFGA** was among the 34 organizations that received BFRDP grants. The three-year, **\$709,713 award** will support 150 new, beginning farmers in MOFGA’s Journeyperson Program, which equips new farmers throughout Maine with innovative production, management and marketing skills. This project also aims to increase capacity for new farmers to become mentors to the next generation of Maine farmers.

Other recipients include the Farmer Veteran Coalition (FVC), which will expand its national peer network to facilitate access to training, education, internships, jobs, mentors and other resources for beginning farmer veterans. The FVC will also provide 27 on-farm workshops focusing on basic small-scale livestock/vegetable production practices, business planning and risk management. Throughout the grant, farmer veterans will receive individualized support using a case management model. And the N.H.-based Land For Good’s renewal grant continues to help New England’s beginning farmers access land and improve conditions for successful land access. (“USDA Awards Millions to Support New Farmers,” National Sustainable Agriculture Coalition, Oct. 8, 2015; http://sustainableagriculture.net/blog/fy15-bfrdp-awards/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+Sustainable

[AgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29\)](#)

A \$1 million USDA grant will help boost organic grain production in northern New England.

“We are very excited by this new USDA award in that it recognizes the impact of the work we’ve done with farmers, millers and bakers with our prior grant to build a local, organic bread wheat economy in our region,” says Ellen Mallory, University of Maine Cooperative Extension specialist and UMaine associate professor of sustainable agriculture.

The grant will be shared with researchers at the University of Vermont; UMaine will receive 60 percent of funds as the lead institution. The money will provide needed support to expand the local organic grain sector to include other grains, including oats, barley, rye and spelt. The project will help evaluate seeding equipment, design weed and disease management strategies, establish efficient legume green manure and rotation systems and expand networking among farmers, processors, end-users and educators.

Though New England has excelled in developing organic dairy and vegetable sectors, it lags behind other regions for organic grain production, says Mallory. However, she notes that the recent increase in organic wheat production in Maine and Vermont — from 309 acres in 2008 to 1,730 in 2013 — demonstrates New England’s potential for growth.

The project, titled “Innovative Sowing, Cultivation, and Rotation Strategies to Address Weed, Fertility, and Disease Challenges in Organic Food and Feed Grains,” involves nine researchers from UMaine and UVM and will span four years. (“Researchers receive \$1 million to boost organic grain production in Maine,” By Amanda Clark, UMaine News, Sept. 25, 2015; <https://umaine.edu/news/blog/2015/09/25/researchers-receive-1-million-to-boost-organic-grain-production-in-maine/>)

The Pittsfield-based **Maine Federation of Farmers’ Markets (MFFM)** has received more than **\$348,000 in federal funds** for work in Maine communities. The USDA’s Food and Nutrition Service will provide \$249,600 to increase access at Maine farmers’ markets for people participating in the Supplemental Nutrition Assistance Program (food stamps). This will enable MFFM to hire a SNAP program manager to support low-income access at the markets and impact specific Maine communities. Projects such as this benefit small farmers, too.

The MFFM also received \$99,000 from the USDA’s Agricultural Marketing Service for a statewide marketing campaign and to develop a Farmers’ Market Snapshot Week event to collect data, photos and stories about Maine’s markets, culminating in the publication of an annual report.

Maine has more than 8,000 farms and 150 farmers’ markets. The database of Maine’s farmers’ markets is available at mainefarmersmarket.org. (“MFFN Receives Two USDA Grants,” MFFN press release, Oct. 8, 2015; <http://www.mainefarmersmarkets.org/news-events/mffm-wins-usda-grants/>)

Maine has five **NOFA (Northeast Organic Farming Association)-accredited organic land**

care professionals: Wayne Davis of Maine Organic Lawn Care in Richmond; Carol Laboissonniere of CL Design & Landscaping LLC in Kennebunkport; David Melevsky of Go Green Landscaping Inc. in Scarborough; Justin Nichols of Durham; and Paula Kovecses of T.W.I.G. Horticultural Consulting of Eastport. In addition, two individuals are accredited at the supporter level: Katherine Holland of Warren and Daniel MacPhee of Palermo. NOFA-accredited land care professionals have completed 30 hours of coursework, adhere to NOFA standards and attend yearly trainings. The next New England Regional Accreditation Course in Organic Land Care will take place from February 22-25, 2016, at Three Rivers Community College in Norwich, Connecticut. In addition, NOFA's Online Organic Lawn Care Certificate Course can be taken at any time. FMI: <http://organiclandcare.net/>

In **“Growing Maine’s Food Industry, Growing Maine,”** researchers from Harvard Kennedy School (HKS) and Harvard Business School highlight Maine’s growing food industry cluster, identifying opportunities and challenges for business growth and job creation.

The project report concludes that with roughly 50,000 Mainers working in the farming, fishing and aquaculture and food processing industries (including affiliated local food industries such as grocery stores and restaurants), abundant farmland and water, the productive Gulf of Maine and access to large Northeastern markets, Maine’s food industry cluster has significant strengths to build upon. Based on its employment specialization, Maine ranks second in the United States for its fish and fishing products, 21st for food processing, and 26th for agriculture. Employment in agriculture has been growing briskly in the state.

These strengths are reinforced by positive trends in Maine’s food industries: lobster, scallops, aquaculture, craft beer and natural and organic food have seen sales growth and proliferation of new companies. Also, Maine has a growing reputation as a “foodie” destination; an influx of new farmers and a growing farming sector; and innovation around adding value to agricultural and marine products and lengthening the growing season.

Challenges for Maine food businesses include managing operations, finances and growth; expanding into new markets; supply chain bottlenecks, infrastructure gaps, labor availability and cost; transportation and energy costs; government regulation; and increased competition supplying local consumers, pointing to an opportunity to supply larger markets in the Northeast.

More than 100 organizations support Maine’s food industry but they lack a broadly-agreed upon growth strategy for Maine farms, seafood companies and food processors, says the report. Vermont and Oregon are profiled as states with strategies to grow their farm-to-plate and food manufacturing industries respectively, with dramatic results. Since Vermont launched its Farm to Plate Initiative in 2009, the number of food companies has increased by 5.9 percent, food manufacturing jobs have grown by 34.5 percent, and the agriculture sector has added 4,189 jobs.

The project makes recommendations for growth opportunities for Maine’s farming, seafood and food processing sectors. Among them: Maine food business leaders, food system advocates, investors and others need to come together and define a growth plan. The report outlines steps for scaling up food processing to add more value and boost productivity; working with growth-oriented, mid-sized companies looking to expand their sales to customers outside of Maine; and exploring industry niches where Maine businesses can produce sustainable protein food and

beverage products in light of estimates that the world's demand for protein will double by 2050. ("Study Finds Opportunity for Growth in Maine's Farming, Seafood and Food Processing Industries," by Merritt Carey, Harvard University, Oct. 22, 2015; full report at www.hks.harvard.edu/centers/mrcbg/programs/maine)

Antibiotics

Researchers investigating staphylococcal populations responsible for causing mastitis in dairy cows in South Africa found that humans carried more multidrug-resistant staphylococci than the farm animals with which they worked. "The risk, therefore, is the transfer from humans to farm animals and not from farm animals to humans as is often suggested," said Matt Lucy, Ph.D., professor of animal science at the University of Missouri and editor-in-chief of the Journal of Dairy Science. ("Study: Farm workers carry more antibiotic-resistant bacteria than animals," *Bovine & Veterinarian*, Aug. 25, 2015; www.bovinevetonline.com/news/industry/study-farm-workers-carry-more-antibiotic-resistant-bacteria-animals)

Bees

Alexandra-Maria Klein of the University of Freiburg and colleagues studied 124 fruit, vegetable and seed crops representing the top 99 percent of global food production, according to the U.N. Food and Agriculture Organization. They found that some degree of animal pollination was necessary for 87 of those crops, irrelevant for 28 and unknown for the rest. Based on USDA data on the nutrient content of each crop, the team estimated that **the majority of vitamins A and C and most carotenes and tocopherols come from crops that at least partially depend on animal pollinators**, so jeopardizing animal-dependent pollination "could have a potentially drastic effect on human nutrition," they said. ("Pollinator Power: Nutrition Security Benefits of an Ecosystem Service," by Wendee Nicole, *Environmental Health Perspectives*, August 2015; <http://ehp.niehs.nih.gov/wp-content/uploads/123/8/ehp.123-A210.alt.pdf>)

After Washington state mycologist Paul Stamets, owner of Fungi Perfecti, noticed honeybees sipping on woodland fungal mycelium, he and Washington State University entomologist Steve Sheppard started feeding liquid extracts of those forest mushrooms to honeybees infected with varroa mites. Initial findings suggest that **five species of wood-rotting fungi can reduce viruses that affect bees** after hives have been infected with varroa mites, and can increase the lifespan of the bees. Stamets is also working on a fungal product that will kill the mites themselves, leaving the bees unharmed. ("Could A Mushroom Save The Honeybee?" by Ken Christensen, Oregon Public Radio, Aug. 17, 2015; www.opb.org/news/article/could-a-mushroom-save-the-honeybee/)

The European Food Safety Authority says its analysis of the insecticides clothianidin, imidacloprid and thiamethoxam – all in the class of **neonicotinoid insecticides** – shows a **"high risk" to bees** when the toxicants are sprayed on leaves. The pesticides were banned in the EU, with some exemptions. Now activists are calling for extending the ban. ("Banned pesticides pose a greater risk to bees than thought, EU experts warn," by Arthur Nelsen, *The Guardian*, Aug. 25, 2015; www.theguardian.com/environment/2015/aug/26/banned-pesticides-pose-a-greater-risk-to-bees-than-thought-eu-experts-warn)

Researchers from Bern, Switzerland, and Wolfville, Canada, have found that **honey bee queens are extremely vulnerable to two neonicotinoid insecticides**, thiamethoxam and clothianidin. Exposure to field-realistic concentrations of the two pesticides during development compromised ovaries and spermathecal-stored sperm quality and quantity and likely corresponded to reduced living and producing worker offspring. This is the first study to investigate the effects of neonicotinoids on honey bee queens. (“Neonicotinoid pesticides severely affect honey bee queens,” by Geoffrey R. Williams et al., Scientific Reports, Oct. 13, 2015; <http://www.nature.com/articles/srep14621>)

Climate

To deal with greenhouse gas emissions and the resulting weather extremes they have created, most analysts believe we must stop burning fossil fuels to prevent further increases in atmospheric carbon and remove 106.25 gigatons (Gt) of the carbon already in the air.

“But where can we put that carbon once it is removed from the air?” asks Jack Kittredge of NOFA-Mass. In a white paper, he says, “There is only one practical approach – to **put it back where it belongs, in the soil.**” The paper is highly readable, even for those with no background in soil sciences, and it’s encouraging.

The FAO, says Kittredge, “says there are 8.3 billion acres of grasslands on the globe and 3.8 billion acres of cropland. If everyone were willing to use carbon-building practices on those acres annually, the grasslands, at an average of 2.6 tons per acre, could restore 21.6 Gt and the croplands, at an average of 0.55 tons per acre, could restore 2.1 Gt. This gives us a total of 23.7 gigatons per year. Since we are interested in restoring 106.25 Gt, that means we could do it in under 5 years!”

To restore and stabilize soil carbon, Kittredge suggests that we

- keep soil planted
- minimize tillage
- use cover crops
- encourage biodiversity (including through crop rotations and management-intensive grazing by ruminants)
- don’t use synthetic agricultural chemicals
- convert degraded soils to forests (Different studies show losses or gains of carbon for this method.)
- apply biochar to soils (a method needing more investigation).

“Farmers, gardeners, homeowners, landscapers – anyone who owns or manages land – can follow these simple principles and not only restore carbon to the soil but help rebuild the marvelous system that nature has put in place to renew our atmosphere while providing food, beauty and health for all creation,” says Kittredge. (“Soil Carbon Restoration: Can Biology Do the Job?” by Jack Kittredge, Northeast Organic Farming Association/Massachusetts Chapter, Inc., Aug. 14, 2015;

www.nofamass.org/sites/default/files/2015_White_Paper_web.pdf)

Food Safety

After a 2006 E. coli outbreak from contaminated spinach killed three people and sickened about 200 more, manure from cattle and wild pigs was implicated as the bacterial source. This led to the California Leafy Greens Marketing Agreement – recommended food safety practices for leafy greens that then became widespread in the industry. One practice was to remove nearby wildlife habitat – woodlands, hedgerows, etc.

Now those **nearly sterile landscapes** are being questioned, as the occurrence of **pathogenic E. coli increased** among 57 farms in the area from 2007 to 2013 and was most common where surrounding vegetation had been cleared. Conversely, where surrounding vegetation remained, occurrence of pathogenic E. coli and Salmonella did not increase.

University of California Berkeley postdoctoral researcher Daniel Karp, who conducted the recent study, said that keeping vegetation supports pollinators and has other benefits. He suggests keeping natural habitat between livestock and fields of leafy greens to filter runoff from grazed lands; planting buffer areas of crops that require cooking; or fencing off nearby streams to keep wildlife and cattle from defecating in them. (“Farms Without Wildlife Don’t Produce Safer Food, Study Finds,” by Kristine Wong, Civil Eats, Aug. 11, 2015; <http://civileats.com/2015/08/11/farms-without-wildlife-dont-produce-safer-food-study-finds/>)

Consumer Reports tested 300 packages of ground beef from 103 U.S. outlets for five types of bacteria (Clostridium perfringens, E. coli O157 and six other toxin-producing strains, enterococcus, salmonella and Staphylococcus aureus). The study distinguished between beef from conventional and more sustainably raised cows – i.e., beef produced without antibiotics, at a minimum, and grass-fed organic at best. The bacteria were tested for antibiotic-resistance, as well.

All samples contained bacteria indicating fecal contamination (enterococcus and/or nontoxin-producing E. coli). Almost 20 percent contained C. perfringens, which sickens almost 1 million people annually; 10 percent had a strain of S. aureus that can produce a toxin harmful to health – even when meat is cooked; and 1 percent contained salmonella.

Beef from conventionally raised cows was more likely to have bacteria and to have antibiotic-resistant bacteria than beef from sustainably raised cows. Three samples from conventionally raised cows contained methicillin-resistant S. aureus bacteria (MRSA), which kills about 11,000 people in the United States annually; no samples from sustainably raised cows had these bacteria. Eighteen percent of samples from conventionally raised cows contained bacteria that resist three or more classes of antibiotics, while 9 percent of beef from cows raised sustainably contained such “superbugs.” Consumer Reports recommends buying sustainably raised beef whenever possible. (“How Safe Is Your Ground Beef?” by Andrea Rock, Consumer Reports, Aug. 24, 2015; www.consumerreports.org/cro/food/how-safe-is-your-ground-beef.htm)

Genetic Engineering

(GE, or GMO – Genetically Modified Organisms. Note that organic standards do not allow use of GE crops or animals.)

The crop biotech industry is starting to use new techniques, include cisgenics (using GE to introduce traits and genetic material from the same or closely related species), zinc-finger nucleases (ZFNs) to delete, substitute or insert base pairs, and CRISPR /Cas9 (“clustered regularly interspaced palindromic repeats”) to edit DNA. Although claimed to be precise techniques, ZFNs and CRISPR/Cas9 have reportedly produced unexpected mutations as they may affect nontarget genes, and cisgenics can change genetic material within a species enough that new traits are as foreign as if DNA from another species had been used, says Friends of the Earth. These techniques can be used to develop crops tolerant to synthetic herbicides – likely resulting in yet more herbicide use. The industry claims these are not GE techniques and thus should not be subject to regulation. Their uses and risks are described in the Austrian Environment Agency’s “New plant breeding techniques: risks associated with their application.” DuPont says it may be selling CRISPR-engineered seeds by the end of this decade. (“Semantically engineered crops,” Friends of the Earth, July 17, 2015; <http://emergingtech.foe.org.au/semantically-engineered-crops/>; “New Plant Breeding Techniques – Risks Associated with Their Application,” by Michael Eckerstorfer et al., Environment Agency Austria, 2014; www.ekah.admin.ch/fileadmin/ekah-dateien/New_Plant_Breeding_Techniques_UBA_Vienna_2014_2.pdf; “Powerful and possibly unregulated, gene editing starts new boom in GMOs,” by Antonio Regalado, MIT Technology Review, Oct. 8, 2015; www.technologyreview.com/news/542311/dupont-predicts-crispr-plants-on-dinner-plates-in-five-years/#comments)

Sheldon Krimsky of Tufts University examined scientific papers on **animal feeding experiments using GE crops**. The papers appeared in refereed publications from 2008 to 2014. He compared findings of professional societies, discussed treatment of scientists who reported adverse effects, and explored the role of politics and corporate interests in distorting honest inquiry into the health effects of GE crops. Krimsky wrote, “Many scientific data indicate that animals fed by GM crops have been harmed or even died.” He found 26 studies that reported adverse effects or uncertainties of GE crops fed to animals and eight review articles reporting mixed assessments of such health effects. Regarding the poor way in which Arpad Pusztai and Gilles-Éric Séralini, two respected scientists, were treated by the scientific community over their peer-reviewed work, Krimsky said he “could find no comparable case in the history of science where someone’s published and peer-reviewed work was retracted because it was not definitive. Comparable works that found GMOs equivalent to their non-GMO parental strain were not retracted for the same reason since they too were not definitive.” Krimsky concludes “that the putative consensus about the inherent safety of transgenic crops is premature.” (“An Illusory Consensus behind GMO Health Assessment Science, Technology, & Human Values,” by Sheldon Krimsky, Aug. 7, 2015; www.scienceforthepublic.org/assets/154/STHV%20GMO%20ILLUSORY%20CONSENSUS.pdf)

In an editorial published in **The New England Journal of Medicine**, Philip J. Landrigan, M.D., and Charles Benbrook, Ph.D., **urge the FDA to require labeling of GE foods** and to adequately **fund long-term post-marketing surveillance** of these foods. They also urge the EPA to **delay permitting use of Enlist Duo**, a combination of glyphosate and 2,4-D herbicides to be used with GE crops. They base their editorial on the current and projected increases in amounts and

numbers of synthetic herbicides applied to GE crops. Also, glyphosate, the herbicide most widely used on GE crops, has been classified as a probable human carcinogen, and 2,4-D, resistance to which GE crops have been developed, is a possible human carcinogen. They note that National Academy of Sciences reviews of GE crops called for new risk-assessment tools and post-marketing surveillance – recommendations largely unheeded. Previous risk assessments of herbicides used with GE crops have not fully considered their potential disruption of hormones at low doses, their effects on infants and children, their ecological impacts or effects of additives to glyphosate formulations. (“GMOs, Herbicides, and Public Health,” by Philip J. Landrigan, M.D., and Charles Benbrook, Ph.D., The New England Journal of Medicine, August 20, 2015; www.nejm.org/doi/full/10.1056/NEJMp1505660)

A diet including **MON810 GE Bt corn leaves** increased production of resting eggs and reduced growth and fecundity later in the life cycle of the aquatic organism *Daphnia magna*, indicating **increased stress levels in animals** compared with those fed a non-GE near-isoline. The study indicates that effects of GE feed and food materials intended for lifelong consumption should be tested over the full life cycle of model organisms. (“Chronic Responses of *Daphnia magna* Under Dietary Exposure to Leaves of a Transgenic (Event MON810) Bt-Maize Hybrid and its Conventional Near-Isoline,” by Daniel Ferreira Holderbaum et al., J. Toxicology and Environmental Health, Aug. 11, 2015; www.tandfonline.com/doi/full/10.1080/15287394.2015.1037877#)

The Center for Food Safety (CFS) has **sued USDA's** Animal and Plant Health Inspection Service (APHIS) for allegedly routinely **failing to respond** as required to Freedom of Information Act requests for records regarding GE crops. (“U.S. regulator sued for withholding information on GMO crops,” by Carey Gillam, Reuters, Aug. 25, 2015; www.reuters.com/article/2015/08/25/us-usa-agriculture-gmo-regulations-idUSKCN0QU2M920150825)

Scottish ministers plan to **ban commercial growing of GE crops** in Scotland, following a long-standing moratorium on planting GE crops there, and Germany is reportedly moving in the same direction. Both cited the desire to keep food and the environment “clean and green.” Also, 19 EU member states have requested opt-outs for all or part of their territory from cultivating Monsanto’s GE MON 810 corn, which is authorized to be grown in the European Union. (“Majority of EU nations seek opt-out from growing GM crops,” by Barbara Lewis, Reuters, Oct. 4, 2015; www.reuters.com/article/2015/10/04/us-eu-gmo-opt-out-idUSKCN0RY0M320151004; “Scotland to issue formal ban on genetically modified crops,” by Severin Carrell, The Guardian, Aug. 9, 2015; www.theguardian.com/environment/2015/aug/09/scotland-to-issue-formal-ban-on-genetically-modified-crops; “Germany follows Scotland's example with move to ban all GM crops and opt out of EU approvals,” by Adam Withnall, The Independent, Aug. 25, 2015; www.independent.co.uk/news/world/europe/germany-follows-scotlands-example-with-move-to-ban-all-gm-crops-and-opt-out-of-eu-approvals-10471343.html; “Latvia, Greece win opt-out from Monsanto GM crop,” by Barbara Lewis, Yahoo News, Aug. 27, 2015; <http://news.yahoo.com/latvia-greece-win-opt-monsanto-gm-crop-163105486--finance.html>)

GMO Free USA sent a package of **Gerber** Graduates Lil' Crunchies Veggie Dip Baked Whole Grain Corn Snack to a certified lab to test for the presence of GE material. All corn in the dip was determined to have been **GE Roundup Ready**, and the corn contained DNA sequences known to occur in **GE Bt** corn. Gerber, owned by Nestlé, sells baby food and formula made from non-GE crops to markets in South Africa, Europe and elsewhere. ("Gerber Lil' Crunchies Veggie Dip Toddler Snack Full of Insecticidal GMOs," GMO Free USA; www.gmofreeusa.org/food-testing/gerber-lil-crunchies/)

Jonathan Latham, a plant biologist who made GE plants as part of his Ph.D. research, says, "I now believe, as a much more experienced scientist, that **GMO crops still run far ahead of our understanding of their risks**. In broad outline, the reasons for this belief are quite simple. I have become much more appreciative of the complexity of biological organisms and their capacity for benefits and harms. As a scientist I have become much more humble about the capacity of science to do more than scratch the surface in its understanding of the deep complexity and diversity of the natural world."

He says the numerous risk assessment applications he has read for GE crops ask primarily trivial questions and often cite inadequate and sloppy studies using outdated methods and with ambiguous or uninterpretable results. When "the results are inconvenient, and raise red flags, they blame the limitations of the antiquated method. This bulletproof logic, in which applicants claim safety no matter what the data shows, or how badly the experiment was performed, is routine in formal GMO risk assessment."

Latham is concerned about GE crops because many GE plants contain a Bt insecticidal toxin or multiple Bt toxins (called Cry proteins). "One concern is that *Bacillus thuringiensis* [Bt] is all but indistinguishable from the well known anthrax bacterium," says Latham, adding that Bt insecticides also share structural similarities with the highly toxic ricin. Also, the mode of action of Bt proteins is not understood, but some Cry proteins are known to be toxic toward isolated human cells. "Yet we put them in our food crops."

Herbicide-resistant crops invite farmers to spray large quantities of herbicides, says Latham, so commercial soybeans routinely contain the herbicide Roundup (glyphosate) in amounts that its maker, Monsanto, once called "extreme." Also, the herbicide Glufosinate (phosphinothricin, made by Bayer), routinely applied to GE crops, is toxic to most organisms, is neurotoxic to mammals and doesn't break down easily on crops or in the environment.

Most GE crops also contain a viral sequence called the cauliflower mosaic virus promoter (or a similar figwort mosaic virus promoter). Both encode much of a viral protein that misdirects all normal gene expression and turns off a key plant defense against pathogens.

GE crops exist not to feed the world or improve farming, says Latham, but to gain patent rights over seeds and plant breeding and to drive agriculture in directions that benefit agribusiness – which is occurring at the expense of farmers (with great increases in seed prices), consumers and the natural world.

Latham concludes that “risk assessment of GMOs has been short-circuited and public concerns about them are growing. Until the damaged scientific ethos is rectified, both scientists and the public are correct to doubt that GMOs should ever have been let out of any lab.” (“Growing Doubt: A Scientist’s Experience of GMOs,” by Jonathan R. Latham, Ph.D., Independent Science News, 8/31/2015; www.independentsciencenews.org/health/growing-doubt-a-scientists-experience-of-gmos/)

A review of 15 reports of glyphosate-tolerant GE crops and 15 animal feeding studies found that **industry studies are insufficient for regulating GE crops**, due in part to methodological flaws and failure to mention glyphosate residues in glyphosate-tolerant plants. Regulators need to address specific unanswered questions relating to safety and quality aspects of food and feed from GE crops using independent research, says author Marek Cuhra. Independent research has found that glyphosate-tolerant GE plants accumulate glyphosate residues at unexpectedly high levels that may affect plant composition. “Furthermore, these residues are passed on to consumers,” says Cuhra.

(“Review of GMO safety assessment studies: glyphosate residues in Roundup Ready crops is an ignored issue,” by Marek Cuhra, Environmental Sciences Europe, Sept. 10, 2015; www.enveurope.com/content/27/1/20)

Email messages obtained by US Right To Know through a public records request show that Harvard Kennedy School professor Calestous Juma wrote a widely disseminated policy paper in 2014 **supporting genetic engineering of crops – at Monsanto’s request and without disclosing that connection**. Monsanto even provided information to be covered and a suggested headline. Monsanto connected Juma with a marketing company to “merchandise” the paper, arrange talks, and more, according to emails. Monsanto’s Eric Sachs asked professors to write seven such papers. US Right To Know has also publicized University of Florida professor Kevin Folta and other scientists’ ties to Monsanto. (“Harvard professor failed to disclose connection,” by Laura Krantz, Boston Globe, Oct. 1, 2015; www.bostonglobe.com/metro/2015/10/01/harvard-professor-failed-disclose-monsanto-connection-paper-touting-gmos/ILJipJQmI5WKS6RAgQbnrN/story.html)

Pesticides

A two-year study in rats administered 0.1 ppb Roundup (50 ng/L glyphosate equivalent) via drinking water (4 ng/kg bw/day of glyphosate) suggest that **chronic exposure to Roundup** in an established laboratory animal toxicity model system at an ultra-low, environmental dose can result in **liver and kidney damage** with potential significant health implications for animal and human populations. (“Transcriptome profile analysis reflects rat liver and kidney damage following chronic ultra-low dose Roundup exposure,” by Robin Mesnage et al., Environmental Health, Aug. 25, 2015;

www.ehjournal.net/content/14/1/70)

Evidence of deteriorating health in Montana wildlife over the past two decades prompted researchers to obtain U.S. government data on pesticide use and on human disease patterns from 1998-2010 hospital discharge data. Congenital malformations and wildlife diseases follow the trends for use of dicamba, 2,4- D, chlorothalonil and glyphosate; and congenital **malformations**

and other diseases in humans follow trends in **glyphosate** use. Some conditions increased sharply when the switch to the salt formulations of the herbicides was made. (“The High Cost of Pesticides: Human and Animal Diseases,” by Judy Hoy, Nancy Swanson and Stephanie Seneff, Poultry, Fisheries & Wildlife Sciences, May 30, 2015; www.esciencecentral.org/journals/the-high-cost-of-pesticides-human-and-animal-diseases-2375-446X-1000132.php?aid=56471)

Enrique Rubio, who applied Roundup and other pesticides in vegetable fields in California, Texas and Oregon and has been diagnosed with bone cancer, is a plaintiff in a suit filed in U.S. District Court in Los Angeles; and horticultural assistant Judi Fitzgerald, diagnosed with leukemia, has filed suit in New York. The **lawsuits** claim that Monsanto’s **Roundup herbicide** caused the **cancers** and that Monsanto misled the public and regulators about dangers associated with Roundup. Other personal injury lawsuits alleging that Roundup caused cancer are emerging in the United States, and lawyers say “mass tort” actions against Monsanto are possible. (“U.S. workers sue Monsanto claiming herbicide caused cancer,” by Carey Gillam, Reuters, Sept. 29, 2015; www.reuters.com/article/2015/09/29/monsanto-lawsuit-idUSL1N1Z20Y20150929; “U.S. lawsuits build against Monsanto over alleged Roundup cancer link,” by Carey Gillam, Reuters, 10/15/2015; <http://www.reuters.com/article/2015/10/15/us-usa-monsanto-lawsuits-idUSKCN0S92H720151015>)

Last spring, in a pilot study commissioned by the nonprofit Moms Across America, Microbe Inotech Labs found **glyphosate residues in the breast milk** of three of 10 women tested. The World Health Organization classifies glyphosate as a probable carcinogen.

More recently, Washington State University assistant professor Michelle McGuire’s study found no glyphosate in 41 women’s breast milk samples tested, based on a test developed and conducted by Monsanto, maker of Roundup. The results were verified by Covance Laboratories, which has previously done testing for Monsanto.

Further tests by Moms Across America, Washington State University and the EPA are in progress. (“Is There Herbicide in Breast Milk?” by Elizabeth Grossman, Civil Eats, July 30, 2015; <http://civileats.com/2015/07/30/is-there-glyphosate-in-breast-milk/>)

California is considering placing glyphosate, malathion, parathion and tetrachlorvinphos on its list of carcinogenic chemicals, since the World Health Organization's International Agency for Research on Cancer found that the four are probable carcinogens. If it does, any knowing discharges of the chemicals into drinking water would become illegal, and farmers, pest control companies and most other businesses that want to use the pesticides would first have to notify the public. (“California to Put Four Pesticides on Cancer List,” by David Schultz, Bloomberg, Sept. 9, 2015; www.bna.com/california-put-four-n17179935728/)

In Germany and London, retailers have been **removing glyphosate herbicides** from their shelves voluntarily, while the French environment minister Ségolène Royal plans new restrictions on the sale of glyphosate at garden centers there. (“Supermarkets and garden centres ban Roundup weedkiller suspected of causing cancer,” by Tom Levitt, The Guardian, Aug. 7, 2015;

www.theguardian.com/sustainable-business/2015/aug/07/supermarkets-garden-centres-weedkiller-ban-cancer-glyphosate-monsanto)

The U.S. Geological Survey found **neonicotinoid insecticides in more than half of 38 urban and agricultural streams** sampled from 2011 to 2014 in 24 states and Puerto Rico.

Neonicotinoids were present in urban streams throughout the year, while pulses of neonics were typical in agricultural streams during planting season. The occurrence of low levels in streams for extended periods highlights the need for research on the potential effects of neonicotinoids on aquatic life and terrestrial animals that rely on aquatic life, say the researchers. (“First National-Scale Reconnaissance of Neonicotinoid Insecticides in United States Streams,” by Michelle L. Hladik and Dana W. Kolpin, Environmental Chemistry, Aug. 2015;

<http://www.publish.csiro.au/?paper=EN15061>)

Increased use of the neonicotinoid insecticide **imidacloprid** applied to oilseed rape seeds in England and Wales over 11 years **correlated with higher honeybee colony losses**. Farmers who used seed pesticide treatments reduced the number of applications of other insecticides, but long-term benefits of imidacloprid seed treatments on crop yields were negligible. (“Pesticides linked to bee decline for first time in a countrywide field study,” by Alison Benjamin, The Guardian, Aug. 20, 2015; www.theguardian.com/environment/2015/aug/20/pesticides-neonicotinoids-linked-bee-decline-first-time-large-scale-field-study)

Combining data from 16 studies, researchers concluded that **children who had been exposed to insecticides** indoors were 47 percent more likely to have **leukemia** and 43 percent more likely to have **lymphoma**. (“Report: Pesticide exposure linked to childhood cancer and lower IQ,” by Carina Storrs CNN, Sept. 14, 2015; www.cnn.com/2015/09/14/health/pesticide-exposure-childhood-cancer/index.html)

Researchers reviewing 21 studies found that exposure to any type of **pesticide** was correlated with a 61 percent increased risk for any type of **diabetes** and a 64 percent increased risk for type 2 diabetes. Separate analyses linked an increased risk of diabetes to chlordane, oxychlordane, trans-nonachlor, DDT, DDE, dieldrin, heptachlor and HCB (hexachlorobenzene). (“Pesticide Exposure Tied to Diabetes Risk,” by Mary Elizabeth Dallas, U.S. News and World Report, Sept. 16, 2015; <http://health.usnews.com/health-news/articles/2015/09/16/pesticide-exposure-tied-to-diabetes-risk>)

When cells were treated with chlorpyrifos, an organophosphate insecticide, results suggest that **organophosphates could contribute to the reactivation of latent Epstein-Barr virus (EBV)**, possibly playing an important role in the development of EBV-associated diseases.

(“Chlorpyrifos Induces the Expression of the Epstein-Barr Virus Lytic Cycle Activator BZLF-1 via Reactive Oxygen Species,” by Ling Zhao, Oxidative Medicine and Cellular Longevity, July 14, 2015; www.ncbi.nlm.nih.gov/pmc/articles/PMC4516845/)

Concentrations of 23 pesticide metabolites were measured in the urine of 40 Mexican-American children in California when they ate a non-organic diet for four days, then switched to an organic diet for seven days, followed by the non-organic diet for five more days. **Metabolites of two organophosphate insecticides dropped by a mean of 40 and 49 percent, and the**

metabolite of the herbicide 2,4-D dropped by a mean of 25 percent when organic foods were eaten. Metabolites for several other OP pesticides, pyrethroids and herbicides were either infrequently detected and/or not significantly affected by diet. (“Effect of Organic Diet Intervention on Pesticide Exposures in Young Children Living in Low-Income Urban and Agricultural Communities,” by Asa Bradman et al., Environmental Health Perspectives, Oct. 2015; <http://ehp.niehs.nih.gov/1408660/#tab1>)

A Portland, Maine, residents’ group called **Portland Protectors has proposed** to the city council **strong municipal restrictions on the sale and use of synthetic outdoor pesticides**, including Roundup herbicide (glyphosate), and synthetic lawn fertilizers, which can contaminate bodies of water. The proposal would allow products approved for use in organic farming or classified by the EPA as exempted materials. Community education is part of the proposal as well, as is a requirement that commercial pesticide applicators be certified in organic land care management. Emergency waivers are part of the proposal. Officials in South Portland are also developing a proposal to restrict pesticide use. (“Portland citizens’ group proposes broad pesticide ban,” by Kelley Bouchard, Portland Press Herald, Oct. 7, 2015; <http://www.pressherald.com/2015/10/07/portland-citizens-group-proposes-strong-pesticide-ban/>)

A coalition of mothers, progressive businesses, and local and national health and environmental advocates has **stopped hazardous pesticide use on public and private property throughout Maryland’s Montgomery County**. The coalition prevailed over the powerful conventional landscaping and chemical industry to pass the strongest, most protective pesticide legislation in the United States. By a vote of 6-3, the Montgomery County Council banned the use of toxic lawn pesticides (insecticides, herbicides, fungicides, etc.) for cosmetic purposes on all property county-wide. (“Historic Ordinance in Maryland County a Victory for Grassroots Activism!” Beyond Pesticides, Oct. 7, 2015; <http://beyondpesticides.org/dailynewsblog/2015/10/maryland-county-bans-cosmetic-lawn-pesticides-on-all-land-in-county-one-million-people-affected/>)

The Ninth Circuit Court of Appeals has found that the **EPA failed to get enough evidence** from Dow AgroSciences **to approve the safety of Dow’s Sulfoxaflor**, a neonicotinoid insecticide that becomes incorporated into plant tissues. No reliable information about the risk of Sulfoxaflor to honeybee colonies was provided, according to Greg Loarie, staff attorney for Earthjustice, a plaintiff in the case. (“The EPA broke the law when it approved a new pesticide,” by Adam Wernick, PRI, Oct. 6, 2015; <http://www.pri.org/stories/2015-10-06/epa-broke-law-when-it-approved-new-pesticide>)

EcoWatch has confirmed that **the American Academy of Pediatrics (AAP) is ending its corporate partnership with Monsanto** since Mamavation founder Leah Segedie confronted AAP’s public affairs team about AAP’s relationship with the company. The AAP has also cut ties with Coca-Cola. (“Confirmed: American Academy of Pediatrics Cuts Ties With Monsanto,” by Lorraine Chow, EcoWatch, Oct. 6, 2015; <http://ecowatch.com/2015/10/06/aap-cuts-ties-with-monsanto/>)

Traditional Plant Breeding

A new report from the Union of Concerned Scientists (UCS), “Seeds of the Future: How Investments in Classical Breeding Can Support Sustainable Agriculture,” says that **inadequate funding for seed development through classical breeding is compromising crop diversity**. This oversight poses a serious threat to farmers’ profits and the nation’s food security. The USDA can increase the range of crop varieties available to farmers by funding research proposals that aim to increase seed diversity, says UCS. (“Seed Diversity Critical for Agriculture’s Future but Inadequate Funding Threatens Potential,” Union of Concerned Scientists, Aug. 10, 2015; www.ucsusa.org/news/press_release/seed-diversity-critical-for-agriculture-future-0520#.VdC-uWRVikp)

Spring 2016

The Good News

For 15 years, University of Maine Cooperative Extension’s statewide **Maine Harvest for Hunger (MHH) program** has organized gardeners, farmers, businesses, schools and civic groups to grow, glean and donate quality produce to distribution sites (pantries, shelters, community meals) and directly to neighbors in need, to help mitigate hunger, improve nutrition and health, and help recipients develop lifelong, positive nutritional habits.

During that time, MHH participants have **distributed more than 2,197,000 pounds of food to people in Maine experiencing food insecurity**. In 2015, record-breaking donations of over 318,000 pounds of food went to 188 distribution sites and directly to individuals. Nearly 500 program volunteers in 14 counties collectively logged more than 5,000 hours, and the value of the produce was over \$537,000, based on an average \$1.69 per pound.

The program has improved the efficiency of supplying low-income clients with fresh produce. It has expanded the number of offerings used by recipients, minimized donation waste and extended the donation season. Shelters that years ago did not want produce such as kale are now using MHH recipes and getting clients to taste test, making them more likely to adopt a healthier diet. Pantries are networking more regularly to match excess in one site with need in another site, sharing best practices for handling and distributing produce, and processing less marketable produce into nutritious food. To extend the season, donors are offering more storage crops that can be distributed over a longer time period.

“Clients at homeless shelters are very interested in learning to grow their own food and are helping to establish a new four-season garden on the grounds of York County Shelter. The staff is committed to engaging residents to work in the garden, help in the food pantry, and in some cases go out with volunteers to help glean. This is great for their health and morale,” says Kristine Jenkins, executive director of Partners for a Hunger Free York County.

Gardeners, farmers, corporations, schools, businesses and civic groups can become involved in MHH. Visit <http://umaine.edu/harvest-for-hunger/help/> to learn how. (“Maine Harvest for Hunger 2015 donations break records,” UMaine Cooperative Extension, Jan. 8, 2016; <https://umaine.edu/harvest-for-hunger/news/>; FMI: Frank Wertheim, 207.324.2814, frank.wertheim@maine.edu)

Farming is a hazardous occupation. Working conditions include all kinds of weather and dusty, slippery, hot, cold or wet environments with uneven terrain, temperamental machinery and large animals. Fully a third of all farmers experience chronic pain from arthritis, a condition directly related to the repetitious nature of farm work. Many farmers consider pain to be an inevitable outcome of the work they do.

It doesn't have to be so. The USDA-funded **Maine AgrAbility** program provides education and resources for farmers and gardeners with limitations, chronic health issues or injuries so that they can continue to be active in agriculture. The program was re-funded in 2014, when the mission was expanded to include fishermen, aquaculturists and forest workers.

“Since the project started in Maine in 2010, we have provided technical information to more than 200 farmers and conducted on-site assessments and provided recommendations for 92 others whose agricultural businesses include dairies, Christmas tree farms, vegetable stands, livestock operations and hay sales,” said Project Coordinator Lani Carlson.

Maine AgrAbility is a partnership with the University of Maine Cooperative Extension, Goodwill Industries of Northern New England and Alpha One. For more information, including success stories and a link to the National AgrAbility Project at Purdue University, go to umaine.edu/agrability/ or check out the program on Facebook. Carlson can be reached at leilani.carlson@maine.edu or 207-944-1533.

The 185,000-acre northeastern **Indian state of Sikkim has become the country's first organic state**, as per policies of the Indian government's National Programme for Organic Production, meant to promote organic farming. The state produces mainly corn, rice and cardamom. (For contrast, Maine has 22.6 million acres.) (“In a corner of the Himalayas, India now has its first organic state,” by Madhura Karnik and Manu Balachandran, Quartz, Jan. 15, 2016; <http://qz.com/595408/in-a-corner-of-the-himalayas-india-now-has-its-first-organic-state/>)

The **USDA has launched new commitments and a new website**, <https://newfarmers.usda.gov/>, for new and aspiring farmers. The new USDA goals focus on boosting funding for and participation in USDA programs and services that support new and beginning farmers, including prioritizing \$5.6 billion within key USDA programs over the next two years and increasing beginning farmer participation in key USDA programs by 6.6 percent. The latter include farm loan programs, National Disaster Assistance Program, Environmental Quality Incentives Program, Value-Added Producer Grants, Farmers Market and Local Food Promotion Program and crop insurance programs.

The new USDA website features special resources for farms in transition, women, youth and veterans. It features advice and guidance on everything from writing a business plan to obtaining a loan and filing taxes as a new small business owner. Its “Discovery Tool” creates a customized list of USDA programs and resources based on questions related to location, operation type, operation model and other criteria. (“USDA Releases New Commitments, New Website for New Farmers,” National Sustainable Agriculture Coalition, Oct. 29, 2015; <http://sustainableagriculture.net/blog/fy16-bfrdp-rfa/>)

Susannah B. Lerman et al. tested different **lawn mowing frequencies to try to improve bee habitat and promote ecosystem services for households**. They assigned 17 suburban yards in Springfield, Mass., to be mowed every one, two or three weeks. They documented 110 bee species in Springfield lawns, representing nearly a third of the state's species pool. Floral abundance peaked in yards mowed every three weeks, averaging 300 percent more lawn flowers than yards mowed weekly. Bee abundance was highest in yards mowed every two weeks, although species richness did not differ among mowing treatments. Soils in yards mowed every three weeks were the least compacted, possibly offering more nesting opportunities for some ground-nesting bees. ("To mow or to mow less: How landscaping behaviors influence bee diversity and ecosystem services in residential yards," by Susannah B. Lerman et al., Abstract, Ecological Science at the Frontier conference, Aug. 14, 2015; <http://eco.confex.com/eco/2015/webprogram/Paper50775.html>)

The first **Maine Farm, Fish & Food Innovation Challenge** at Bowdoin College heard pitches from 10 teams last November. Judges awarded first place to the Forq Food Lab and the Maine Farm and Sea Cooperative, both from Portland. The New Beet Market from Brunswick and Frinklepod Farm from Arundel were awarded second place. Two student teams, Darling Sea Farm from the Darling Center and AgriGatr from Hampshire College received Honorable Mention. The First Place teams each received \$5,000 and six hours of legal services from Drummond & Drummond. Second Place teams each received \$1,750 and eight hours of business development consulting services from the Sustainability Lab.

During the weekend teams attended two workshops: the Business Model Canvas presented by Bill Seretta from the Sustainability Lab and the Art of the Pitch presented by Don Gooding from the Maine Center for Entrepreneurial Development.

The teams received advice and consultations from George Parmenter, manager of sustainability, Delhaize North America (Hannaford); Beth Boepple, Lambert Coffin; Stephanie Gilbert, farm viability and farmland protection specialist, Maine Department of Agriculture, Conservation and Forestry; and Nate Huckel-Bauer of Drummond & Drummond.

Bill Seretta and Tom Settlemire co-chaired the event, for which MOFGA was a partner. ("Winners of the Maine, Farm, Fish & Food Innovation Challenge Announced," Press release, Bill Seretta, Convener and Co-Chair, Nov. 30, 2015)

Researchers have shown that a **typical organic crop rotation reduced nitrate leaching from crop fields by nearly 50 percent**, compared with leaching from the conventional corn and soybean rotation common in Iowa. Over three years, the conventional system leached a total of 69.7 pounds per acre of nitrate-nitrogen, compared with 35.1 pounds per acre for organic. The Iowa Nutrient Reduction Strategy seeks a 41 percent reduction in nitrate leaching across the state's agriculture. Changing to an organic cropping system alone could do that. Organic systems typically include rotations with small grain crops and perennial legumes and grasses, which hold soil nitrate. Also, nitrogen supplied from legumes, compost or manure (typical of organic systems) is less soluble than that from many synthetic fertilizers (typical of conventional

systems). (“Organic farming can cut nitrate leaching in half,” by Francis Thicke, Margaret Smith and Paul Mugge, The Des Moines Register, Dec. 24, 2015; www.desmoinesregister.com/story/opinion/abetteriowa/2015/12/24/organic-farming-can-cut-nitrate-leaching-half/77774262/; “Water Quality in Organic Systems,” by Cynthis A. Cambardella et al., Sustainable Agriculture Research, June 20, 2015; www.ccsenet.org/journal/index.php/sar/article/view/50106/26958)

The seven home games played at the University of Florida stadium host more than 90,000 fans who, says environmental engineering professor Treavor Boyer, produce enough **urine** then **to meet the nutrient requirements for the field** for the growing season. He and his coworkers hope to develop waterless urinals, collect urine in a storage tank and let it sit for several weeks to transform the urea to ammonia. The nutrients would then be processed into a solid fertilizer. (“Urine for Some Fertilizer,” by Ben Gruber, Reuters, Dec. 15, 2015; www.reuters.com/article/us-usa-urine-fertilizer-idUSKBN0TY26T20151215)

Organic farmers no longer have to pay into programs that compete with the organic market, since **the USDA extended the organic farmer exemption from conventional commodity check-offs to all organic farmers**, effective February 29, 2016. Previously only farmers who made 100 percent of their farm business as certified organic could participate in the exemption. Now all farmers and processors, even those with some conventional products, can exempt their organic products. This is a separate issue from the ongoing efforts of the Organic Trade Association to create a national organic check-off. (No Organic Checkoff Coalition press release, by Kate Mendenhall, Jan. 6, 2016)

Researchers examined how **pest removal by birds** varies within and between “wildlife-friendly” farms on 29 small, organic row-crop farms in northern California. When they placed caterpillar pests on crop leaves, birds depredated 0 to 80 percent of these “caterpillar presentation stations” within seven hours, with a mean of 24 percent depredation per farm. The probability of pest removal was higher near hedgerows. Birds did not significantly affect the abundance of arthropods or yields of kale when they could access kale plots, compared with abundance and yields in net-covered plots that excluded birds. However, natural caterpillar densities were relatively low during this experiment. The researchers suggest that birds may be more helpful during pest outbreaks, so maintaining hedgerows may benefit birds and farmers. (“Pest-removal services provided by birds on small organic farms in northern California,” by Megan Garfinkel and Matthew Johnson, Agriculture, Ecosystems & Environment, Dec. 15, 2015; www.sciencedirect.com/science/article/pii/S0167880915001565)

Climate Change

The National Sustainable Agriculture Coalition and Breakthrough Strategies and Solutions LLC paper. “**Carbon Sequestration Potential on Agricultural Lands: A Review of Current Science and Available Practices**,” explores how soil carbon is sequestered, the state of soil carbon research and the debate on its potential. It offers recommendations for research, and it highlights the many co-benefits of increasing soil carbon.

The author, Daniel Kane – a soil scientist and agroecologist who researches soil carbon cycles, regenerative agriculture and sustainable food systems – says, “Based on global estimates of historic carbon stocks and projections of rising emissions, soil’s usefulness as a carbon sink and drawdown solution appear essential. Since over one-third of arable land is in agriculture globally, finding ways to increase soil carbon in agricultural systems will be a major component of using soils as a sink.”

Carbon can be sequestered through conservation tillage and no-till farming, cover crops and resource-conserving crop rotations, managed rotational grazing and perennial cropping systems. Benefits associated with increasing soil carbon include maintaining soil structure, improving soil water retention, fostering healthy soil microbial communities and providing fertility for crops.

Kane notes, “Historic land use conversion of native ecosystems to agriculture is responsible for soil carbon reductions as high as 60-75 percent.” The paper points to the Conservation Reserve Program, which pays producers to set land aside for 10 to 15 years rather than cropping that land, and to the Sodsaver program, which reduces the incentives caused by federal subsidies for tilling formerly uncropped land, such as native prairie. It notes that these programs have been successful but that they “can at times be overwhelmed by commodity market upswings or perverse federal production subsidies.”

(“New Paper Explores the Role of Agriculture In Sequestering Carbon,” National Sustainable Agriculture Coalition, Dec. 5, 2015;

http://sustainableagriculture.net/wp-content/uploads/2015/12/Soil_C_review_Kane_Dec_4-final-v2.pdf)

Farmers and ranchers, says the National Sustainable Agriculture Coalition (NSAC), are already facing devastating impacts from the realities of climate change, including severe floods, extreme heat and drought, and increased pressures from changing disease and pest patterns. The year 2016, continues the NSAC, presents a final window of opportunity for the Obama administration to act upon its commitment to climate change, including critical initiatives to support agricultural adaptation and mitigation. The NSAC details the **top 10 opportunities for USDA to address climate change** in the final year of the Obama administration. None require new legislative authority.

Natural Resources Conservation Service (NRCS)

1. Set a nationwide goal for cover crop adoption in 2016.
2. Increase support for crop rotations that benefit the climate. The current payment rate of \$15 per acre for Resource Conserving Crop Rotations is not high enough.
3. Promote the Soil Health Crop Rotation Enhancement to encourage widespread adoption. This enhancement, first made available through the Conservation Stewardship Program (CSP) in 2015, ranks higher than any other enhancement in terms of its recognized environmental benefits.

4. Increase rankings for key conservation activities. Several key activities offer climate benefits and opportunities for sustainable systems, but many of these CSP enhancements have received environmental benefit scores that are far too low in relation to their conservation benefits and require producer investment. NRCS should increase scores to recognize the climate benefits of incorporating native grasses and/or legumes, intercropping to improve soil quality and increase biodiversity, and improving grazing management.

5. Support producers transitioning to organic. Raise the scores for organic transition enhancements in CSP and improve the Environmental Quality Incentives Program (EQIP) Organic Initiative for transitioning producers.

6. Encourage management intensive rotational grazing.

Farm Service Agency (FSA)

7. Ensure that land expiring from the Conservation Reserve Program (CRP) retains climate benefits. The CRP allows farmers to remove environmentally sensitive land from production and plant resource-conserving land cover to protect soil, water and wildlife habitat. Most CRP contracts last for 10 to 15 years. It is essential to ensure that climate benefits are retained through the preservation of permanent cover.

8. Encourage a transition from corn and stover to perennial-based ethanol.

Risk Management Agency (RMA)

9. Eliminate crop insurance cover crop termination guidelines. Currently RMA has guidelines for crop insurance policy holders regarding when cover crops need to be terminated, in order to ensure that they don't scavenge water from the cash crop, thus reducing yields. These guidelines discourage farmers from trying cover crops out of fear that they could lose their crop insurance coverage. RMA should instead rely on Good Farming Practices procedures that farmers must follow in order to receive a full crop insurance indemnity when they have a loss. Also RMA should adopt a new rule to clarify that farmers who adopt an NRCS conservation practice are by definition following Good Farming Practices.

Research, Education and Economics

10. Increase USDA's research emphasis on climate change impacts, including developing new plant varieties and animal breeds that are better suited to future climates. For example, develop plants that are better able to conserve water, withstand drought or are more resistant and hardy to new warm-weather diseases or emerging pests. The NSAC urges the administration to increase USDA's research emphasis on climate change impacts within the Agriculture Food and Research Initiative (AFRI), specifically to increase resources available for public plant breeding research. ("10 Ways USDA Can Address Climate Change in 2016," National Sustainable Agriculture Coalition, Dec. 30, 2015; http://sustainableagriculture.net/blog/climate-and-ag-in-2016/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29)

The **Soil Association** has set a goal of **increasing organic matter in UK arable and horticultural soils by 20 percent over the next 20 years**. Doing so would store more carbon in soil and would increase water holding capacity so that farms are less susceptible to drought. One grower said that by growing cover crops, soil organic matter levels on the farm rose from 2.5 percent to an average of 3 percent in five years – a 20 percent increase. Adding compost or well rotted manure increased soil organic matter to 5 per cent over five years. (“Aiming to Increase Soil Organic Matter Content by 20 per cent in 20 Years,” by Caroline Corsie, FG Insight, Dec. 7, 2015; www.fginsight.com/news/aiming-to-increase-soil-organic-matter-content-by-20-per-cent-in-20-years-8371)

At the 2015 U.N. **Climate Change Conference in Paris**, participants made **sequestering carbon in soil** a formal part of the global response to the climate crisis. The UN Lima-Paris Action Agenda promotes "robust global action towards low carbon and resilient societies." Countries, businesses and NGOs have made new commitments under the agenda, including several on agriculture. Reducing tilling and plowing, adding compost and using cover crops can all help keep and/or add carbon to soils – often while increasing crop yields and protecting soil from erosion.

Some say that removing carbon from the atmosphere and storing it in soil may cause the ocean to release some carbon into the atmosphere, offsetting some of the sequestration in soils. Still, “carbon farming” seems to be one of the best ways to try to deal with excess CO₂ in the atmosphere.

In France, the Ministry of Agriculture, Agrifood and Forestry launched in 2015 a “4 Per 1000 initiative,” an international campaign to increase soil carbon content. Under the proposal, countries, businesses and NGOs would commit to increasing the carbon in their cultivated lands by 0.4 percent per year – a quantity that the French say would halt the annual increase in carbon dioxide emissions. MOFGA signed on to promote the 4 per 1000 initiative. (“Carbon Farming Gets A Nod At Paris Climate Conference,” by Alastair Bland, NPR, Dec. 7 2015; www.npr.org/sections/thesalt/2015/12/07/458063708/carbon-farming-gets-a-nod-at-paris-climate-conference; “A secret weapon to fight climate change: dirt,” by Debbie Barker and Michael Pollan, The Washington Post, Dec. 4, 2015; www.washingtonpost.com/opinions/2015/12/04/fe22879e-990b-11e5-8917-653b65c809eb_story.html)

According to a study by the University of Sheffield’s Grantham Centre for Sustainable Futures, **nearly 33 percent of the world’s adequate or quality food-producing land has been lost in the past 40 years** – a rate much greater than that of natural processes that create soil. Repeatedly plowing soil and using fertilizers heavily are major causes of these losses; deforestation is also to blame. To counter the losses, the researchers propose recycling nutrients from sewage, rotating crops with livestock (which would involve more closely linked crop and livestock farms) and using biotechnology to develop plants that require less fertilizer. [The use of sewage and genetic engineering are not permitted in organic farming.] (“Earth has lost a third of arable land in past 40 years, scientists say,” By Oliver Milman, The Guardian, Dec. 2, 2015; www.theguardian.com/environment/2015/dec/02/arable-land-soil-food-security-shortage)

Bees

In a fascinating interview, entomologist Gene Kritsky of Mount St. Joseph University talks about his latest book – a historical look at beekeeping in ancient Egypt. He discusses honey, hives and hieroglyphs and addresses the **potential effects of modern fungicides that contaminate beeswax foundation**. Kritsky and microbiologist Dr. Andrew Rasmussen have found natural yeasts and fungi on flowers. Bees inoculate pollen with these yeasts, which ferment the pollen into “bee bread” that bees use as a food. However, most foundation wax that beekeepers use in bee hives now is contaminated with fungicides (and insecticides), which may kill those natural yeasts and contribute to bee health problems, because bees may not get the same nutrition without those natural yeasts. (“The Beekeepers of Ancient Egypt,” *Living on Earth*, Nov. 13, 2015; <http://loe.org/shows/segments.html?programID=15-P13-00046&segmentID=7>)

Researchers led by Insu Koh at the University of Vermont estimate that **wild bee abundance between 2008 and 2013 declined in 23 percent of the contiguous United States**. The study also shows that 39 percent of U.S. croplands that depend on pollinators face a threatening mismatch between rising demand for pollination and a falling supply of wild bees. The researchers mapped counties with the worst declines and with the most bee-dependent crops. Declines are related to pesticides, climate change, bee diseases and, possibly, to conversion of bee habitat from grasslands and pastures into cropland, especially for corn for biofuel. (“Wild Bee Decline Threatens U.S. Crop Production,” by Joshua E. Brown, University of Vermont, Dec. 21, 2015; <http://www.uvm.edu/%7Euvmpr/?Page=news&storyID=22053&category=ucommfeaturea>)

Pesticides

Jonathan Lundgren, a senior research entomologist with the USDA Agriculture Research Service, has filed a **whistleblower complaint against USDA**, accusing it of retaliation and harassment after he publicized his concerns about the safety and effectiveness of widely used **neonicotinoid insecticides** (“neonics”). Lundgren’s complaint said managers blocked publication of his research (including a paper about harm from neonics to Monarch butterflies), prohibited him from talking to the media and disrupted his lab operations. He was suspended twice. (“USDA whistleblower claims censorship of pesticide research,” by Carey Gillam, Harvest Public Media, Oct. 27, 2015; <http://harvestpublicmedia.org/article/usda-whistleblower-claims-censorship-pesticide-research>; Lundgren will speak at the April 15-16 Beyond Pesticides’ National Pesticide Forum at the University of Southern Maine. See <http://beyondpesticides.org/dailynewsblog/2016/01/new-video-release-cultivating-community-and-environmental-healththe-34th-national-pesticide-forum/>)

Researchers have found that **bees exposed to neonicotinoids didn't pollinate as many apple trees**, and the apple trees they did visit produced apples with fewer seeds (a sign of decreased pollination). Another study found that near fields treated with the neonicotinoid thiamethoxam, more bees died when exposed to the insecticide, and the colonies focused on making more workers to replace dead bees rather than producing as many male bees (drones) that allow the

colonies to reproduce. Drones that were produced appeared later. (“Neonicotinoid Pesticides Make Bees Worse Pollinators and also Kill Them,” by Mary Beth Griggs, Popular Science, Nov. 18, 2015;
www.popsoci.com/studies-show-neonicotinoid-pesticides-harm-bees-in-field)

The EPA has found that **neonicotinoid insecticides** did not **harm commercial honeybees** or their hives when used on some crops, including corn, berries, most vegetables and tobacco, but did on others, including cotton and citrus. Results were inconclusive for other crops, including legumes, melons, tree nuts and herbs. Nectar with more than 25 parts per billion (ppb) of the neonic imidacloprid from cotton and citrus resulted in fewer bees, less honey and a less robust hive, while concentrations below 25 ppb showed no harm. Treating seeds with neonics did not seem to harm bees, the EPA said. Bayer initially criticizing the report but then proposed extra protections to reduce the risk to bees from imidacloprid.

Meanwhile, the Center for Food Safety, with various beekeepers and farmers, filed a lawsuit against the EPA in January, accusing it of allowing seeds coated in neonicotinoids to be planted without proper impact assessments. (“EPA says pesticide harms bees in some cases,” by Seth Borenstein, AP, Jan. 6, 2016;
<http://bigstory.ap.org/article/0a90958c813946bd928443f07479255b/apnewsbreak-epa-says-pesticide-harms-bees-some-cases>; “Bayer revises position to propose extra protections for bees from pesticides,” by Oliver Milman, The Guardian, Jan. 12, 2016;
www.theguardian.com/environment/2016/jan/12/bayer-revises-position-extra-protections-for-bees-from-pesticides)

After a campaign and letter by Friends of the Earth and allies (including MOFGA), **Home Depot says it has removed neonicotinoid pesticides from 80 percent of its flowering plants** and will complete its phase-out in plants by 2018.

Lisa Archer, food and technology program director at Friends of the Earth U.S., says, “... we know that Home Depot and other retailers can do even more to address the bee crisis. Along with allies, we will continue to challenge retailers to engage in a race to the top to move bee-toxic pesticides off their shelves and out of garden plants as soon as possible. Bees are the canary in the coal mine for our food system and everyone, including the business community, must act quickly to protect them.”

A study released by Friends of the Earth and Pesticide Research Institute, Gardeners Beware 2014, showed that 51 percent of garden plants purchased at Lowe’s, Home Depot and Walmart in 18 cities in the United States and Canada contained neonicotinoid pesticides at levels that could harm or kill bees.

Dr. Susan Kegley of the Pesticide Research Institute says many growers are using innovative approaches to control pests, such as applying beneficial insects or fungi that eat or disable pest insects, as well as sanitation, frequent monitoring for pests and selection of pest-resistant plants. “Their success shows that harmful systemic insecticides are not necessary to grow bee-friendly plants,” she says. (“Home Depot to phase out bee-killing pesticides,” Friends of the Earth, Dec.

3, 2015; www.huffstrategy.com/MediaManager/release/Friends-of-the-Earth-Canada/3-12-15/-Home-Depot-to-phase-out-bee-killing-pesticides/3207.html)

The first study of **pesticide residues on field-caught, native bees**, conducted by the U.S. Geological Survey (USGS) in northeastern Colorado, shows that native bees are exposed to neonicotinoid insecticides and other pesticides. The research focused on native bees, because limited information exists on their exposure to pesticides. It found that the presence and proximity of nearby agricultural fields was an important factor resulting in the exposure of native bees to pesticides. Pesticides were detected in the bees caught in grasslands with no known direct pesticide applications.

Native bees were collected from cultivated agricultural fields and grasslands and tested for 122 pesticides and 14 pesticide metabolites. Fifteen of the 54 total samples tested negative for the 122 chemicals examined. The neonicotinoid insecticide thiamethoxam, most commonly detected, was in 46 percent of the composite bee samples. Thiamethoxam is used as a seed coating on a variety of crops.

Another USGS study published in 2015 found neonicotinoids in a little more than half of both urban and agricultural streams sampled across the United States and Puerto Rico. (“Native Bees Foraging in Fields Are Exposed to Neonicotinoid Insecticides and other Pesticides,” United States Geological Survey, Nov. 4, 2015; www.usgs.gov/newsroom/article.asp?ID=4381&from=rss#.Vk0C_GQrJ-U)

Basing its conclusion almost entirely on pesticide industry studies, **the EPA says there is “no convincing evidence” that glyphosate**, the active ingredient in Roundup and some other herbicides, **is an endocrine disruptor**. Of the five independently funded studies that the agency considered, three found evidence of endocrine disruption. None of the 27 industry studies concluded that glyphosate caused harm – despite some data showing harm, according to The Intercept. (“EPA Used Monsanto’s Research to Give Roundup a Pass,” by Sharon Lerner, The Intercept, Nov. 3, 2015; <https://theintercept.com/2015/11/03/epa-used-monsanto-funded-research/>)

The European Food Safety Authority (EFSA) says **glyphosate** is "unlikely" to cause **cancer**, while the World Health Organization International Agency for Research on Cancer (IARC) says it "probably" does. The EFSA assessed glyphosate alone, while the IARC considered glyphosate alone and in products in which it is an active ingredient. The two agencies also used different methods to draw conclusions. The EFSA considers the number of positive versus negative studies; the IARC believes that one result showing problems can outweigh all other studies. The EFSA considers some industry studies; the IARC looks only at published studies available to independent scientists. Both said some evidence exists that exposure to glyphosate can change or damage animal or human cells. (“Mixed message on weed-killer reflects reality of scientific uncertainty,” by Kate Kelland, Reuters, Nov. 17, 2015; www.reuters.com/article/2015/11/17/us-health-monsanto-glyphosate-idUSKCN0T61QL20151117#iIIdPVwFsLPF47Xd.97.99)

In November the **EPA** said it would **revoke its approval of Enlist Duo herbicide**, a combination of glyphosate (the active ingredient in Roundup) and 2,4-D made by Dow AgroSciences for use with genetically engineered corn and soy. Dow made the herbicide to help counter “superweeds” that had become resistant to glyphosate, due to overuse of that herbicide. Earthjustice and the Center for Food Safety on behalf of several farming and environmental groups sued the EPA, arguing that it had failed to fully consider harm from Enlist Duo to endangered species, including Monarch butterflies. The EPA said new information from Dow, supplied to the U.S. Patent Office but not, originally, to EPA, suggested greater toxicity than the agency originally thought, due to synergistic effects of the two herbicides. Dow reportedly said it expects to resolve questions about the synergistic effects and that the herbicide will be approved in time for the 2016 growing season. (“Why the EPA Pulled a New Pesticide for GMO Corn and Soy,” by Elizabeth Grossman, Civil Eats, Dec. 1, 2015; <http://civileats.com/2015/12/01/why-the-epa-pulled-a-new-pesticide-for-gmo-corn-and-soy-enlist-duo/>; “EPA Pulls Registration for Dow’s Enlist Duo Herbicide Citing High Toxicity Levels,” Center for Food Safety, Nov. 25, 2015; www.centerforfoodsafety.org/press-releases/4144/epa-pulls-registration-for-dows-enlist-duo-herbicide-citing-high-toxicity-levels#)

Early exposure to organophosphate insecticides, widely used in agriculture worldwide, is associated with **decreased lung function** in children, according to recent research at the University of California Berkeley. Previous research had shown such effects in adults, and acute exposure is known to be highly toxic, causing headaches, vomiting, seizures or coma. The researchers tested the urine of more than 200 children living in California’s Salinas Valley – many in households with agricultural workers – at ages 0.5, 1, 2, 3.5 and 5 for evidence of organophosphates. When researchers tested the lung capacity of the children at age 7, they found reduced lung function in those with higher concentrations of organophosphates in their urine. (“This common farm pesticide could be damaging the lungs of young children,” by Chelsea Harvey, The Washington Post, Dec. 3, 2015; <https://www.washingtonpost.com/news/energy-environment/wp/2015/12/03/this-common-farm-pesticide-could-be-damaging-the-lungs-of-young-children/>; Original paper: “Decreased lung function in 7-year-old children with early-life organophosphate exposure,” Thorax, Dec. 3, 2015; <http://thorax.bmj.com/content/early/2015/11/11/thoraxjnl-2014-206622>)

In December the Senate unanimously approved an **overhaul of the Toxic Substances Control Act (TSCA)**, originally passed in 1976. The House previously approved a narrower bill. Once differences between the two bills are resolved, the final bill will be sent to President Obama for signing. Currently the EPA cannot restrict use of a chemical or request new toxicity data on it without first proving that it poses a certain level of risk. The new bill would give the EPA more freedom to remove chemicals from the market, to order new toxicity data, and would require safety reviews of chemicals that persist in the environment, accumulate in the body or are known to be highly toxic. (“After rocky road, U.S. Senate passes landmark chemical law overhaul,” by Puneet Kollipara, Science, Dec. 17, 2015; <http://news.sciencemag.org/environment/2015/12/after-rocky-road-u-s-senate-passes-landmark-chemical-law-overhaul>)

Eighty-five percent of **male smallmouth bass** tested in or near 19 National Wildlife Refuges in the U.S. Northeast **had signs of female reproductive parts**, reports Brian Bienkowski in Environmental Health News, citing a federal study.

The study, led by the U.S. Geological Survey and U.S. Fish and Wildlife Service, also reported that 27 percent of male largemouth bass in the testing sites were intersex. At two Maine refuges – Sunkhaze Meadows National Wildlife Refuge near Orono and Moosehorn National Wildlife Refuge outside of Calais – nearly every smallmouth bass showed potential effects of chemical exposure.

The study adds to growing evidence that endocrine disrupting chemicals are getting into U.S. lakes, rivers, streams and reservoirs, apparently affecting the reproductive development of some fish species. The intersex bass in this study either had a protein that is used to make egg yolk typically found in females, or immature egg cells in their testes. Such changes could threaten overall fish populations and the ability to properly reproduce.

Endocrine disrupting compounds are found in birth control pills, some industrial chemicals and some pesticides. (“Intersex’ male bass found throughout protected Northeast US waters,” by Brian Bienkowski, Environmental Health News, Dec. 17, 2015; www.environmentalhealthnews.org/ehs/news/2015/dec/endocrine-disruption-fish-rivers-national-wildlife-refuge; “Study finds chemicals may be affecting Maine bass,” by Kevin Miller, Portland Press Herald, Dec. 26, 2015; www.pressherald.com/2015/12/26/study-finds-chemicals-may-be-affecting-maine-bass/)

Food Labels

In a victory for the industrial meat business and at the behest of the World Trade Organization, **Congress repealed a labeling law** in December that required retailers to include the **animal's country of origin** on packages of red meat. On the other hand, Congress did not to add language to its spending bill that would have blocked mandatory labeling of foods with ingredients from genetically engineered crops, and it will require labeling of the GE salmon recently approved by the Food and Drug Administration.

(“Consumers Won't Know Meat Origin After US Ends Labeling Law,” by Mary Clare Jalonick ABC News, Jan. 4, 2016;

<http://abcnews.go.com/Health/wireStory/consumers-meat-origin-us-ends-labeling-law-36075758>)

In January the **USDA Agricultural Marketing Service rescinded the labeling standard for grass-fed meat** that was developed over four years and finalized in 2006, with the support of national farm and consumer organizations.

“Meat labeling just became even more confusing for farmers and consumers,” said Ferd Hoefner, policy director for the National Sustainable Agriculture Coalition. “USDA is revoking a label standard that had widespread farm and consumer support. Actions such as this take us into a Wild West situation, where anything goes and both farmers and consumers lose.”

In the Federal Register notice, AMS said having a strong, clear, consumer-friendly labeling standard “does not facilitate the marketing of agricultural products in a manner that is useful to stakeholders or consumers” because a different USDA agency, the Food Safety Inspection Service (FSIS), must approve meat labels, and “there is no guarantee that an USDA-verified production/marketing claim will be approved by FSIS.”

“The rationale that a strong USDA label standard for grass fed beef is not useful because it might not be recognized by a partner agency is outrageous,” said Hoefner. “It is both sad and true that these two USDA agencies often do not coordinate, and worse yet that in some cases FSIS has looked the other way, allowing particularly unscrupulous meat companies to abuse the USDA standard,” Hoefner said. “But the common sense solution is not to revoke the standard, but instead to tackle siloing and lack of interagency communication head-on.”

The Federal Register notice gives producers using the grass-fed label 30 days to either convert the newly revoked USDA grass fed label claim into their own private grass-fed standard, or to develop a new grass-fed standard of their own. (“USDA Revokes Grass Fed Label Standard,” National Sustainable Agriculture Coalition,” by Ferd Hoefner, National Sustainable Agriculture Coalition, Jan. 12, 2016; http://sustainableagriculture.net/blog/release-usda-revokes-grass-fed-label-standard/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29)

Campbell Soup Co. says it will label its U.S. products for the presence of ingredients derived from **genetically engineered** (GE or GMO) organisms. It also supports federal legislation for a mandatory U.S. labeling standard for such foods and for foods claiming to be made from non-GE ingredient sources. Campbell also said it would no longer take part in efforts by groups fighting GE labeling. The company has an organic soup line for children and plans to remove artificial colors and flavors from most of its North American products by July 2018. (“Campbell Soup becomes first major company to start GMO labeling,” by Subrat Patnaik and Siddharth Cavale, Reuters, Jan. 8, 2016; <http://www.reuters.com/article/us-campbell-soup-gmo-idUSKBN0UM0H420160108>)

Trade Agreements

With text of the secretly negotiated **Trans Pacific Partnership** (TPP) free trade agreement now public, analysis raises concern about its impact on farmers, food systems and the environment. The recent repeal of Country of Origin Labeling rules for meat (COOL) because of a suit brought by Canada and Mexico under WTO investor rules similar to those found in the TPP validate fears that passage could endanger democratically established food policies and limit flexibility to set future policy.

Similarly, MOFGA’s sistering organizations in El Salvador have supported the country’s moratorium on metallic mining in order to preserve remaining land and water resources for farming and conservation. That moratorium, however, led Canada's Pacific Rim Resources to sue the country through the international Investor-State Dispute Settlement (ISDS) system for \$284 million in lost income from metallic mining – 5 percent of the Salvadoran GDP. The ISDS

system is part of earlier trade agreements, including the North American Free Trade Agreement. To date El Salvador has spent more than \$12 million defending itself against the suit. (<https://nowtoronto.com/news/environment/canadian-companies-behaving-badly/>)

The TPP agreement includes the United States, Japan, Viet Nam and nine other countries and if passed would set the rules for 40 percent of the world's economy, with impacts reaching to the local level. Leaders of the 11 countries were tentatively set to sign the agreement on February 4, after which President Obama can ask Congress for ratification any time beginning in early March. Because of Fast Track rules passed in summer 2015, Congress will have limited time for debate and can vote yes or no but cannot make amendments.

The Institute for Agriculture and Trade Policy (IATP) has issued a report, "State's Leadership on Healthy Food at Risk Under Proposed Trade Deals," authored by former Maine state legislator Sharon Anglin Treat. The report and a summary can be downloaded at <http://www.iatp.org/blog/201511/trade-laws-undo-local-progress-on-food-systems>. Summary analysis of all chapters of the proposed agreement can be downloaded at <http://citizen.typepad.com/eyesontrade/2015/11/initial-analysis-of-key-tpp-chapters.html>.

MOFGA and the MOFGA-El Salvador Sistering Committee signed on to a letter, along with more than 1,500 others, asking senators and representatives to oppose the TPP and explaining problems with the deal. The letter is posted at http://www.citizenstrade.org/ctc/wp-content/uploads/2016/01/TPPOppositionLetter_010716.pdf.

--Cynthia Phinney, Maine Fair Trade Campaign and president of Maine AFL-CIO

Genetic Engineering (GE, also known as GMO – genetically modified organisms. Organic standards do not permit products made from GE organisms.)

Analysis of currently published evidence confirms that **GE NK603 corn and Roundup herbicide are kidney and liver toxicants** at levels below current regulatory thresholds, according to John Fagan et al., so they call for reevaluation of the regulatory status of NK603, glyphosate and Roundup. Also, preliminary research suggests that Roundup and NK603, alone and combined, may increase tumor incidence and mortality. Noting that a paper by Séralini et al. about safety issues with NK603 and Roundup was retracted from the journal Food Chemistry and Toxicology but was later published in Environmental Sciences Europe, Fagan et al. decry the trend to put commercial interests ahead of science in peer-reviewed scientific journals. ("The Seralini affair: degeneration of Science to Re-Science?" by John Fagan et al., Environmental Sciences Europe, Aug. 29, 2015; www.enveurope.com/content/27/1/19)

Glyphosate residues have been detected in a small sampling of human breast milk. The World Health Organization has found that the herbicide is a probable carcinogen. The U.S. Department of the Interior has found glyphosate in numerous U.S. air and water samples. **The USDA, however, says it is too expensive to test for glyphosate residues** in its Pesticide Data Program, although it does test for residues of more than 400 other pesticides for the program. Carey Gillam, research director at U.S. Right to Know, says consumers deserve better. "It seems reasonable for the USDA to respect consumer concerns and make glyphosate residue testing a

priority.” (“USDA Shirking Obligation to Give Consumers Clarity Over Herbicide Residues on Food,” by Carey Gillam, US Right to Know, Jan. 11, 2016; <http://usrtk.org/pesticides/usda-shirking-obligation-to-give-consumers-clarity-over-herbicide-residues-on-food-2/>; “USDA Releases 2014 Annual Summary for Pesticide Data Program: Report confirms that pesticide residues do not pose a safety concern for U.S. food,” USDA, Jan. 11, 2016; <http://www.ams.usda.gov/press-release/usda-releases-2014-annual-summary-pesticide-data-program-report-confirms-pesticide>)

The Supreme Court of Justice of **Mexico has provisionally suspended the authorization** granted by former president Felipe Calderón’s administration to Monsanto **to cultivate GE soy** in Campeche and Yucatán, because the government did not consider the right of prior consultation of indigenous communities when it approved the crop. The Mayan people there have historically kept bees. In 2011, the European Union stopped importing their honey because it contained traces of GE pollen. (“Monsanto banned from producing genetically-modified soy,” Latinamerica Press, Nov. 13, 2015; <http://lapress.org/articles.asp?art=7237>)

Jackson County, Oregon, became one of at least **eight U.S. “GE-free zones”** in December, when a federal judge approved a consent decree protecting the county. The ordinance that passed in 2014 was challenged by two farmers who grow GE alfalfa. A judge rejected the challenge. In December a settlement was approved that let those farmers grow the crop for the rest of its useful life. (“Around the country, organic farmers are pushing for ‘GE-free’ zones,” by Chelsea Harvey, The Washington Post, Jan. 4, 2015; www.washingtonpost.com/news/energy-environment/wp/2016/01/04/around-the-country-organic-farmers-are-pushing-for-ge-free-zones/)

A recent study by USDA scientists shows that **GE alfalfa has spread** from major seed production areas in the western United States. “This feral GE alfalfa may help explain a number of transgenic contamination episodes over the past few years that have cost American alfalfa growers and exporters millions of dollars in lost revenue,” says the Center for Food Safety, adding, “it also exposes the failure of USDA’s ‘coexistence’ policy for GE and traditional crops.” (“New Study Finds Genetically Engineered Alfalfa Has Gone Wild, Exposing Failure of ‘Coexistence’ Policy,” by Bill Freese, Center for Food Safety, Jan. 13, 2016; www.centerforfoodsafety.org/blog/4207/new-study-finds-genetically-engineered-alfalfa-has-gone-wild-exposing-failure-of-coexistence-policy#; Original study: Occurrence of Transgenic Feral Alfalfa (*Medicago sativa* subsp. *sativa* L.) in Alfalfa Seed Production Areas in the United States, PLoS One, 12/23/2015, by Stephanie L. Greene et al., <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0143296>)

The Yurok Tribe – California’s largest tribe with roughly 5,000 enrolled members – **banned GE crops and salmon** in December. The ordinance prohibits propagating, raising, growing, spawning, incubating or releasing GE organisms within the Tribe’s territory and declares the Yurok Reservation to be a GMO-free zone. Yurok Chief Judge Abby Abinanti said that the Yurok Tribal Court will enforce violations. (“California’s Largest Tribe Bans GMO Crops and Genetically-Engineered Salmon,” by Lorraine Chow, EcoWatch, Dec. 26, 2015; <http://ecowatch.com/2015/12/26/yurok-tribe-bans-gmos/>)

The **Taiwanese** legislature has **banned raw GE ingredients** and processed food made from GE ingredients from its schools. (“Taiwan Bans GMOs in Schools, Mandates Strict Label Laws,” by Lorraine Chow, EcoWatch, Jan. 13, 2016; <http://ecowatch.com/2016/01/13/taiwan-ban-gmos-schools/>)

Greenpeace has concisely documented “**Twenty Years of Failure – Why GM Crops Have Failed to Deliver on Their Promises**” in its 40-page PDF. The publication provides data and citations about the seven myths that GE crops can feed the world; hold the key to climate resilience; are safe for humans and the environment; simplify crop protection; are economically viable for farmers; can coexist with other agricultural systems; and that GE is the most promising pathway of innovation for food systems. (“Seven myths about GM crops, and the truth behind them,” Greenpeace, Nov. 2015; <http://www.greenpeace.org/international/Global/international/publications/agriculture/2015/Twenty%20Years%20of%20Failure.pdf>)

The **U.S. Food and Drug Administration approved AquaBounty’s GE salmon** in November – the first GE animal approved for human consumption in U.S. markets. The fish has been engineered to grow twice as fast as nonengineered farmed salmon, using a gene for a growth hormone from Chinook salmon and a genetic switch from ocean pout. The FDA said it would not require that GE fish be labeled as such – but in their December federal spending bill, lawmakers instructed the FDA to forbid the sale of GE salmon until the agency creates labeling guidelines and a program of disclosure for consumers about GE fish.

Some consumer and environmental groups are concerned about GE fish escaping into wild populations and about the safety of eating the fish. The Center for Food Safety said it planned to challenge the approval in court. The GE fish, which will be raised initially in Panama from eggs produced on Prince Edward Island, is not expected to appear in markets for about two years.

While polls show that 90 percent of Americans support mandatory GE labeling, FDA policy allows manufacturers to voluntarily label their products as containing ingredients from GE sources rather than requiring that they disclose such information. Congresswoman Chellie Pingree and others support labeling and have co-sponsored Congressman DeFazio’s bill, the Genetically Engineered Food Right-to-Know Act, which would require mandatory labeling of GE foods. Meanwhile, the American Seed Trade Association, American Farm Bureau Federation, American Soybean Association, National Corn Growers Association and the National Grain and Feed Association praised FDA’s ruling. (“Genetically Engineered Salmon Approved for Consumption,” by Andrew Pollack, The New York Times, Nov. 19, 2015; www.nytimes.com/2015/11/20/business/genetically-engineered-salmon-approved-for-consumption.html?_r=3; “Lawmakers blast federal approval of genetically-engineered salmon, voluntary GMO labeling,” Penobscot Bay Pilot, Nov. 19, 2015; www.penbaypilot.com/article/lawmakers-blast-federal-approval-genetically-engineered-salmon-voluntary-gmo-labeling/62323?source=dh; “FDA denies request to require labeling of GMO-containing foods,” by Forrest Laws, Delta Farm Press, Nov. 20, 2015; <http://deltafarmpress.com/corn/fda-denies-request-require-labeling-gmo-containing-foods>; “FDA must develop plan to label genetically engineered salmon, Congress says,” by Brady Dennis, The Washington Post, Dec. 17, 2015; www.washingtonpost.com/news/to-your-

health/wp/2015/12/17/congress-to-fda-no-genetically-engineered-salmon-in-supermarkets-unless-it-is-labeled/)

Civil society groups, including the Organic Consumers Association, IFOAM International Organics, Navdanya, Regeneration International and Millions Against Monsanto, are **putting Monsanto on trial for alleged crimes against nature and humanity** in The Hague on World Food Day – October 16, 2016. "Monsanto promotes an agroindustrial model that contributes at least one third of global anthropogenic greenhouse gas emissions," said the coalition, adding, "It is also largely responsible for the depletion of soil and water resources, species extinction and declining biodiversity, and the displacement of millions of small farmers worldwide. This is a model that threatens peoples' food sovereignty by patenting seeds and privatizing life ..." The Tribunal will rely on the "Guiding Principles on Business and Human Rights" adopted at the UN in 2011 and will assess potential criminal liability on the basis of the Rome Statue created by the International Criminal Court in The Hague in 2002. The coalition released its statement at the Paris Climate Conference, COP21, saying, "The answer [to climate change] lies in scaling up the regenerative forms of agriculture, not extractive ones that are based on greed and ecological injustice. The most efficient way for taking carbon out of the atmosphere is to put it in the soil by building resilient, productive and healthy farming systems." ("Monsanto on trial for crimes against nature and humanity," by Pavlos Georgiadis, Ecologist, Dec. 6, 2015; www.theecologist.org/News/news_round_up/2986570/monsanto_on_trial_for_crimes_against_nature_and_humanity.html)

Summer 2016

The Good News

Mitch Lansky, a MOFGA member and long-time low-impact forestry proponent, has published a report on the Maine Environmental Policy Institute website (<http://www.lowimpactforestry.org/>) about using Maine's extensive forests to sequester carbon. In "**The Double Bottom Line: Managing Maine's Forests to Increase Carbon Sequestration and Decrease Carbon Emissions**," Lansky says, "Three-fourths of the volume of trees harvested in Maine's forests get chipped and/or burned. And much of what doesn't get burned is turned into paper that has a single use and then is thrown away. Rather than look for cheap substitutes to continue that trend, it is time we start managing forests and energy as if the future mattered." Lansky will be a featured speaker at the 2016 Common Ground Country Fair.

The NOFA (Northeast Organic Farming Association) Organic Land Care Program will offer its 30-hour professional training course, the "NOFA Accreditation Course in Organic Land Care," to landscapers **in Maine on August 15, 16, 22 and 23**, 2016, after receiving requests from MOFGA, Portland Protectors and many individuals to bring the course to Maine. The course, to be held at the University of Southern Maine, Portland, gives the opportunity for landscapers, lawn care specialists, municipal groundskeepers, landscape architects and environmental educators to learn and adopt best practices for caring for the landscape without using synthetic fertilizers and pesticides. In addition, an organic approach encourages practices that build soil fertility, encourage a healthy soil food web, plant the right plant in the right place, and use native plants to increase biodiversity and reduce needs for water and fertilizers.

The NOFA Connecticut and its organic land care program have held over 20 courses and trained about 2,000 students since 2002. With Connecticut's legislation prohibiting synthetic chemicals from use on K-8 grade school grounds, and many states and municipalities following that lead, a thorough knowledge of organic gardening and landscape care is a must for the green industry workforce and the homeowner.

The accreditation course features experts in the organic land care industry, including Chip Osborne, Michael Nadeau, Frank Crandall, Paul Wagner and others. Paula Kovacs, owner of The Way it Grows, a landscaping company in Eastport, Maine, will join the line-up of skilled presenters when she teaches an "Introduction to Permaculture" in August.

At the end of the course, business owners or employees will gain a new credential by passing the accreditation exam. Those who pass will join over 500 NOFA-accredited organic land care professionals in 20 states, including eight in Maine. Landscapers are increasingly using this unique course to study and prepare themselves to capture the growing market of customers seeking nontoxic and organic landscaping services.

The course runs from 8 a.m. to 5 p.m. and can accommodate up to 60 students. The early bird fee, \$695, includes course materials, lunch, the final exam and the first year of NOFA accreditation. Group discounts and payment plans are available. FMI: 203-308-2584 or www.organiclandcare.net.

City councilors in Belfast, Maine, have unanimously supported creating a public labyrinth walking path at Belfast Common and, after members of the public spoke up at a council meeting, **decided against the use of pesticides** in that park. Belfast resident Sasha Kutsy was quoted in the Bangor Daily News as telling councilors, "Our town is better than that," regarding possible pesticide use. ("Belfast councilors decide against use of pesticides in park," by Abigail Curtis, Bangor Daily News, Feb. 3, 2016; <https://bangordailynews.com/2016/02/03/news/midcoast/belfast-councilors-decide-against-use-of-pesticides-in-park/>)

Washington State University researchers have concluded that feeding a growing global population with sustainability goals in mind is possible. Their review of hundreds of published studies provides evidence that **organic farming can produce sufficient yields, be profitable for farmers, protect and improve the environment and be safer for farm workers.**

The study, "Organic Agriculture in the 21st Century," was published in the journal Nature Plants by John Reganold, WSU regents professor of soil science and agroecology, and doctoral candidate Jonathan Wachter.

This is the first study to analyze 40 years of science comparing organic and conventional agriculture across the four goals of sustainability identified by the National Academy of Sciences: productivity, economics, environment and community well-being. The assessment of organic farming relative to conventional illustrates that organic systems better balance the four areas of sustainability.

Critics have long argued that organic agriculture is inefficient, requiring more land to yield the same amount of food. The paper describes cases where organic yields can be higher than those from conventional farming.

“In severe drought conditions, which are expected to increase with climate change, organic farms have the potential to produce high yields because of the higher water-holding capacity of organically farmed soils,” Reganold said.

However, even when yields may be lower, organic agriculture is more profitable for farmers because consumers are willing to pay more. Higher prices can be justified as a way to compensate farmers for providing ecosystem services and avoiding environmental damage or external costs.

Overall, organic farms tend to store more soil carbon, have better soil quality and reduce soil erosion. Organic agriculture creates less soil and water pollution and lower greenhouse gas emissions. And it’s more energy efficient because it doesn’t rely on synthetic fertilizers or pesticides.

It is also associated with greater biodiversity of plants, animals, insects and microbes as well as genetic diversity. Biodiversity increases the services that nature provides, such as pollination, and improves the ability of farming systems to adapt to changing conditions.

Reganold said that feeding the world is not only a matter of yield but also requires examining food waste and food distribution.

“If you look at calorie production per capita we’re producing more than enough food for 7 billion people now, but we waste 30 to 40 percent of it,” he said. “It’s not just a matter of producing enough, but making agriculture environmentally friendly and making sure that food gets to those who need it.”

Reganold and Wachter suggest that feeding the world requires “a blend of organic and other innovative farming systems, including agroforestry, integrated farming, conservation agriculture, mixed crop/livestock and still undiscovered systems.”

The authors recommend policy changes to address barriers that hinder the expansion of organic agriculture. Such hurdles include the costs of transitioning to organic certification, lack of access to labor and markets and lack of appropriate infrastructure for storing and transporting food. Legal and financial tools are necessary to encourage the adoption of innovative, sustainable farming practices. (“40 years of science: Organic ag key to feeding the world,” by Sylvia Kantor, Washington State University News, Feb. 3, 2016;

<https://news.wsu.edu/2016/02/03/40-years-of-science-organic-ag-key-to-feeding-the-world/>)

Analyzing data from around the world, a research team led by Newcastle University reviewed 196 papers on milk and 67 papers on meat and found **clear differences between organic and conventional milk and meat**, especially in terms of fatty acid composition, and concentrations of certain essential minerals and antioxidants. The team, which published its findings in the

British Journal of Nutrition, says the data show that switching to organic meat and milk would help increase our intake of nutritionally important fatty acids.

Diets low in omega-3 fatty acids, especially in combination with high omega-6 diets, are risk factors for cardiovascular disease, cancer and inflammatory and autoimmune diseases. Diets with high omega-3 intakes, on the other hand, suppress these conditions.

Chris Seal, professor of food and human nutrition at Newcastle University, explains: “Western European diets are recognised as being too low in these [omega-3] fatty acids and the European Food Safety Authority (EFSA) recommends we should double our intake. But getting enough in our diet is difficult. Our study suggests that switching to organic would go some way towards improving intakes of these important nutrients.”

Levels of omega-3 fatty acids were 50 percent higher in organic milk and meat, and switching from conventional to organic would raise omega-3 fat intake without increasing calories and undesirable saturated fat. For example, half a liter of organic full-fat milk (or equivalent fat intakes from other dairy products such as butter and cheese) provides an estimated 16 percent (39 mg) of the recommended daily intake of very long-chain omega-3, while conventional milk provides 11 percent (25 mg).

Other positive changes in fat profiles included lower levels of two saturated fats, myristic and palmitic acid, in organic meat and a lower omega-6/omega-3 ratio in organic milk. The researchers also noted that organic milk had higher concentrations of fat-soluble vitamins, such as vitamin E and carotenoids; higher concentrations of iron and selenium; and 40 percent more conjugated linoleic acid (CLA).

The more desirable fat profiles in organic milk were closely linked to outdoor grazing and low concentrate feeding in dairy diets, as prescribed by organic farming standards.

The reviews also describe recently published results from several mother and child cohort studies linking consumption of organic milk, dairy product and vegetables to reduced risk of certain diseases, including eczema in babies.

Newcastle University’s Professor Carlo Leifert, who led the studies, said, “People choose organic milk and meat for three main reasons: improved animal welfare, the positive impacts of organic farming on the environment, and the perceived health benefits. But much less is known about impacts on nutritional quality, hence the need for this study.

“Several of these differences stem from organic livestock production and are brought about by differences in production intensity, with outdoor-reared, grass-fed animals producing milk and meat that is consistently higher in desirable fatty acids such as the omega-3s, and lower in fatty acids that can promote heart disease and other chronic diseases.”

The study also found 74 percent more iodine in conventional milk. Iodine is low in most foods, except seafood, and the World Health Organization (WHO) recommends iodine fortification of table salt to address this. Iodine fortification of cattle feeds is also widely used to increase iodine concentrations in organic and conventional milk.

Gillian Butler, co-author and senior lecturer in animal nutrition at Newcastle University, explains that a relatively narrow margin exists between dietary iodine deficiency (<140 µg/day) and excessive intakes (> 500 µg/day), which can lead to thyrotoxicosis, so optimizing iodine intake can be challenging.

In the United States, China, Brazil and many European countries, where iodine-fortified salt is widely used, elevated levels of iodine in milk may increase the risk of excessive intake for individuals with high dairy consumption. For this reason the European Food Safety Authority has proposed reducing the permitted level of iodine in cattle feed from 5 to 2 mg iodine per kg of feed.

However, in the UK, where iodized salt is not widely available, the population relies more on milk and dairy products for adequate iodine supply. Pregnant and breastfeeding women require more iodine, as well.

Iodine can also be found in seaweed, seafood and enriched wheat products. Also, when iodine deficiency has been found in individuals, it has been linked to reduced intake of iodine-rich foods, reports The Organic Center, adding that deficiency has never been linked to drinking organic milk. When compared with the multitude of benefits of choosing organic, the marginally lower levels of iodine pale in comparison, says the Center.

A previous study by the same team showed that organic crops and crop-based foods are up to 60 percent higher in a number of key antioxidants than conventionally-grown crops and were lower in the toxic metal cadmium.

“We have shown without doubt there are composition differences between organic and conventional food. Taken together, the three studies on crops, meat and milk suggest that a switch to organic fruit, vegetables, meat and dairy products would provide significantly higher amounts of dietary antioxidants and omega-3 fatty acids,” concludes Leifert.

He continued, “We need substantially more, well designed studies and surveys before we can accurately estimate composition differences in meat from different farm animals and for many nutritionally important compounds (vitamins, minerals, toxic metal and pesticide residues), as there is currently too little data to make comparisons. However, the fact that there are now several mother and child cohort studies linking organic food consumption to positive health impacts shows why it is important to further investigate the impact of the way we produce our food on human health.”

The database generated and used for this analysis is freely available on the Newcastle University website, alongside data from the previous study on organic versus conventional crops (<http://research.ncl.ac.uk/nefg/QOF>). The study was funded by the European Commission, the executive body of the European Union, and the Sheepdrove Trust, a British charity that supports organic farming research. (“Study finds clear differences between organic and non-organic products,” Newcastle University, Feb. 16, 2016;

<http://www.ncl.ac.uk/press/news/2016/02/organicandnon-organicmilkandmeat/> ; Original article: “Composition differences between organic and conventional meat; a systematic literature review and meta-analysis,” by Carlo Leifert et al., British Journal of Nutrition; “Organic Meat and Milk Higher in Healthful Fatty Acids,” by Kenneth Chang, The New York Times, Feb. 15, 2016; http://well.blogs.nytimes.com/2016/02/15/more-omega-3-in-organic-meat-and-milk-review-of-studies-says/?_r=0; “New Studies Show Dietary Benefits of Organic Dairy and Meat,” The Organic Center, Feb. 16, 2016; <https://www.organic-center.org/news/new-studies-show-dietary-benefits-of-organic-dairy-and-meat/>)

Women who reported eating organic food during their first four months of pregnancy were 58 percent less likely to deliver boys with hypospadias, a common urogenital birth defect, than mothers who never ate organic foods, according to a study of 35,107 women and their male infants who participated in the Norwegian Mother and Child Cohort Study. Of the food groups noted – vegetables, fruits, cereals, dairy, eggs and meat – organic vegetables had the strongest association with lower prevalence of hypospadias. In hypospadias, the urinary opening of the urethra forms on the underside of the penis. Preeclampsia – also associated with increased risk for hypospadias – was shown in a previous study to be less prevalent among pregnant women who ate organic vegetables. These preliminary findings are based on small numbers and do not reflect other, possibly related behaviors, such as avoiding exposures to endocrine-disruption chemicals in cleaning and personal care products, or family history of hypospadias. (“Eating for Two: Does an Organic Diet Make a Difference?” by Carol Potera, Environmental Health Perspectives, March 2016; <http://ehp.niehs.nih.gov/124-a55/>; “Organic Food Consumption during Pregnancy and Hypospadias and Cryptorchidism at Birth: The Norwegian Mother and Child Cohort Study (MoBa), by Anne Lise Brantsæter et al., Environmental Health Perspectives, March 2016; <http://ehp.niehs.nih.gov/1409518/>)

Ruminants are perceived as contributing to greenhouse gases (GHG) through methane (CH₄) produced by rumen fermentation. However, **regenerative crop and grazing management may reduce overall GHG emissions and even increase soil carbon (C)** sequestration. Researchers found that permanent cover with forage plants greatly reduces soil erosion, and ruminants consuming only grazed forages under appropriate management help sequester more C than they emit. Other benefits include water infiltration, nutrient cycling, soil formation, increased biodiversity and wildlife habitat. “Our assessment suggests that increasing SOC [soil organic carbon] globally within food production systems will reduce the C footprint of agriculture much more than reducing domesticated ruminant numbers in an effort to reduce enteric GHG emissions,” say W.R. Teague et al. The researchers suggest rewarding regenerative agricultural practices. (“The role of ruminants in reducing agriculture’s carbon footprint in North America,” by W.R. Teague et al., Journal of Soil and Water Conservation, March/April 2016; <http://www.jswconline.org/content/71/2/156.full.pdf>)

In February, the USDA announced a **new conservation option for organic farmers – cost-share and land rental payments for field border buffers**. Conservation buffers are an important conservation practice for all farms, but especially for organic farmers. Introducing a payment option for organic buffers will help farmers meet USDA organic certification

requirements that they maintain or improve natural resources (including soil and water quality), support biodiversity and native species, and develop habitat for beneficial insects.

The initiative aims to help organic farmers establish up to 20,000 acres of new conservation buffers through the Continuous Conservation Reserve Program (CCRP). Organic farmers are eligible to enroll windbreaks, filter strips, pollinator strips and field borders planted to native grasses, shrubs and trees in the program in the new 20,000-acre initiative. Eligible conservation practices include riparian, wetland and wildlife habitat buffers, filter strips, wetland restoration, grass waterways, shelterbelts, windbreaks, living snow fences and contour grass strips. A chart with additional information on special incentive payments available for particular field border buffer options is available via the NSAC website.

Enrollment in CCRP happens on a continuous basis, with eligible acres automatically accepted into the program. This differs from CCRP's parent program, the Conservation Reserve Program (CRP), which features a competitive enrollment process during a defined sign-up period.

Other services that organic farmers can access include the Noninsured Crop Disaster Assistance Program (NAP), which provides financial assistance for crop losses due to natural disasters. The USDA Farm Service Agency (FSA) is streamlining NAP procedures so that organic farmers can be paid for lost crops at the higher organic rather than the lower conventional price. FSA is also offering organic farmers free mapping of farm and field boundaries and reporting of organic acreage. Farmers can use this information when working with organic certifiers or crop insurance agents. ("USDA Makes Payments Available for Organic Field Border Buffers," National Sustainable Agriculture Coalition, Feb. 26, 2016; http://sustainableagriculture.net/blog/new-conservation-option-organic-farms/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29)

Montana State University researchers have identified six traditionally bred varieties of **low glycemic index (GI) potatoes** that produced well in Montana and could help foil type 2 diabetes, as they do not cause a rapid spike in blood sugar. One of the six lowest GI cultivars, Huckleberry Gold, has been certified for seed production in Montana and released; certification of the other five is in progress. Huckleberry Gold, a purple-skinned, yellow-fleshed variety, is more resistant to growth cracks, secondary growth and hollow heart than Yukon Gold and has high antioxidant concentrations and good resistance to common scab and verticillium wilt. Huckleberry Gold is also being grown as certified seed in experimental plots at MOFGA-certified organic Wood Prairie Farm. ("Researchers find spuds that could foil type 2 diabetes," by Sarah Brown, The Prairie Star, Feb. 15, 2016; http://www.theprairiestar.com/news/crop/researchers-find-spuds-that-could-foil-type-diabetes/article_0141603c-d1e5-11e5-ac59-dfc4149983a5.html; personal communication, Wood Prairie Farm, Feb. 16, 2016)

Organic farmers, asked about their **organic seed use** by Organic Seed Alliance, reported planting about 69 percent of their vegetable acreage with organic seed, up from 55 percent five years earlier; 66.5 percent of their cover crops, up from 49 percent; and 77 percent of field crops, up from 72 percent; 59 percent of forage acreage, up from 61 percent. Smaller farmers tended to use much more organic seed. Growers said a lack of desired varieties was the main limitation to

planting more. The USDA National Organic Program rules require that organic growers use organic seed unless the type they require is commercially unavailable. (“Organic Seed Usage Grows,” by Mateusz Perkowski, Capital Press, Feb. 8, 2016; www.capitalpress.com/Organic/20160208/organic-seed-usage-grows)

Organic food sales in the United States have shown double-digit growth during most years since the 1990s, and this trend shows no sign of slowing. The Nutrition Business Journal reports annual growth in U.S. organic food sales has generally exceeded 10 percent since 2008, approaching an estimated \$37 billion in 2015, up 12 percent from the previous year.

The Organic Trade Association estimates that U.S. organic food purchases accounted for nearly 5 percent of the total food market in 2014; and U.S. sales of organic personal care products, linens and other nonfood items exceeded an estimated \$3 billion in 2014. Certified organic farmland has also expanded, but not as fast as organic sales.

The top two organic food categories – fresh produce and dairy products – have been increasing rapidly, along with sales of organic bread, packaged foods, snacks, beverages, poultry, meat and condiments. Produce growers in the United States have adopted organic systems more widely than have other types of producers. Many of these organic producers market directly to consumers, especially when they are beginning to farm. Organic dairy production is also expanding rapidly; the organic share of the total U.S. fluid milk market has increased almost every year for nearly a decade and now accounts for about 5 percent of the total, according to USDA federal milk marketing statistics.

Most organic produce items receive significant price premiums over conventionally grown, and prices for organic grain crops can be double or triple conventional prices due to chronic shortages of domestically produced grains. A recent Economic Research Service study based on national survey data found that the higher economic costs of producing organic corn and soybeans were more than offset by the higher prices for these crops.

The United States also has a growing export market for organic products. The U.S. Census Bureau tracks nearly three dozen organic exports, mostly fresh fruits and vegetables; their value topped \$500 million in 2014. The annual value of tracked organic imports, currently over \$1 billion, includes bananas, coffee, olive oil, mangos, wine, soybeans and other commodities. (“Consumer Demand Bolstering Organic Production and Markets in the U.S.,” by Catherine Greene, USDA Economic Research Service, Feb. 16, 2016; <http://blogs.usda.gov/2016/02/16/consumer-demand-bolstering-organic-production-and-markets-in-the-u-s/>)

The Organic Trade Association’s “**US Families Organic Attitudes and Beliefs**” study found that

- 35 percent of US. families make a great deal of effort to buy organic products
- 74 percent make at least a minor effort
- 33 percent of parents say buying organic is one of their top three food-buying priorities (price, taste, and health and nutrition were some other priorities)

(“Nearly three-quarters of families make an effort to buy organic food, OTA survey reveals,” by Elizabeth Crawford, Food Navigator, April 25, 2016;

<http://www.foodnavigator-usa.com/R-D/Most-families-make-an-effort-to-buy-organic-food-OTA-survey-reveals>”

The USDA in April announced a **significant increase in the number of certified organic operations**, continuing the trend of double digit growth in the organic sector. The new data count 21,781 certified organic operations in the United States. Data from USDA’s Agricultural Marketing Service's National Organic Program (NOP) show that the number of U.S. certified organic operations increased by almost 12 percent between 2014 and 2015, representing the highest growth rate since 2008 and an increase of nearly 300 percent since the count began in 2002. The total retail market for organic products is now valued at more than \$39 billion in the United States and over \$75 billion worldwide. The site www.usda.gov/organic enables organic producers to find technical and financial resources to help them grow. Also, USDA has made market and pricing information for approximately 250 organic products available free through USDA's Market News.

The data announced in April are publicly available as part of the Organic Integrity Database. In the past, USDA published an updated list of certified organic operations annually. The new database enables organic certifiers to add new operations and report changes to existing operations at any time. (“USDA Reports Record Growth in U.S. Organic Producers, \$1 Billion in USDA Investments Boost Growing Markets for Organic Products and Local Foods,” USDA Agricultural Marketing Service, April 4, 2016;

www.ams.usda.gov/press-release/usda-reports-record-growth-us-organic-producers-1-billion-usda-investments-boost)

A two-year field study at the University of Illinois found **effective weed control in organic tomato and pepper crops by propelling abrasive grit** from a hand-held sand blaster connected to a gas-powered, tractor-pulled air compressor. Grit, including granulated walnuts shells and maize cobs, greensand fertilizer and soybean meal, was applied within planting holes of plastic mulch one to four times. Two applications of any type of the grit reduced weed density by 63 percent in tomatoes and 80 percent in peppers and reduced final weed biomass by 69 to 97 percent compared with an unweeded control. Broadleaf weeds were more susceptible than grasses. Total tomato yield was up to 44 percent greater in treated than in unweeded plots; yield increases in peppers (up to 33 percent) were not significant. Fruit yield was the same as in hand-weeded plots when plastic mulch was combined with one or more blastings. The soybean meal used as grit in this study could contribute about 31 to 94 pounds of nitrogen per acre. (“Air-propelled abrasive grits reduce weed abundance and increase yields in organic vegetable production,” by Sam E. Wortman, Crop Protection, Nov. 2015;

sciencedirect.com/science/article/pii/S0261219415300788; “Weed blasting offers new control method for organic farmers,” by Deborah Gertz Husar, Herald-Whig, March 20, 2016; <http://www.whig.com/article/20160320/ARTICLE/303209974#>)

In March the Maine Legislature considered LD 483, a proposed constitutional amendment sponsored by Rep. Craig Hickman, D-Winthrop and declaring that Mainers have a **“right to food freedom.”** To be ratified, the amendment would have to have passed the House and Senate by a two-thirds vote and then be passed by Maine voters. It did so in the House but not the Senate.

The proposed amendment read, “All individuals have a natural, inherent and unalienable right to acquire, produce, process, prepare, preserve and consume the food of their own choosing, for their own nourishment and sustenance, by hunting, gathering, foraging, farming, fishing, gardening and saving and exchanging seeds, as long as no individual commits trespassing, theft, poaching or other abuses of private property rights, public lands or natural resources in the acquisition of food.”

Supporters, including MOFGA, object to excessive government regulation of small-scale farmers. (“House backs constitutional changes to protect Mainers’ right to food choices,” by Kevin Miller, Portland Press Herald, March 22, 2016; <http://www.pressherald.com/2016/03/22/right-to-food-constitutional-amendment-gains-support/>; “Maine Senate rejects proposed ‘right to food’ constitutional amendment,” by Kevin Miller, Portland Press Herald, March 23, 2016; <http://www.pressherald.com/2016/03/23/maine-senate-votes-down-proposed-right-to-food-constitutional-amendment/>)

BPA

Tests of 200 cans of national brands, including Campbell’s, Del Monte, General Mills, Albertsons (which owns Shaws), Trader Joe’s and Whole Foods, showed the presence of the dangerous chemical **Bisphenol A (BPA) in the linings of two out of three cans.**

BPA is a hormone-disruptor linked to adverse health effects such as breast and prostate cancer, infertility, and learning and attention deficit disorders. Most people are exposed to BPA from dietary sources. Prenatal exposure to BPA occurs when pregnant women consume canned foods. BPA easily migrates from can linings to food.

The report, “Buyer Beware: Toxic BPA & Regrettable Substitutes in the Linings of Canned Food” (at www.toxicfoodcans.org), was conceived and written by the Mind the Store campaign of Safer Chemicals, Healthy Families, a Washington, D.C.-based coalition that includes Maine’s Environmental Health Strategy Center and other organizations.

The report found that 67 percent of cans tested still contain BPA in the liners, and 100 percent of leading food manufacturer Campbell’s cans contained BPA. It also documented chemicals used to replace BPA, many of which were unsafe PVC-based substitutes; others require more research to determine their safety.

In 2011, under Maine’s Kid Safe Products Act, BPA was banned in baby bottles and sippy cups over the objections of Governor Paul LePage. In 2013, the Environmental Health Strategy Center and Alliance for a Clean and Healthy Maine (of which MOFGA is a member) led a successful campaign to expand the phase-out of BPA to infant-formula cans and baby food jar lids. But the Maine Board of Environmental Protection stopped short of banning BPA in canned foods marketed to toddlers based on opposition from the LePage administration.

On the positive side, Whole Foods reports that store brand buyers are not accepting any new canned items with BPA in the lining material; Amy's Kitchen, Annie's Homegrown, Hain Celestial Group and ConAgra have fully transitioned away from BPA and have disclosed alternatives they're using; Eden Foods reported eliminating use of BPA-based epoxy liners in 95 percent of its canned foods and says it is seeking alternatives.

Identifying the safety of BPA alternatives is challenging, given insufficient FDA review and approval of packaging additives and highly protected trade secrets in this product sector. However, the report identified four major coating types other than BPA among the cans tested: acrylic resins, oleoresin, polyester resins and polyvinyl chloride (PVC) copolymers. Vinyl chloride is a known human carcinogen; styrene is a possible carcinogen.

The Maine Environmental Health Strategy Center recommends that consumers choose fresh or frozen foods or purchase canned food only from manufacturers and retailers that fully disclose the identity and safety of their can linings. Look for food packaged in other materials such as glass and Tetra Pak containers, it adds. ("Two Out of Three Food Cans Have Toxic BPA in the Linings, New Report Says," press release, Elyse Tipton, Environmental Health Strategy Center, March 30, 2016)

Genetic Engineering

(Genetically engineered (GE) crops are sometimes called GMOs – genetically modified organisms. National organic regulations do not allow GE products in organic agriculture.)

Steve Marsh, an organic farmer in Western Australia, lost his final appeal in his landmark GE contamination lawsuit against neighboring farmer Michael Baxter, who planted Monsanto's GE canola. Marsh said he lost organic certification on about 70 percent of his property after his neighbor's GE Roundup Ready canola seeds blew onto his farm in 2010. Australia has a zero-tolerance organic standard concerning GE contamination on organic lands. After six years of the suit and appeals, the Supreme Court of Western Australia ruled against Marsh.

This case highlights the challenges facing organic farmers whose crops are contaminated by GE crops, says Ken Roseboro, editor of The Organic & Non-GMO Report. Those farmers suffer economic losses and can lose organic certification. Roseboro says the case shows that coexistence of GE crops and organic is difficult, if not impossible, when biotech/pesticide companies are not held liable. EcoWatch quotes Monsanto Australia's managing director Daniel Kruithoff as saying that Monsanto supported Baxter's legal defense financially. Marsh received support from the nonprofit Safe Food Foundation. ("Organic Farmer Dealt Final Blow in Landmark Lawsuit Over Monsanto's GMO Contamination," by Lorraine Chow, EcoWatch, Feb. 12, 2016; <http://ecowatch.com/2016/02/12/monsanto-lawsuit-gmo-contamination/>)

Of the 390 million cropland acres in the United States in 2012, producers planted 182 million acres with GE seed. Ninety percent of GE acreage was in corn and soybeans; GE varieties are also widely used in U.S. cotton, sugar beet and canola production. Only 0.6 percent of U.S. vegetable acreage and 0.03 percent of U.S. fruit acreage were planted with GE varieties in 2012.

The United States had 5.4 million acres managed under certified organic farming systems in 2011, with just over half for cropland and the rest for pasture and rangeland. Only 0.3 percent (234,000 acres) of U.S. corn acres and 0.2 percent (132,000 acres) of U.S. soybean acres were certified organic in 2011, despite large organic price premiums. The USDA Agricultural Marketing Service reports organic corn and soybean prices are generally two to three times higher than conventional crop prices. Over 4 percent of fruit and vegetable acreage is certified organic; organic lettuce, carrots and squash exceeded 10 percent of total U.S. production in 2011.

In 2014, U.S. farmers planted 6.4 million acres of corn and 5.1 million acres of soy using non-GE seed. About 59 percent of the non-GE conventional soybean producers sold their crop in a market for identity-preserved (IP) non-GE soybeans in 2012. Survey respondents who sold non-GE soybeans (food and feed) in an IP market reported receiving an average price premium of \$2.50 per bushel, about 18 percent higher than USDA's reported average price for all soybeans in 2012. USDA recently began publishing a non-GE price report, which shows non-GE price premiums of \$0.75 per bushel for food soybeans (8 to 9 percent higher than for all soybeans) and \$1.13 per bushel for feed soybeans (12 to 14 percent higher than for all soybeans) in fourth quarter 2015.

Among the challenges of organic and conventional non-GE corn and soybean production is preventing accidental comingling with GE crops and pollen in order to protect price premiums. Top practices that help reduce the risk of comingling include use of buffer strips and delayed planting, which may lower yields.

In 2014, 1 percent of all U.S. certified organic farmers in 20 states reported experiencing economic losses (amounting to \$6.1 million, excluding expenses for preventive measures and testing) due to GE comingling during 2011-2014. The percentage of organic farmers who suffered economic losses would be higher if calculated only for organic farmers growing the nine crops with a GE counterpart. (Commodity-specific estimates could not be reported due to data limitations and concerns about respondents' privacy.) While less than 1 percent of all organic farmers in California, Indiana, Maine, Minnesota and Michigan suffered losses due to unintended presence of GE material in their crops, 6 to 7 percent of organic farmers in Illinois, Nebraska and Oklahoma suffered losses. ("Economic Issues in the Coexistence of Organic, Genetically Engineered (GE), and Non-GE Crops," by Catherine Greene et al., USDA Economic Research Service, Feb. 2016; http://www.ers.usda.gov/media/2022021/eib-149_summary.pdf)

The U.S. Government Accountability Office (GAO) is **urging USDA to set a clear timeline for updating its biotechnology regulations**. In a report released on April 14, 2016, GAO cautioned, "Until a rule is finalized USDA will continue to lack regulatory authority to assess the potential risks, if any, posed by GE [genetically engineered] crops created with alternative technologies. Completing a new rule to update USDA's regulations is particularly important given that the number of GE crops developed with alternative technologies is expected to grow."

The report also highlights the need for further data collection from farmers who cultivate non-GE crops, recommending that the agency "include farmers growing identity-preserved crops in its survey efforts to better understand the impacts of unintended mixing."

Current USDA biotechnology regulations date back to 1986 (with minor changes), and have long since become obsolete in face of a rapidly evolving biotechnology landscape. The existing, outdated regulations limit the regulatory purview of USDA to genetic modification that involves genetic material from a plant pest, effectively deregulating over 30 “gene silencing” crop varieties (a form of genetic modification to edit or delete genes).

According to the GAO report, USDA officials intend to publish a proposed rule for updated biotechnology regulations no later than September 2016; however, they do not yet have a timeline for finalizing the new rule.

The GAO report found that EPA and FDA are both fully engaged in regulating GE crops; their legal authority is the same whether the GE organism they regulate includes gene insertion, edition or deletion, and regardless of the method used to genetically engineer a crop. (“GAO Report Calls for Timeline to Update USDA Biotechnology Regulations,” National Sustainable Agriculture Coalition, April 25, 2016; http://sustainableagriculture.net/blog/gao-report-biotech-reg-updates/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+Sustainable+AgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29)

University of Illinois professor Bruce Chassy received more than \$57,000 from Monsanto over less than two years to communicate about GE organisms, including lobbying federal officials to halt further regulation on GE products. **Chassy did not disclose his financial relationship with Monsanto** on state or university conflict-of-interest forms, and he and the university had Monsanto make the payments through the University of Illinois Foundation, thus avoiding public disclosure. WBEZ also found university records showing that Monsanto sent at least \$5.1 million between 2005 and 2015 through the foundation to university employees and programs. (“Why Didn't An Illinois Professor Have To Disclose GMO Funding?” by Monica Eng, WBEZ News, March 15, 2016; <https://www.wbez.org/shows/wbez-news/u-of-i-professor-did-not-disclose-gmo-funding/eb99bdd2-683d-4108-9528-de1375c3e9fb>)

The Grocery Manufacturers Association (GMA) violated Washington state’s campaign-finance disclosure laws by trying to hide the identities of corporations from which it raised \$14 million for a “Defense of Brands” fund to defeat a 2013 initiative that would have required labeling of GE foods, seeds and seed products there. The top contributors to that fund in 2013 (as of Dec. 3, 2013) were PepsiCo, Nestle USA, Inc., The Coca-Cola Company, General Mills, ConAgra, Campbell Soup, The Hershey Company, J.M. Smucker, Kellogg and Land O’Lakes, but the GMA listed the \$11 million donated from that fund as coming from GMA rather than listing those donors. (“Big Food Found Guilty in Multimillion Dollar Cover Up in GMO Labeling Fight,” by Lorraine Chow, Eco Watch, March 14, 2016; <http://ecowatch.com/2016/03/14/big-food-guilty-gmo-labeling-fight/>)

MOFGA is encouraged that Congress and the food manufacturing industry are recognizing the overwhelming desire of citizens for mandatory labeling of foods derived from GE organisms. In March, the U.S. Senate rejected legislation that would preempt states from

enacting mandatory GE labeling laws, and General Mills aligned itself with Campbell, becoming the second major food corporation to commit to labeling its products made with GE ingredients before Vermont's labeling law goes into effect on July 1. Kellogg Co., ConAgra Foods Inc. and Mars also said they will add GE labels to their product packaging. These moves show that food manufacturers can manage mandatory GE labeling with little cost or logistical challenge. Vermont's law sets fines of \$1,000 per day per product for noncompliance.

"While we are encouraged by these developments in the policy arena and the marketplace, we remain cautious about possible future threats to the mandatory GMO labeling effort," said Heather Spalding, deputy director of MOFGA. "We know that industry would prefer a voluntary system to keep consumers in the dark. We must prevent any weakening of the laws passed in Maine, Vermont and Connecticut, and ensure consistent policy language under development in states such as Massachusetts, Rhode Island, New Hampshire and New York."

Any federal labeling program must honor four principles developed by MOFGA, said Spalding:

1. No Preemption. Federal labeling must not preempt established state GE labeling laws.
2. Voluntary is Not Acceptable. GE labeling must be mandatory.
3. On-Package. GE labeling must appear on the package.
4. Consumer Transparency. Labels must display the words "Produced With Genetic Engineering."

MOFGA praised Senators Susan Collins and Angus King for opposing the DARK (Deny Americans the Right to Know) Act, sponsored by Senator Pat Roberts (R-KS). That legislation sought to replace mandatory labeling initiatives with a misleading voluntary system. Monsanto, the Grocery Manufacturers Association and other big agriculture interests worked hard to craft the bill making mandatory labeling laws in Maine, Connecticut and Vermont illegal. Consumers nationwide opposed the DARK Act as it would prevent states like Maine from enacting mandatory GMO food labeling laws, and would overturn important laws regulating GE crops at state and municipal levels. A two-thirds majority was required to pass the Senate bill, which got a bi-partisan rejection with a vote of 48 opposed to 49 supporting. Representatives Chellie Pingree and Bruce Poliquin voted against the DARK Act last summer, when the House of Representatives passed a similar bill by 275-150 seeking to preempt state labeling laws.

While Vermont's labeling law is promoting labeling more broadly, Will Allen and Michael Colby note in VTDigger that more than 92,000 acres of GE feed corn are grown in Vermont, and more than 96 percent of all feed corn grown in Vermont is a GE variety – most fed to the state's dairy cows. Dairy makes up 70 percent of Vermont's agricultural economy, and dairy and meat products are exempt from the state's labeling law. (Twenty percent of Vermont dairy farms are organic, so do not use GE feed.) Allen and Colby say, "The history of Vermont's heavy adoption of industrial – or degenerative – forms of agriculture is also the history of its failure and decline." They urge an end to "the industrial superhighway of commodity agriculture" and adoption of regenerative agriculture. ("National Mandatory GMO Labeling Gaining Traction," MOFGA press release, March 18, 2016; "GMO labels spread as U.S. congressional effort to halt them fades," by Lisa Baertlein, Reuters, March 28, 2016; <http://www.reuters.com/article/us-gmo-labels-idUSKCN0WU1J7>; "Will Allen & Michael Colby: Vermont's GMO Addiction – With or Without a Label," VTDigger, March 10, 2016;

<https://vtdigger.org/2016/03/10/will-allen-michael-colby-vermonts-gmo-addiction-with-or-without-a-label/>)

Pesticides

The community group **Portland Protectors** reported in January that **the city-owned Riverside Golf Course applied in 2014 (the most recent year for which numbers are available) 191 pounds of dry, undiluted pesticides and more than 125 gallons of undiluted liquid pesticides.** The course abuts the Presumpscot River. The data are based on Riverside's required disclosures

Riverside's 2015 Integrated Pest Management plan shows that the golf course budgeted \$25,000 for pesticides. In addition, the city spent \$15,000 in 2015 to repeatedly spray the herbicide Roundup on sidewalks in the Old Port and Arts District and other areas throughout the city.

The pesticides applied to Riverside included glyphosate (the active ingredient in Roundup), 2,4-D and imidacloprid (a neonicotinoid and one of five chemicals used on the course that have been linked to bee toxicity).

Four of the synthetics applied to the course – 2,4-D, dicamba, propiconazole and chlorothalonil – are among the pesticides found in the ocean through Friends of Casco Bay monitoring.

Nearly all of the 11 fungicides used on the course are carcinogenic; at least seven are known to be toxic to aquatic organisms.

Portland Protectors has submitted an ordinance to the Portland City Council that bans the use and sale of synthetic lawn pesticides and fertilizers for cosmetic purposes. (Portland Protectors, by Avery Yale Kamila, Jan. 29, 2016;

<https://www.facebook.com/portlandprotectors/photos/a.992215204136347.1073741827.992204477470753/1070159069675293/?type=3&theater>)

The **South Portland** City Council in April unanimously approved a first reading of a **partial ban on using synthetic pesticides and herbicides** on city-owned and private property, starting May 1, 2017, and May 1, 2018, respectively. It would not apply to pesticides permitted in organic farming or exempted from federal regulation. It would be phased in over three years and promoted by a Pest Management Advisory Committee. The city code enforcement officer would enforce the ban and levy fines. The council asked city staff to recommend amendments regarding enforcement and waivers. The city-owned South Portland Golf Course would be included, but playing surfaces at the private Sable Oaks Golf Club would be exempt. Synthetic pesticides could still be sold and used in commercial agriculture and to kill poisonous plants and biting, destructive or disease-carrying insects.

As we went to press, the city council was still considering the ordinance. MOFGA's public policy committee had suggested closing loopholes and strengthening provisions. ("South Portland gives initial approval to pesticide ban," by Kelley Bouchard, Portland Press Herald, April 5, 2016.

<http://www.pressherald.com/2016/04/05/so-portland-gives-initial-approval-to-pesticide-ban/>;
MOFGA public policy committee communications)

Since 1974, more than 3.5 billion pounds of glyphosate active ingredient (the active ingredient in Roundup and some other herbicides) have been applied in the United States – 19 percent of estimated global use of glyphosate. Worldwide **glyphosate use has risen almost 15-fold since GE glyphosate-tolerant crops were introduced** in 1996, and GE herbicide-tolerant crops now make up about 56 percent of glyphosate use worldwide. Two-thirds of the total volume of glyphosate applied in the United States from 1974 to 2014 has been sprayed in the last 10 years; globally, 72 percent. In 2014, farmers sprayed enough glyphosate to apply about 0.8 pounds on every acre of U.S.-cultivated cropland and nearly 0.47 pounds on each acre of cropland worldwide. (“Trends in glyphosate herbicide use in the United States and globally,” by Charles Benbrook, Environmental Sciences Europe, Feb. 2, 2016; <http://enveurope.springeropen.com/articles/10.1186/s12302-016-0070-0>)

Traces of glyphosate – the active ingredient in Roundup herbicide – have been found in **German beer, organic panty liners, British bread and in the urine** of people across Europe. The FDA says it will start testing for glyphosate residue in food in the United States. The EPA has been reviewing glyphosate use since 2009 and is supposed to release its information this year. (“Cheers! Enjoy a Tall Glass of Roundup,” by Andrew Martin, Bloomberg Businessweek, March 10, 2016; www.bloomberg.com/news/articles/2016-03-10/monsanto-s-roundup-could-get-whacked-by-european-regulators)

Ninety-four scientists who support the World Health Organization’s International Agency for Cancer Research (IARC) declaration that **glyphosate is a probable carcinogen** have released an article in the peer-reviewed Journal of Epidemiology and Community Health, saying, “The most appropriate and scientifically based evaluation of the cancers reported in humans and laboratory animals as well as supportive mechanistic data is that glyphosate is a probable human carcinogen. On the basis of this conclusion and in the absence of evidence to the contrary, it is reasonable to conclude that glyphosate formulations should also be considered likely human carcinogens.” Their article explains how the European Food Safety Authority concluded otherwise by discounting some studies showing above-average rates of non-Hodgkin lymphoma in farmers or farmworkers; by inadequately accounting for the long latency period before cancer develops; by failing to note that the greatest increases in glyphosate use have occurred in the past decade; by ignoring many studies on test animals or lab-based studies; and instead by relying on heavily pesticide industry-sponsored and -vetted studies and by using unacceptable statistical methods. The IARC has released a Q&A document explaining these discrepancies and stating that “pure” glyphosate poses similar cancer and genotoxicity risks as its formulations. (“The Battle Over the Most Used Herbicide Heats Up as Nearly 100 Scientists Weigh In,” by Doug Gurian-Sherman, Civil Eats, March 10, 2016; <http://civileats.com/2016/03/10/the-battle-over-the-glyphosate-herbicide-heats-up-as-nearly-100-scientists-weigh-in/>; Original article: “Differences in the carcinogenic evaluation of glyphosate between the International Agency for Research on Cancer (IARC) and the European Food Safety Authority (EFSA),” by Christopher J. Portier et al., J. Epidemiology & Community Health, March 3, 2016; <http://jech.bmj.com/content/early/2016/03/03/jech-2015-207005.full>; Q&A on

Glyphosate, International Agency for Research on Cancer, World Health Organization, March 1, 2016; www.iarc.fr/en/media-centre/iarcnews/pdf/Q&A_Glyphosate.pdf)

France's health and safety agency, ANSES, intends to **ban herbicides that combine glyphosate and tallowamine** due to possible health risks, and France's environment minister wants an EU-wide ban on glyphosate-based products. Manufacturers already voluntarily withdrew glyphosate and tallowamine combinations from the German market. ("France to ban some glyphosate weedkillers amid health concerns," by Gus Trompiz and Karl Plume, Reuters, April 8, 2016; www.reuters.com/article/us-france-glyphosate-idUSKCN0X512S)

The Minnesota Department of Agriculture has **compensated two beekeepers** whose hives were severely damaged in 2015 when toxic dust drifted as a neighbor planted corn seed coated with the **neonicotinoid insecticide clothianidin**. This is the first time any state has made such compensation. ("In win for beekeepers, Minnesota links insecticide to damaged hives," by Josephine Marcotty, Minneapolis Star Tribune, March 20, 2016; <http://m.startribune.com/in-win-for-beekeepers-state-links-insecticide-to-damaged-hives/372728941/>)

Maryland's Pollinator Protection Act has passed the state's House and Senate. The bill will **prohibit consumers from buying pesticides that contain neonicotinoids** starting in 2018. Farmers, veterinarians and certified pesticide applicators will still be allowed to use neonicotinoids. The pesticide industry and Maryland Farm Bureau opposed the bill. As we went to press, Governor Larry Hogan had not yet signed the first-in-the-nation bill. ("Bee advocates victorious in Maryland General Assembly," by Pamela Wood, The Baltimore Sun, April 7, 2016; <http://www.baltimoresun.com/news/maryland/politics/blog/bal-bee-advocates-victorious-in-general-assembly-20160407-story.html>)

An EPA analysis says that **almost all of the most endangered plants and animals in the United States are likely to be harmed by two widely used pesticides**. Malathion and chlorpyrifos, commonly used insecticides, will likely harm 97 percent of the 1,782 plants and animals listed under the Endangered Species Act, while the insecticide diazinon threatens 79 percent of endangered species. The few species considered not at risk from these widely used products are mainly those already classified as extinct. ("Two widely used pesticides likely to harm 97% of endangered species in US," by Oliver Milman, The Guardian, April 7, 2016; www.theguardian.com/world/2016/apr/07/endangered-species-protection-animals-plants-pesticides-epa-insecticides; "EPA Releases Draft Biological Evaluations of Three Chemicals' Impacts on Endangered Species," EPA, April 6, 2016; www.epa.gov/pesticides/epa-releases-draft-biological-evaluations-three-chemicals-impacts-endangered-species)

A team of University of North Carolina Neuroscience Center researchers exposed mouse cortical neuron cultures to 294 **chemicals common in the environment and on food** to see if any caused **changes like those in brain tissue** of people with autism, advanced age, and neurodegenerative diseases such as Alzheimer's. Eight did, including two fungicides – pyraclostrobin and trifloxystrobin. Residues of both have been found on foods and in streams.

(“Disturbing New Evidence About What Common Pesticides Can Do to Brains,” by Tom Philpott, Mother Jones, April 13, 2016;
<http://www.motherjones.com/tom-philpott/2016/04/what-are-these-widely-used-fungicides-doing-us>)

Conventional strawberries top the Dirty Dozen™ list of the Environmental Working Group’s **2016 Shopper's Guide to Pesticides in Produce**, displacing apples, which headed the list the last five years. Nearly all strawberry samples – 98 percent – tested by federal officials had detectable pesticide residues. Forty percent had residues of 10 or more pesticides and some had residues of 17 pesticides – some relatively benign, others linked to cancer, reproductive and developmental damage, hormone disruption and neurological problems. This year's update found a total of 146 different pesticides on fruit and vegetable samples tested in 2014 – residues that remain on produce even after items are washed and in some cases peeled.

Recent studies of insecticides used on some fruits and vegetables, including strawberries, found that children exposed to high levels were at greater risk of impaired intelligence and ADHD. Research also indicates that the levels of pesticides in the bodies of elementary school children peaked during the summer, when they ate the most fresh produce. But after just five days on an organic diet, they were essentially pesticide-free.

According to the Dirty Dozen list, more than 98 percent of strawberries, peaches, nectarines and apples tested positive for at least one pesticide residue. The average potato had more pesticides by weight than any other produce.

Avocados remained atop EWG's Clean Fifteen™ list, with less than 1 percent of samples showing any detectable pesticides. No single fruit sample from the Clean Fifteen tested positive for more than four types of pesticides, and very few for more than one. (“EWG's 2016 Dirty Dozen™ List of Pesticides on Produce: Strawberries Most Contaminated, Apples Drop to Second,” Environmental Working Group, April 12, 2016; <https://www.ewg.org/>)

Trade Policy

MOFGA continues to follow international trade treaties and recently signed on to a letter written by the National Farmers Union **urging Congress to reject the Trans-Pacific Partnership** trade agreement. The letter pointed out that the big agribusiness, meatpacker and food processing industries stand to gain from the TPP, but most individual farmers will see little substantial benefit, and increased agricultural and food imports undermine prices and threaten the viability of family farms. Also, the TPP does not address the trade deficit and does not meaningfully address currency manipulation. In a related move, 2nd District Congressman Bruce Poliquin informed his Maine constituents, “After months of careful and thorough analysis, I’ve concluded that the proposed TPP international trade agreement is not in the best interest of our 2nd District workers and their families. I don't believe this deal gives us a fair shot. As a result, I do not support it.” First District Representative Chellie Pingree also opposes the trade deal, while Senators Angus King and Susan Collins say they have serious reservations about it. (Barbara Patterson, email, National Farmers Union, March 25, 2016; Bruce Poliquin email update, April 20, 2016; “Maine congressional delegation aligning against Obama trade deal,” by Christopher

Cousins, Bangor Daily News, April 20, 2016;
<http://bangordailynews.com/2016/04/20/politics/maine-congressional-delegation-uniting-against-obama-trade-deal/>)

Fall 2016

The Good News

A Friends of the Earth (FOE) report, “**Farming for the Future: Organic and Agroecological Solutions to Feed the World,**” counters the myths that we must significantly increase food production to feed the world, that organic farming cannot produce enough to feed the world, and that large-scale industrial agriculture is more efficient and sustainable than ecological approaches to farming and provides the technologies and methods needed to feed the world.

The global, industrial food system, says the report, accelerates global poverty and hunger, while organic and agroecological methods produce food, protect public health, regenerate the environment, provide greater resilience to climate change and improve farmer livelihoods. On the other hand, the UN FAO calculates the environmental damage of industrial agriculture at \$3 trillion annually. This system makes corporations rich but impoverishes farmers and communities.

Increased funding and policy incentives are needed, says FOE, to support and expand organic and agroecological farming. (“Farming for the Future: Organic and Agroecological Solutions to Feed the World,” by Christopher D. Cook, Kari Hamerschlag and Kendra Klein, Ph.D., Friends of the Earth, June 21, 2016;
<http://www.foe.org/news/archives/2016-06-new-report-farming-for-the-future>)

Economic health at the county level is linked to organic agriculture, and organic food and crop production – and business activities accompanying organic agriculture – creates real and long-lasting regional economic opportunities. So says “**U.S. Organic Hotspots and their Benefit to Local Economies,**” prepared for the Organic Trade Association (OTA) by Penn State agricultural economist Dr. Edward Jaenicke.

The research identifies 225 U.S. counties in organic hotspots – counties with high levels of organic agricultural activity that have neighboring counties with high organic activity – and then looks at how these organic hotspots impact key county-level economic indicators.

Organic Hotspots boost household incomes and reduce poverty levels — and at greater rates than general agriculture activity and than major anti-poverty programs.

Being an organic hotspot increases median household income by over \$2,000 and lowers a county’s poverty rate by as much as 1.35 percent.

The research identifies factors that create organic hotspots, shows how effects of organic agricultural hotspots compare with those of general agriculture, and recommends policies to

foster more organic hotspots. (“Organic Hotspots,” Organic Trade Assoc., May 25, 2016; <https://www.ota.com/hotspots>)

Total sales for the U.S. organic industry hit \$43.3 billion in 2015, up 11 percent from 2014 and outpacing the overall food market growth rate of 3 percent, according to the Organic Trade Association (OTA) 2016 Organic Industry Survey. Of that \$43.3 billion, \$39.7 billion were organic food sales, up 11 percent from the previous year, and non-food organic products accounted for \$3.6 billion, up 13 percent. Nearly 5 percent of all food sold in the United States is organic.

Organic produce, the largest of the organic categories, had sales of \$14.4 billion, up 10.6 percent. Almost 13 percent of the produce sold in the United States is now organic.

Dairy, the second biggest organic food category, accounted for \$6 billion in sales, an increase of over 10 percent. Dairy accounts for 15 percent of total organic food sales in the United States.

Sales of organic fresh juices and drinks grew by 33.5 percent in 2015, and organic condiments sales reached \$1 billion, with 18.5 percent growth.

Organic snack food sales reached \$2.3 billion, up almost 14 percent from 2014.

Non-food products accounted for 8.2 percent of overall organic sales – a growth rate of almost 13 percent, while sales of comparable products, primarily conventional, increased by merely 2.8 percent. Growth in the non-food category was led by organic fiber, followed closely by organic supplements.

Dairy and grain sales could have been even greater in 2015 if greater supply had been available. The organic industry, says OTA, understands the need to build a secure supply chain that can support demand. This includes securing more organic acreage, developing programs to help farmers transition to organic, and encouraging new farmers to farm organically. To do so, collaborations are occurring. For example, some companies formed the U.S. Organic Grain Collaborative, and the OTA formed the Organic Fiber Council. (“U.S. organic sales post new record of \$43.3 billion in 2015,” Organic Trade Assoc., May 19, 2016; <http://www.prnewswire.com/news-releases/us-organic-sales-post-new-record-of-433-billion-in-2015-300271135.html#continue-jump>)

Local products sold at farmers’ markets are within a 10 percent price range of those sold in supermarkets, and some foods are even less expensive at farmers’ markets. Local, certified organic products at farmers’ markets are almost always competitively priced when compared with prices at retail stores. These are some of the findings from the Local Foods Data Tracking Program, a joint effort between the USDA Agricultural Marketing Service (AMS) Market News division and the Vermont Agency of Agriculture, Food, & Markets. Prices were collected on a variety of fruits, vegetables, meat and poultry products raised in Vermont and sold at 12 Vermont farmers’ markets and five retail establishments in central Vermont.

To help consumers find producers of fresh, local food and to help local food business managers advertise their products, AMS hosts the USDA Local Food Directories, which include the National Farmers Market Directory and national directories covering community supported agriculture (CSAs), food hubs and on-farm markets. (“Local and Organic Food Shopping – Finding the Best Price,” by Craig Morris, USDA, May 19, 2016; <http://blogs.usda.gov/2016/05/19/local-and-organic-food-shopping-finding-the-best-price/>)

In 2015, a group of organizations and individuals called the **Maine Food for the UMaine System coalition** worked to create preferential sourcing of Maine- and New England-produced foods in the University of Maine System’s 2015-16 food service Request for Proposal (RFP) and contracting process. Participating organizations included Farm to Institution New England (FINE), Real Food Challenge, Environment Maine and Maine Farmland Trust. The group influenced the food service contracting process so that its request for proposals (RFPs) included a commitment to reaching 20 percent local/regional foods by 2020. Several additional sustainability elements recommended by the coalition were included, but others, such as a 20 percent “Real Food” commitment, were not. (Real Food, in addition to being local, includes such values as organic, fair labor and humane treatment of animals.)

The project involved six UMaine system universities that were part of the food service contract. The Orono campus was not included.

Two large multinational companies, Aramark and Sodexo, bid on the RFP, as did the member-owned Maine Farm & Sea Cooperative, which focused primarily on supporting Maine producers. The cooperative formed with a goal of winning the UMaine System bid and demonstrating how innovative new models of food service could help transform institutional food service. Sodexo, however, won the bid.

Associated with this effort, Maine Farmland Trust held workshops for farmers in partnership with MOFGA, FINE, UMaine Cooperative Extension, Conservation Law Foundation and Cultivating Community. The workshops provided education and tools to help farmers from the 90 participating farms access larger wholesale markets, including institutional markets.

The coalition developed goals and recommendations for a locally-based, sustainable food system supported by the UMaine System. It also built statewide awareness about the RFP process and generated broader support for local and sustainable food. Its priorities, challenges and lessons learned are posted on the FINE website. (“Case Study: Maine Food for the UMaine System,” by Riley Neugebauer, FINE, May 12, 2016; <http://www.farmtoinstitution.org/blog/case-study-maine-food-umaine-system>)

University of New Hampshire scientists have found that **forage radish is a top cover crop** for suppressing weeds and enhancing soil quality. Researchers Richard Smith, Elisabeth Hodgdon, Nicholas Warren and Becky Sideman tested eight cover crops intended to fill the late summer and fall fallow period that occurs between crop harvest in the summer and the following springtime planting of a subsequent cash crop. This fallow period would typically follow the harvest of vegetable crops such as snap beans, broccoli, sweet corn and spinach, or corn silage.

The researchers planted either individual cover crops or mixtures of two cover crops. Crops planted included annual ryegrass, winter rye, alfalfa, crimson clover, white clover, hairy vetch, soybean and forage radish. Control plots had no cover crop.

Based on the two-year study, forage radish was consistently among the highest biomass-producing treatments in the fall, provided excellent fall weed suppression, and resulted in some of the highest impacts on the subsequent test crop. (“UNH Researchers Find Forage Radish is the Cream of Cover Crops,” by Lori Wright, University of New Hampshire, May 31, 2016; <https://colsa.unh.edu/nhaes/article/2016/05/covercrops>; “In-Season and Carry-Over Effects of Cover Crops on Productivity and Weed Suppression,” by Elisabeth Hodgdon et al., Agronomy Journal, January 2016; https://www.researchgate.net/publication/302054947_In-Season_and_Carry-Over_Effects_of_Cover_Crops_on_Productivity_and_Weed_Suppression)

Farm Transitions

The farming population in New England and New York is changing rapidly. Farmers are aging without clear plans for their land when they retire. At the same time, new farmers face significant challenges to beginning careers in agriculture.

American Farmland Trust and Land for Good tabulated 2012 Census of Agriculture data as part of their “Gaining Insights, Gaining Access” project. They also held focus groups to learn more about the farms and transition goals of older farmers without successors. They found that more than 90 percent of retirement-age farmers in New England do not have a young farm operator farming alongside them. In addition, the percentage of young farm operators in the six-state region continues to drop. Only 15 percent of principal farm operators were 45 years of age or younger, down from 24 percent a decade ago. Over 60 percent of beginning farmers are over age 45. Numerous policy changes were identified to address these challenges. (“Gaining Insights, Gaining Access,” American Farmland Trust, <http://www.farmlandinfo.org/special-collections/4621>; “Keeping Farmers on the Land,” American Farmland Trust, Jan. 2016; https://4aa2dc132bb150caf1aa-7bb737f4349b47aa42dce777a72d5264.ssl.cf5.rackcdn.com/AFT_ME-FS_C-min.pdf?utm_source=May16+eNews+&utm_campaign=May16+eNews&utm_medium=email)

Organic Seed

The USDA National Organic Program (NOP) requires that organic farmers use organic seed when commercially available. As demand for organic products grows, so does demand for organic seed. Gaps remain in the organic seed supply, but “we’re making progress in developing organic seed systems that have the potential to transform how we farm and what we eat,” says Organic Seed Alliance (OSA) in its report, “**State of Organic Seed, 2016.**”

Across all crop types, says OSA, 27 percent of organic farmers responding to its survey are already using 100 percent organic seed – up from 20 percent in 2011. More than 30 percent are using more organic seed than they were three years ago. Acreage planted to organic seed by farmers responding to the survey averaged 69 percent across crop types – an 11 percent increase

since 2011. Acreage increased in vegetables, field crops and cover crops but decreased in forage crops.

Farmers report fewer problems with organic seed now than five years ago (e.g., quality characteristics, such as germination rates, variety integrity and seed-borne diseases). More organic farmers agree that organic seed is important to organic integrity and that having seed bred under organic conditions is important to their success and that of the broader organic industry.

More than 60 percent of organic farmers responding to the survey produce organic seed for on-farm use and/or to sell commercially. More than half of respondents say they're interested in learning how to produce organic seed for the commercial marketplace.

Public and private investments in organic plant breeding and other organic seed initiatives increased by \$22 million in the last five years. In 2011 OSA documented a mere \$9 million invested between 1996 and 2010. The largest three sources of funding include USDA's Organic Research and Extension Initiative (OREI) and Sustainable Agriculture and Research Education (SARE) program, and other federal funding programs. Eighty-eight percent of funding supported organic plant breeding and variety trials as opposed to other areas, such as organic seed production research.

Most survey respondents still rely on conventional seed for at least part of their operation because specific varieties or sufficient quantities are unavailable in an organic form or desirable traits are lacking.

The largest organic operations still use relatively little organic seed. Farmers with less than 10 acres in vegetables on average plant 75 percent of their acreage to organic seed, whereas farmers with more than 480 acres on average plant only 20 percent of their acreage to organic seed. Some of these larger operations' buyers require a specific variety, and too often that variety is unavailable in an organic form or in the quantity needed.

Organic certifiers can help expand organic seed systems by enforcing the organic seed requirement, says OSA.

Other challenges include lack of access to seed processing facilities, a lack of economic opportunity (at least for some crops) and a need for more educational trainings and resources. Investment in organic seed research still pales compared with funding for non-organic research – even though organic plant breeding prioritizes traits important to organic farmers (e.g., disease resistance) that typically also benefit conventional agriculture.

Organic farmers who grow crops with a GE counterpart, especially corn, are increasingly challenged by the proliferation of GE traits in seed and crops.

The report recommends greater investment of public and private dollars in organic seed research, training more organic farmers in seed production, and advocating for organic seed. ("State of

Organic Seed, 2016,” by Kristina Hubbard and Jared Zystro, Organic Seed Alliance, June 21, 2016; <http://stateoforganicseed.org>)

Climate

Carbon farming, or regenerative farming, refers to moving carbon dioxide from the atmosphere into plants, which can then sequester carbon in soils. Techniques include minimizing soil tillage, intercropping, cover cropping, letting plant residue decay in or on soils, rotational grazing and growing woody plants.

Rattan Lal, Ohio State University soil science professor, says that agriculture contributes almost 25 percent of greenhouse gas emissions worldwide, and cultivated soils have lost 50 to 70 percent of their carbon since farming began. Those depleted soils, he adds, could reabsorb up to 100 billion metric tons of carbon and reduce atmospheric carbon dioxide by 38 to 50 parts per million. Vegetation could sequester even more, and agriculture could become carbon neutral in a generation.

Eric Toensmeier, author of “The Carbon Farming Solution,” has suggested economic incentives to encourage sequestration. (“A Boon for Soil, and for the Environment,” by Beth Gardiner, The New York Times, May 17, 2016; <http://www.nytimes.com/2016/05/18/business/energy-environment/a-boon-for-soil-and-for-the-environment.html>)

When tetracycline **antibiotics were given to cattle**, the microbial composition in the guts of dung beetles feeding on that cattle manure changed, and **emissions of methane**, a greenhouse gas, from cattle feces **nearly doubled** compared with emissions from untreated cows’ feces. Such antibiotics are commonly given to livestock in non-organic farming systems to prevent diseases and stimulate growth. Tetracycline may have favored growth of methane-producing archaea (a kingdom of single-celled microorganisms) and reduced bacterial populations in cows’ guts. (“Treating cows with antibiotics doubles dung methane emissions,” by Barbara Axt, New Scientist, May 25, 2016; <https://www.newscientist.com/article/2089867-treating-cows-with-antibiotics-doubles-dung-methane-emissions/>; Journal reference: Proceedings of the Royal Society of London B, DOI: 10.1098/rspb.2016.0150)

Genetic Engineering (GE)

(Note: Certified organic producers are not allowed to use GE – sometimes called GMO – inputs. GMO is an acronym for genetically modified organism)

In July, just after GE labeling legislation went into effect in Vermont, the U.S. Senate voted 63-30 to pass a **federal labeling** bill, a “compromise” by Sen. Pat Roberts (R-KS) and Sen. Debbie Stabenow (D-MI) in consultation with industry groups. The House subsequently passed the bill as well, although Maine’s congressional delegation – Congresswoman Chellie Pingree, Congressman Bruce Poliquin, and Senators Susan Collins and Angus King – all voted against the bill. On July 29, President Obama signed the legislation into law.

The law preempts state laws (including Alaska, Maine, Connecticut and Vermont laws). It establishes a complex federal “bioengineered food” disclosure system giving large food companies three options for labeling GE ingredients: a 1-800 number, barcode or QR (quick response) code on packages that would require that consumers use a smartphone app to get more information about a product, a symbol (to be created by USDA) on the package denoting GE ingredients, or an on-package statement that the product contains GE ingredients. The bill vaguely defines the types of biotechnology and types of products that will need to be labeled or have the QR code, and it lacks any effective enforcement mechanism to ensure such labeling.

The bill gives the USDA Agricultural Marketing Service (AMS) two years to develop rules and regulations for the national labeling systems – providing ample time for opponents of labeling to amend annual funding legislation to block USDA from implementing the legislation, as happened with Country of Origin labeling.

A June 27 Technical Assistance Document prepared by FDA for Congress raised concerns about confusing language in the Senate bill – particularly its definition of “bioengineering.” The document says that the Senate’s definition would too severely limit the types of products that would require labeling and that the bill’s statement on food “that contains genetic material” would likely mean that many foods from GE sources, such as oil made from GE soy, would not be labeled because they do not contain genetic material.

The bill is expected to precipitate a major battle over the next two years as AMS attempts to write labeling rules. Then labeling will likely be litigated in the courts, which could add more years before any labeling law goes into effect fully.

Heather Spalding, deputy director of MOFGA, said about corporations that resist labeling, "The more they try to hide and obfuscate, the angrier the public is going to be." According to The New York Times, a survey of more than 1,500 consumers by research firm Label Insight found that 37 percent of consumers said they would be willing to switch brands if another brand shared more detailed product information.

The Center for Food Safety said, “Consumer, food safety, farm, environmental, and religious groups along with several food corporations representing hundreds of thousands of Americans condemned the bill when it was before Congress ... Civil rights activist Rev. Jesse Jackson said the bill raised ‘serious questions of discrimination’ and left ‘unresolved matters of equal protection of the law.’”

Dave Murphy, executive director of Food Democracy Now!, said, “Attorneys for Food Democracy Now! will be mounting a legal challenge in the coming weeks for this law's numerous legal problems including its infringement on the 14th amendment of the Constitution that guarantees ‘equal protection for all.’”

In response to Organic Trade Association (OTA) support for the bill, the board of directors of the Organic Seed Growers and Trade Association (OSGATA) voted unanimously to withdraw its OTA membership and to terminate OTA’s membership in OSGATA “for Code of Ethics

violations related to public misrepresentations by OTA as it sought to fool U.S. Senators into believing the organic community was in favor of the Monsanto bill.”

(“GMO Labeling Legislation Clears Another Hurdle,” National Sustainable Agriculture Coalition, July 8, 2016; http://sustainableagriculture.net/blog/gmo-labeling-clears-hurdle/?utm_source=roundup&utm_medium=email; “Backers of Maine GMO label law miffed at Congress compromise,” by Patrick Whittle, Miami Herald, July 15, 2016; <http://www.miamiherald.com/news/article89764727.html>; “G.M.O. Labeling Bill Gains House Approval,” by Stephanie Strom, The New York Times, July 15, 2016; <http://www.nytimes.com/2016/07/15/business/gmo-labeling-bill-gains-house-approval.html>; “Organic Farmer Group Dumps Organic Trade Association,” Organic Seed Growers and Trade Association, July 13, 2016; <http://www.osgata.org/2016/organic-dumps-ota/>; “OSGATA Quits OTA,” by Jim and Megan Gerritsen, Wood Prairie Family Farm Seed Piece Newsletter, July 22, 2016; http://www.woodprairie.com/Newsletter_072216; “President Obama Signs GMO ‘Non-labeling’ Bill, Leaves Millions of Americans in the Dark,” Center for Food Safety, July 29, 2016; <http://www.centerforfoodsafety.org/press-releases/4438/president-obama-signs-gmo-non-labeling-bill-leaves-millions-of-americans-in-the-dark#>; “Group to Launch Legal Challenge to S. 764 – the Monsanto and Big Food Bailout, Signed Today by President Obama,” Food Democracy Now! press release, July 29, 2016)

Dannon is moving toward using more natural, non-GE ingredients in some of its products. Dannon’s flagship brands, Dannon, Oikos and Danimals, are included in the change, and by 2018, cows supplying dairy products for the brands will not receive GE feed. Dannon also says it will label its products containing GE ingredients by December 2017. Hershey Co. has also said it will stop using GE sugar beet and GE soy in its most popular products. (“Nation’s Leading Yogurt Maker Will Remove GMO Ingredients and Source Milk From Non-GMO Fed Cows,” by Lorraine Chow, EcoWatch, April 27, 2016; <https://ecowatch.com/2016/04/27/dannon-yogurt-gmos/>)

About half the sugar in the United States comes from sugar beets; the other half comes from sugar cane. Almost all U.S. sugar beet farmers have switched to growing **glyphosate-resistant GE beets**, so now many food companies have switched to using sugar from sugar cane, which is not genetically engineered and which now commands a price 10 to 15 percent more than beet sugar. Farmers who would like to switch back to growing non-GE beets cannot find enough seed. (“As Big Candy Ditches GMOs, Sugar Beet Farmers Hit A Sour Patch,” by Dan Charles, NPR, May 12, 2016; <http://www.npr.org/sections/thesalt/2016/05/12/477793556/as-big-candy-ditches-gmos-sugar-beet-farmers-hit-sour-patch>)

A Greener World has started a non-GMO certification program called **Certified Non-GE**, similar to the Non-GMO Project and USDA’s “USDA Process Verified” label, which can include a statement that the product is not made with GE ingredients. The new program guarantees that products are made without GE ingredients and that meat products come from animals that had “meaningful outdoor access, and were raised and slaughtered according to the industry’s leading

animal welfare standards.” (“A New Non-GMO Label Joins the Fray,” by Andrew Amelinchx, Modern Farmer, May 23, 2016;

<http://modernfarmer.com/2016/05/new-gmo-free-label/>)

A panel of 20 scientists convened by the **National Academies of Sciences, Engineering and Medicine** (NAS) has reported that no "substantiated" evidence shows that **GE crops** have caused health problems in humans or damaged the environment, but it added that broad statements about positive or negative effects of GE crops are premature. The NAS report questioned many assumptions about GE crop yields and herbicide use, and highlighted the need for more research and support for public plant breeding, as well as improved, more transparent regulation.

The report found that GE crops did not yield more than non-GE. Also, “the use of [herbicide resistant] crops is sometimes initially correlated with decreases in total amount of herbicide applied per hectare per crop per year, but the decreases have not generally been sustained.” The NAS report concluded that multi-faceted, integrated weed-management approaches rather than a reliance on more or stacked herbicide use are needed to avoid developing herbicide-resistant weeds.

Jim Thomas of the ETC Group told The Washington Post that “the report is inconsistent on the crucially important question of whether or not to regulate the new techniques such as genome editing and synthetic biology.” Gene-editing may have “off-target” effects, he said. The report did say that for emerging GE technologies to have a place in a sustainable food system, “broad and rigorous analyses will be necessary to determine the long-term health, environmental, social, and economic outcomes of adding specific crops and traits to an ecosystem.” It added that the social and economic elements of GE cannot be solved by science alone.

Michael Hansen of Consumers Union said the report noted that consumers want to make value choices when buying food. The panel also acknowledged that GE plants could contain allergens – another justification for labeling, according to Hansen.

The National Sustainable Agriculture Coalition (NSAC) said it “strongly supports a more comprehensive approach to improving our food security, particularly through the advancement of public plant breeding. According to the NAS report, farmers who choose not to use GE crops have fewer options today (for non-GE varieties) than they did before their introduction. This is coupled with the fact that our nation’s public investment in public sector breeding programs (i.e. government or university funded research, the results of which are publicly available) has been steadily declining for years. Over the past 20 years we have lost over a third of our country’s public plant breeding programs. The slow atrophy of public funding for this research leaves farmers with fewer and fewer seed choices, making them ill-prepared to adapt to a rapidly changing climate.”

The report also recommended additional research to determine the effect of GE patents on seed markets and on farmers. (“Are GMO crops safe? Focus on the plant, not the process, scientists say,” by Joel Achenbach, The Washington Post, May 17, 2016;

<https://www.washingtonpost.com/news/speaking-of-science/wp/2016/05/17/ge-crops/>)

Report: “Genetically Engineered Crops: Experiences and Prospects,” Committee on Genetically Engineered Crops: Past Experience and Future Prospects, The National Academies Press, 2016; <http://www.nap.edu/read/23395/chapter/1#v>; “Socioeconomic and Environmental Impacts of GE Crop Production Raise Concerns,” National Sustainable Agriculture Coalition, May 27, 2016; http://sustainableagriculture.net/blog/nas-ge-report/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29G ; “GMOs: What The Experts Actually Said,” by Scott Faber, Environmental Working Group, May 25, 2016; http://www.ewg.org/agmag/2016/05/gmos-what-experts-actually-said?utm_source=201606EWGNewsletter&utm_medium=email&utm_campaign=201606EWGNewsletter)

Will Allen of the nonprofit Regeneration Vermont, in his report “**Vermont’s GMO Legacy: Pesticides, Polluted Water & Climate Destruction**,” says that herbicide and chemical fertilizer use on Vermont dairy farms nearly doubled from 2002 to 2012. Eight of the herbicides used there have been linked to birth defects, developmental defects and contaminated drinking water, Allen says, and the EU has banned five of those. In 2002, about 8 percent of corn grown in Vermont for dairy cow feed was GE; now it’s 96 percent and is the state’s largest crop. (“Vermont’s GMO Legacy: Pesticides, Polluted Water & Climate Destruction,” by Will Allen, Regeneration Vermont, 2016; http://regenerationvermont.org/wp-content/uploads/2015/12/RVT_VermontsGMOaddiction_9.pdf; “Report: Herbicide, Chemical Fertilizer Use Doubled on Vermont Dairy Farms in a Decade,” by Anne Galloway, VTDigger, June 27, 2016; <http://vtdigger.org/2016/06/27/report-herbicide-chemical-fertilizer-use-doubled-on-vt-dairy-farms-in-a-decade/>)

Pesticides

Two types of **neonicotinoid insecticides** – imidacloprid and thiamethoxam – at realistic exposure concentrations (2.5 ppb) **harmed bumblebee colonies** in a recent study, while a third neonicotinoid did not. Imidacloprid reduced the number of brood cells by 46 percent and reduced bee mobility, while thiamethoxam reduced the number of live bees by 38 percent and altered the sex ratio so that more males were present. Imidacloprid and thiamethoxam also reduced colony strength. Clothianidin showed no harm but did increase the number of queens produced. (“Two of the world’s top three insecticides harm bumblebees – study,” by Damian Carrington, The Guardian, April 28, 2016; <http://www.theguardian.com/environment/2016/apr/28/two-worlds-top-three-leading-insecticides-harm-bees-study-shows>; “Neonicotinoids target distinct nicotinic acetylcholine receptors and neurons, leading to differential risks to bumblebees,” by Christopher Moffat et al., Scientific Reports, April 28, 2016; <http://www.nature.com/articles/srep24764>)

A study compared 101 adults who had or probably had **ALS** (amyotrophic lateral sclerosis or Lou Gehrig’s disease) with 110 who did not. Results of blood tests and subjects’ responses to questionnaires about exposure to toxicants at work showed that subjects with ALS were more likely to have reported pesticide exposure or to have served in the military and had greater

exposure to environmental pollutants. (“Pesticides, military service may be tied to ALS risk,” by Kathryn Doyle, Reuters, May 9 2016;
<http://uk.reuters.com/article/us-health-als-pesticides-idUKKCN0Y02BQ>)

Rice-based foods may contain traces of arsenic (from soils previously treated with arsenic insecticides or from naturally occurring arsenic), and exposure of fetuses and infants to inorganic arsenic may harm the immune system and brain development. A recent study found that **babies who were fed rice cereals** and rice-based snacks **had higher concentrations of arsenic** in their urine than infants who were not fed rice. The infants’ mothers were in the New Hampshire Birth Cohort Study. The Food and Drug Administration has proposed limiting inorganic arsenic in infant rice cereal to 100 parts per billion. Of 76 samples of infant rice cereals that it tested, about half had more than 100 ppb inorganic arsenic. (“Babies Who Eat Rice Cereal Have Higher Arsenic Levels, Study Finds,” by Allison Aubrey, NPR, April 25, 2016;
<http://www.npr.org/sections/thesalt/2016/04/25/475599295/babies-who-eat-rice-cereal-have-higher-arsenic-levels-study-finds>)

Residues of the herbicide atrazine, widely used on corn, sorghum and sugarcane, far exceed EPA’s “levels of concern” for chronic risk and can be **dangerous to animals**, including fish, according to a preliminary report by the EPA. (“Widely used U.S. farm chemical atrazine may threaten animals: EPA,” by Tom Polansek, Reuters, June 2, 2016;
<http://www.reuters.com/article/us-usa-epa-atrazine-idUSKCN0Y02X9>)

Glyphosate may or may not be a probable human carcinogen. In March 2015, the World Health Organization (WHO) International Agency for Research on Cancer (IARC) classified the herbicide (the active ingredient in Monsanto’s Roundup) as a probable carcinogen in humans. A year later, a panel from the U.N. Food and Agriculture Organization (FAO) and WHO said glyphosate is “unlikely to pose a carcinogenic risk to humans” exposed through diet. However, two members of this panel (one the chair) worked for an institute that had received more than \$1 million, total, from Monsanto and CropLife International, which represents Monsanto and other pesticide manufacturers.

The European Food Safety Authority (EFSA) has also said glyphosate is “unlikely to pose a carcinogenic hazard to humans.” The EFSA considered only studies related to glyphosate. Other studies have considered glyphosate together with the “inert” ingredients in Roundup. Also, the EFSA included unpublished, industry-submitted studies, while the IARC considered only independent studies.

Some European governments have removed glyphosate products containing the added ingredient polyethoxylated tallowamine (POEA), which helps glyphosate penetrate the waxy epidermis of plants. And researchers have found that five inert ingredients used with glyphosate products harmed human cells – sometimes far more than glyphosate alone.

On April 29, 2016, the EPA posted on its website a report saying that the herbicide is “not likely to be carcinogenic to humans,” but it removed the report three days later,

saying the document was preliminary and was inadvertently published. According to Reuters, however, the report was described as a "final Cancer Assessment Document," with "FINAL" printed on each page. The EPA also removed several related documents.

Meanwhile, three Nebraska farmers and an agronomist, all diagnosed with non-Hodgkin's lymphoma, have filed a lawsuit against Monsanto alleging that it misled the public about the dangers of glyphosate. And two Californians who used Roundup regularly on the job and developed non-Hodgkins lymphoma have also filed suit against Monsanto there. ("U.N. experts find weed killer glyphosate unlikely to cause cancer," by Kate Kelland, Reuters, May 16, 2016; <http://in.reuters.com/article/health-who-glyphosate-idINKCN0Y711K>; "EPA takes offline report that says glyphosate not likely carcinogenic," by P.J. Huffstutter, Reuters, March 2, 2016; <http://www.reuters.com/article/us-usa-glyphosate-epa-idUSKCN0XU01K>; "New Evidence About the Dangers of Roundup, by Sharon Lerner, The Intercept," May 17, 2016; <https://theintercept.com/2016/05/17/new-evidence-about-the-dangers-of-monsantos-roundup/>; "Farmers sue Monsanto over alleged Roundup cancer link," by Nicholas Bergin, Lincoln Journal Star, May 15, 2016; http://journalstar.com/business/agriculture/farmers-sue-monsanto-over-alleged-roundup-cancer-link/article_1af7cee9-1c24-54f3-ac93-81112ea9b68c.html; "UN/WHO panel in conflict of interest row over glyphosate cancer risk," by Arthur Nelsen, The Guardian, May 17, 2016; <http://www.theguardian.com/environment/2016/may/17/unwho-panel-in-conflict-of-interest-row-over-glyphosates-cancer-risk>)

Glyphosate has been found in 93 percent of urine samples tested by the University of California San Francisco, with a mean concentration of 3.096 ppb (part per billion) and with a mean among children of 3.586 ppb. Samples were submitted by the public to The Detox Project, and participants paid for the testing. The study was commissioned by the Organic Consumers Association. These results represent only the first 131 people tested. More data will be released this year. A previous study in Europe found glyphosate residues in 43.9 percent of those tested, with a mean concentration of 1 ppb. ("UCSF Presentation Reveals Glyphosate Contamination in People across America," The Detox Project, May 25, 2016; <http://detoxproject.org/1321-2/>)

A test of California wines, sponsored by Moms Across America, found trace amounts of **glyphosate in all 10 wines tested**. Glyphosate was present in the organic and biodynamic wines tested (possibly from drift), but at much lower levels than in the conventional wines. The same lab, in other work with Moms Across America, has found glyphosate in breast milk, urine and drinking water. Other research has shown residues in eggs, oatmeal, bread and German beer. ("I-Team investigates controversy over weed killer and California wine," by Dan Noyes, ABC News, May 11, 2016; <http://abc7news.com/health/i-team-investigates-controversy-over-weed-killer-and-california-wine/1332495/>)

A lawsuit seeking to be certified as a class action has been filed on behalf of consumers in New York and California against the owner of **Quaker Oats** after testing found **traces of glyphosate** in some oatmeal. The 1.18 parts per million (ppm) concentration of glyphosate in Quaker Oats Quick 1-Minute was below the 30 ppm that the EPA allows in cereal grains, but the suit says that

advertising Quaker Oats as “100% natural” is false advertising. (“Quaker Oats’ 100% Natural Claim Questioned in Lawsuit,” by Stephanie Strom, The New York Times, May 1, 2016; http://www.nytimes.com/2016/05/02/business/quaker-oats-100-natural-claim-questioned-in-lawsuit.html?_r=0)

A study has shown that **glyphosate is toxic to the soil fungus** *Aspergillus nidulans* at a dose 100 times lower than that recommended for agricultural use. The commercial formulation of Roundup was more toxic than glyphosate alone. Even at concentrations so low that no outward effects were observed, cellular metabolism was affected. Soil fungi are essential to ecosystem functioning. (“Study Finds Low Levels of Roundup Cause Adverse Effects to Soil Health,” Beyond Pesticides, May 13, 2016; <http://beyondpesticides.org/dailynewsblog/2016/05/study-finds-low-levels-of-roundup-cause-adverse-effects-to-soil-health/>; “Multiple effects of a commercial Roundup® formulation on the soil filamentous fungus *Aspergillus nidulans* at low doses: evidence of an unexpected impact on energetic metabolism,” by Valérie Nicolas et al., Environmental Science and Pollution Research, April 11, 2016; <http://link.springer.com/article/10.1007%2Fs11356-016-6596-2>)

The Environmental Working Group (EWG) has compiled the first **comprehensive inventory of up to 420 known or likely carcinogens that have been measured in people**. Sources include industrial chemicals, commercial products, pesticides, heavy metals, byproducts of combustion, heating and disinfection, and solvents. EWG estimated that nine of the more than 400 carcinogens were measured at levels high enough to pose non-trivial cancer risks in most Americans – risks that generally exceed EPA safety standards. Those nine are acrylamide, arsenic, benzene, bromodichloromethane, bromoform, DDT, DDE, dibromochloromethane and hexachlorobenzene.

The Halifax Project, a consortium of hundreds of scientists and physicians from around the world, recently identified the potential for chemicals that disrupt specific biological pathways, known as the hallmarks of cancer, to form carcinogenic mixtures. Similarly, the World Health Organization has identified 10 key mechanisms by which carcinogens act. These initiatives reflect the growing recognition that many carcinogens act on multiple biologic pathways that result in the cellular changes necessary for cancer development. In addition to single chemical carcinogens in isolation, scientists are learning that the disruption of multiple pathways sufficient to cause cancer can occur via the combined effect of a mixture of chemicals.

Reducing exposures to carcinogens, whether through regulation or personal choices, can have important health benefits, EWG concludes. (“The Pollution in People: Cancer-Causing Chemicals in Americans' Bodies,” by Curt DellaValle, Environmental Working Group, June 14, 2016; <http://www.ewg.org/cancer/the-pollution-in-people.php>)

A new report by Friends of the Earth, “**Buzz Kill: How the Pesticide Industry is Clipping the Wings of Bee Protection Efforts Across the U.S.**” (posted at www.foe.org/beeaction), reveals that the pesticide industry has lobbied intensively to delay bee protections: The industry is spending hundreds of thousands of dollars on lobbying to delay state and federal action on the pesticides they manufacture; it has infiltrated federal regulatory agencies via the “revolving

door”; it has cultivated strategic partnerships with public agencies and academic groups that question the culpability of and that help bolster the companies’ credibility; and it has funded or influenced science by donating to education initiatives and building strategic alliances with academics. (“Buzz Kill: How the Pesticide Industry is Clipping the Wings of Bee Protection Efforts Across the U.S.,” Friends of the Earth, June 2016; <http://www.foe.org/projects/food-and-technology/beeaction>)

“Kids on the Frontline,” a new report from Pesticide Action Network (PAN), reflects a rigorous assessment of dozens of independent studies documenting **links between pesticide exposure and children’s health harms**.

Health problems that have increased include childhood cancer, autism spectrum disorder, attention deficit hyperactivity disorder and other developmental disabilities; and some birth defects. Evidence linking prenatal pesticide exposure to childhood brain and nervous system harms, and links to leukemia and brain tumors, has gotten stronger, says PAN. “While children across the country are exposed in various ways, those living in rural, agricultural communities are on the frontlines of both pesticide exposure and the associated health risks.”

Each year, more than 680 million pounds of pesticides are applied to agricultural fields across the country. This 2007 figure – the most recent government estimate available – climbs to more than a billion when common non-agricultural pesticide uses are included, according to the report.

It is also increasingly clear, says PAN, that alternative, less chemical-intensive approaches to farming are not only viable, but would strengthen the resilience of agricultural production. “Put simply, there is no need for our food and farming system to put our children’s health at risk from chemical exposure.”

(“Kids on the Frontline,” Pesticide Action Network, May 10, 2016;

http://www.panna.org/resources/kids-frontline?utm_source=action&utm_medium=alert&utm_campaign=kids-frontline)

Congress voted overwhelmingly in June to give the EPA new powers to regulate tens of thousands of household and industrial chemicals through TSCA, the **Toxic Substances Control Act**. The narrow scope of the 40-year-old law had kept the EPA from limiting exposure to dangerous chemicals, such as asbestos, arsenic, BPA and some flame retardants. Unfortunately, the reform bill limits states’ powers to regulate chemicals further once EPA begins reviewing them – despite the fact that state efforts have been regulating toxic chemicals for decades. Also, only 20 chemicals will be screened at a time, and they can remain under review for up to seven years before a safety decision is made. (“Chemical safety reform passes after ‘perfect storm’,” by Darren Goode and Alex Guillén, Politico, June 7, 2016;

<http://www.politico.com/story/2016/06/chemical-reform-took-advantage-of-perfect-storm-224031>; “The Infuriating Reason Why Toxic Chemicals Lurk in Household Products,” by Erica Langston, Mother Jones, June 13, 2016; <http://www.motherjones.com/environment/2016/06/congress-voted-update-toxic-substances-control-act>)

Trade Deals

Proposed trade rules in the Transatlantic Trade and Investment Partnership (TTIP) threaten to undermine the good food and farm movements on both sides of the Atlantic, say Sharon Anglin Treat and Shefali Sharma in a report for the Institute for Agriculture & Trade Policy. While consumers' and public policy interest increases in locally grown, organic and minimally-processed food, globalization and an increasingly concentrated and vertically integrated agricultural sector are pushing food production, especially the meat sector, toward increasing overall production through industrialized systems located where labor is cheap and environmental and animal welfare standards are weak or non-existent.

If agreed to, TTIP could expand factory farming worldwide by harmonizing standards of two of the largest meat markets (U.S. and EU) and setting the terms for global standards in future trade deals. Eliminating all tariffs on agricultural products as proposed would favor ever cheaper production methods. Likewise, TTIP's focus on reducing or eliminating regulatory differences and protections would promote cheaper industrialized practices prevalent in the United States and increasingly prevalent in the European Union. As a result, TTIP is likely to stand in the way of much-needed regulatory reform as well as proposals that seek to address climate change, animal welfare and the role of GE crops in the food system. ("Selling Off the Farm: Corporate Meat's Takeover Through TTIP," by Sharon Anglin Treat and Shefali Sharma, Institute for Agriculture & Trade Policy, July 11, 2016; <http://www.iatp.org/selling-off-the-farm>)

Winter 2016-2017

The Good News

Analysis of organic research funded by the USDA Organic Research and Extension Initiative (OREI) and Organic Transitions (ORG) competitive research grant programs from 2002 to 2014 shows the progress these programs have made in addressing critical research needs as well as the need for future USDA research investments. The Organic Farming Research Foundation (OFRF) and a team of advisors analyzed 189 organic agriculture research, education and Extension projects on organic farming, and published the results in "Taking Stock: Analyzing and Reporting Organic Research Investments, 2002 – 2014." The report, available free at ofrf.org, says that many of the projects delivered valuable information and tools to organic producers, while others laid the groundwork for future outcomes, including research data, new methods and advanced plant breeding lines.

Diana Jerkins, OFRF research program director, said, "Based on feedback from the organic farmers we interviewed in the U.S. last year, soil health and fertility continues to be the top priority research investment."

Brise Tencer, OFRF executive director, added, "OREI and ORG represent a long-term investment that needs to be sustained with increased funding in order to ensure the continued growth of the organic sector."

In addition, the OFRF 2016 National Organic Research Agenda analyzed **challenges facing organic farmers and priorities for future research.**

More than 1,000 U.S. organic farmers and ranchers participated in the survey, with additional input from 21 listening sessions. Based on this feedback, OFRF recommends intensified research funding and attention in the areas of soil health and fertility management; weed, insect and disease management; and the nutritional benefits of organic food. (Organic Farming Research Foundation press release, by Vicki Lowell, Sept. 28, 2016; report posted at ofrf.org)

The USDA National Agricultural Statistics Service 2015 Organic Production Survey shows that organic acreage increased in the United States by 20 percent from 2014 to 2015, reaching about 4.4 million acres – with almost all of the increase of 691,289 acres attributed to a single organic livestock ranch in Alaska becoming certified in September 2015. That addition increased Alaska's certified organic acres from about 300 to nearly 700,000, second to California in total certified acres. A shortage of U.S. organic acreage has led to increased imports of organic crops.

While the survey found that organic acreage remained roughly flat if Alaska is excluded, organic sales increased 13 percent from 2014 to \$6.2 billion, indicating that organic growers are producing more on fewer acres or in some cases that organic prices are increasing. A majority of the increase, some \$500 million, is credited to livestock and poultry products, mostly eggs and chickens.

The total number of certified organic farms in 2015 was 12,818, down from 14,093 reported in the 2014 survey. Discrepancies can exist between this survey and other sources, such as the Agricultural Marketing Service organic integrity database, which shows 15,904 certified organic operations in the United States raising crops or livestock, and gathering wild crops. Discrepancies may exist because some farms may have multiple certifications; because of the timing of data collection, and because of survey responses.

Maine had the second largest percentage of certified organic farms in a state, with about 6 percent – behind only Vermont, with about 8 percent. Nationally the figure is about 0.6 percent.

Apples led the way in U.S. organic sales at \$302 million, while milk again led the way for animal products at \$1.174 billion. Organic egg sales increased by \$312 million to \$732 million and organic chicken sales were up \$48 million to \$420 million.

The vast majority of certified organic agricultural products sold in 2015 were sold close to the farm or ranch, with many growers having multiple outlets. The first point of sale for 75 percent of all U.S. organic farms and ranches was within 100 miles from the farm, and 35 percent was 100 to 499 miles away, virtually unchanged since 2014.

The number of farms and the amount of the loss from contamination by genetically engineered (GE) crops remained steady from 2014 to 2015, with only one more farm experiencing a loss and a total loss of just a few thousand dollars more than in 2014. These are self-reported, direct losses to individual farms and do not include estimates about losses caused by loss of a market, as when non-approved GE wheat was found in Eastern Oregon in 2013 or when China rejected shipments of grains because of the presence of unapproved GE crops.

The survey does not address other types of contamination, such as from drift of herbicides from fields with GE herbicide-resistant crops, as has been occurring this year in soybeans. Nor does it address costs to organic producers to prevent contamination, such as taking land out of production to create a buffer. (“2015 Sales From U.S. Certified Organic Production up 13 Percent from 2014, USDA Reports,” USDA National Agricultural Statistics Service, Sept. 15, 2016; https://www.nass.usda.gov/Newsroom/2016/09_15_2016.php; “USDA Certified Organic Survey 2015 Summary,” USDA National Agricultural Statistics Service, Sept. 2016; <http://usda.mannlib.cornell.edu/usda/current/OrganicProduction/OrganicProduction-09-15-2016.pdf>; summary at https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Organic_Production/; “Organic Acreage Increase, But!,” National Sustainable Agriculture Coalition, Sept. 20, 2016; http://sustainableagriculture.net/blog/organic-acreage-increase-but/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29)

Based on U.S. agricultural production data for 2014, **the gap between organic and conventional production is lower than previously estimated.** Overall, organic crops had lower yields, but some crops showed no significant difference and others – hay and silage in particular – had greater organic than conventional yields. The authors noted that the gap in organic yield merits “more organic-focused research to support these producers. In particular, efforts to improve available varieties for use in organic production may result in yield improvement via improved nutrient acquisition, pest resistance, competitive traits, or other gene by environment interactions.” They also suggested that variation among yields for different crops presents potential opportunities for sharing information among conventional and organic producers. (“Study examines gap between organic and conventional agriculture,” The Organic Center, Aug. 30, 2016; <https://www.organic-center.org/hot-science/study-examines-gap-between-organic-and-conventional-agriculture/>)

A survey from the Organic Trade Association says that **52 percent of U.S. parents buying organic are millennials** (those who became young adults around the year 2000), compared with 35 percent of generation X parents (those born after the baby boom) and 14 percent baby boomer parents. In addition, 82 percent of 1,800 families with at least one child surveyed said they buy organic sometimes, and 18 percent said never – down from 30 percent in 2009. Organic food sales in the United States reached \$39.7 billion in 2015, when nearly 5 percent of all food sold in the United States was organic. (“Millennials and Organic: a winning combination,” by Maggie McNeil, Organic Trade Assoc., Sept. 22, 2016; <https://www.ota.com/news/press-releases/19256>)

Results from 2,020 farmers from across the country surveyed in March 2016 reflected **enthusiasm for cover crops**, with an increase in acreage planted to cover crops and, for the fourth year in a row, a yield boost in corn and soybeans following cover crops. Participants added that cover crops reduced yield variability during extreme weather events. Of the farmers surveyed, 33 percent found their profit improved as a result of using a cover crop, while 5.7 percent said their profit decreased; remaining responses were split between those reporting no change in profit and those not yet having enough data or experience to evaluate profit impact.

Farmers were asked what would help motivate other farmers to adopt cover crops or increase their use; the top-ranked response was tax credits, followed by getting a discount on their annual crop insurance premium payment. (“2016 Cover Crop Survey Analysis,” USDA SARE, 2016; <http://www.sare.org/Learning-Center/From-the-Field/North-Central-SARE-From-the-Field/2016-Cover-Crop-Survey-Analysis>; full report at www.sare.org/covercropsurvey)

Cornell University and Organic Seed Alliance have released reports describing **organic plant breeding priorities for the Pacific Northwest and the Northeast**. The assessments, which rank crops and traits most important to organic farmers, resulted from surveys and regional working groups that gathered input from organic farmers, organic seed and food distributors, and public and private plant breeders. The goal of the project is to increase farmers’ access to regionally appropriate seed well-suited to organic production. (“Northwest Organic Plant Breeding Assessment of Needs, 2016,” <http://seedalliance.org/publications>; “Breeding Research and Education Needs Assessment for Organic Vegetable Growers in the Northeast,” <https://ecommons.cornell.edu/handle/1813/44636>)

In August the fifth annual **Student Organic Seed Symposium (SOSS)** toured the Johnny’s Selected Seeds research farm and facilities in Albion and Winslow. From their base at Colby College, 50 students and global leaders in organic plant breeding systems attended an intensive four days of lectures, panel discussions and field trips.

“SOSS, the Student Organic Seed Symposium, is a great example of a good idea: a conference of graduate students in organic plant breeding, their professors, and industry people like me,” said Johnny’s company chair and founder, Rob Johnston, Jr.

Lindsay Wyatt, a plant breeder at Johnny’s specializing in squash and pumpkins, helped host the 2014 conference as a Cornell grad student and said, “Most agricultural schools today have a strong Big-Ag focus, and while studying for my Ph.D., I was struggling in my plans. Involvement in the symposium validated and reinvigorated my interest in applied, hands-on breeding of vegetable crops.”

Johnny’s grew out and tended the grad students’ trial plots this year – including cotton sent by Texas A&M grad student Heather Elkins, who is breeding organic cotton to develop a unique leaf shape that helps make genetic engineering contamination more readily apparent.

University of Georgia grad student Suzanne Stone’s breeding focuses on producing cultivars of watermelon with good-size fruits on much more compact vines to increase yield per acre and facilitate inter-row weeding and cultivation, as the aboveground portion of the plants stays neatly on plastic mulch.

Solveig Hansen is a grad student working on genetic aspects of flavor and culinary quality in organic table beets at the University of Wisconsin. She researches geosmin, the volatile phytochemical that gives beets their earthy flavor or “mustiness.” Symposium participants learned how evaluation of differences in taste can be made through plant breeding and genetic studies, and reported a distinct difference in flavor between the beets from her high- and low-geosmin plant populations.

Speakers from the global participatory plant breeding and sustainable seed systems arena included Jim Gerritsen of MOFGA-certified organic Wood Prairie Farm, Neil Lash of Medomak Valley High School, Rodale chief scientist Kris Nichols and Canadian Seed Security's Jane Rabinowicz. Janny van Beem of the Global Crop Diversity Trust spoke of her work to develop and implement gene bank quality and risk management systems, helping plant gene banks globally remain productive and intact. Much of the organization's work is in countries with scant infrastructure, developing backup plans for natural disasters, saving genetic materials, providing grants, building generators, and generally maintaining and securing higher and better conditions for genetic resources in gene banks worldwide.

The group toured Wildfolk Farm and its Maine Rice Project, as well as Maine Grains in Skowhegan and Four Season Farm in Harborside. ("Johnny's Welcomes Student Organic Seed Symposium," by Andrea LaBonte and Marcella Sweet, Johnny's Selected Seeds, Aug. 16, 2016; <http://www.johnnyseeds.com/t-press-release-soss.aspx>)

Researchers at the New Hampshire Agricultural Experiment Station have found that **spinach grown in high tunnels during the coldest months of winter has the highest sugar content.**

Becky Sideman, a researcher with the N.H. Agricultural Experiment Station and extension professor of sustainable horticulture production, Kaitlyn Orde, a graduate student in agricultural sciences, and Connor Eaton, a graduate student in plant biology, conducted a two-year winter spinach trial to determine the most suitable spinach varieties and planting dates for winter production in New Hampshire in an unheated high-tunnel.

"Spinach is a suitable crop for winter production in New Hampshire due to its ability to continue producing saleable leaves at very low temperatures. Fall transplants into high tunnels can result in winter-long harvests and significant spring yields, providing an avenue for growers to meet strong consumer demand for local greens during the off season," Orde said.

Researchers focused primarily on Regiment, Space and Tyee planted on six fall dates. They also investigated Carmel, Corvair, Gazelle, Emperor and Renegade.

In both years, colder temperatures in the days leading up to harvest heightened the sugar content in the leaves. The lowest sugar measurements were recorded during the warmest periods of the experiment (October, November, March and April), and the highest during the coldest months, February in particular.

Earlier transplant dates resulted in higher fall yields. For spring harvest, however, transplanting as late as mid-October did not reduce spring yields, and even the latest planting dates produced good spring yields, so the optimum planting dates will depend on the timing of growers' markets.

Gazelle and Emperor had higher average sugar content than other varieties in both years, but the differences between varieties were not enormous, and all varieties were of a high eating quality. ("UNH Research: Cold Weather Makes for Tastier Spinach," by Lori Wright, University of New Hampshire, Aug. 8, 2016; <https://colsa.unh.edu/nhaes/article/2016/08/spinach>)

The **spotted-wing drosophila** (fruit fly) infests raspberries and other soft fruits at harvest time. Insecticide and exclusion treatments significantly reduced infestation in raspberry fruit, but the combination treatment had the lowest overall abundance of larvae in fruit and delayed detection of larvae in the fruit by 10 days compared with untreated plots. Exclusion netting applied to commercial-size high tunnels significantly reduced overall *D. suzukii* infestation in raspberries and delayed the average first detectable fruit infestation by three weeks, without affecting raspberry size and quality. (“Exclusion Netting Delays and Reduces *Drosophila suzukii* (Diptera: Drosophilidae) Infestation in Raspberries,” by Heather Leach et al., *Journal of Economic Entomology*, July 14, 2016;

<http://jee.oxfordjournals.org/content/early/2016/07/12/jee.tow157.full?ijkey=mle2pdt19sFhzId&keytype=ref>)

Intercropping buckwheat as a living mulch with squash reduced insect pests and diseases while increasing the abundance of beneficial insects. Researchers trialed three arrangements of intercropping buckwheat and squash, with and without the introduction of a natural enemy, the whitefly predatory lady beetle (*Delphastus catalinae*). Intercropping included (A) planting strips of buckwheat on either side of squash with and without lady beetles, (B) planting buckwheat in the middle of squash planted on both sides of the bed with and without lady beetles, (C) planting buckwheat on both sides of squash. Bare ground plots served as controls. Compared with bare ground, all buckwheat arrangements reduced aphid densities and insect-transmitted viruses and increased populations of natural enemies. Intercropping arrangements B and C reduced squash plant size compared with arrangement A. Marketable yields did not differ between the bare ground treatment and buckwheat arrangements A and B. (“Intercropping Buckwheat with Squash to Reduce Insect Pests and Disease Incidence and Increase Yield,” by Janine M. Razzea et al., *Agroecology and Sustainable Food Systems*, July 29, 2016;

<http://www.tandfonline.com/doi/abs/10.1080/21683565.2016.1205541?journalCode=wjsa21>)

German researchers have found that **increases in beneficial insect predators on organic farms can help control weeds by consuming weed seeds.** They collected the seed-eating insect *Harpalus affinis* (a ground beetle) from conventional and organic fields of winter wheat that were surrounded by other organic and conventional farms. They found 3.5 times more beneficial seed predators in organic than conventional fields when those fields were surrounded by conventional fields, suggesting that “organic farming at local and landscape scales enhances the potential of species to control arable weeds by increasing activity densities and intraspecific body size.” (“Organic farming promotes natural control of weeds by promoting seed predators,” *The Organic Center*, Sept. 29, 2016;

<https://www.organic-center.org/hot-science/organic-farming-promotes-natural-control-of-weeds-by-promoting-seed-predators/>)

In September a federal judge refused to dismiss a **lawsuit claiming that Secretary of Agriculture Tom Vilsack changed the process for reviewing substances used in organic farming** without sufficient notice or public input. The Center for Food Safety and 13 others, including MOFGA, filed the suit 2015. The Organic Foods Production Act required that synthetic materials be removed from a list of approved organic farming substances every five years unless two-thirds of National Organic Standards Board (NOSB) members voted to retain

those materials. That provision was changed in 2013, allowing nonorganic substances to remain on the list until the NOSB voted to remove them – making it more difficult to remove synthetics from the list. (“USDA Can't Slide on Organic Food Rules,” by Nicholas Iovino, Courthouse News, Sept. 9, 2016;

<http://www.courthousenews.com/2016/09/09/usda-cant-slide-on-organic-food-rules.htm>)

Food Policy

Food Policy Action (FPA) released its 2016 **National Food Policy Scorecard** in October to help the public understand how members of Congress have performed on food-related policy issues that keep food safe, healthy and affordable. The Senate was graded on 10 votes and 12 bills, and the House on 16 votes and 15 bills. The scored issues included domestic and international hunger, food safety, food access, farm subsidies, animal welfare, food and farm labor, nutrition, sustainable fisheries, food transparency, local and regional food production, organic farming, and the effects of food production on the environment. Maine legislators’ scores ranged from 100 percent for Rep. Chellie Pingree to 75 percent for Sen. Susan Collins, 64 percent for Sen. Angus King, and 50 percent for Rep. Bruce Poliquin. (“National Food Policy Scorecard Measures Congress’ Performance on Major Food Issues,” National Sustainable Agriculture Coalition, Oct. 17, 2016;

http://sustainableagriculture.net/blog/fpa-2016-food-policy-scorecard/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29%29 ; National Food Policy Scorecard, 114th Congress, Food Policy Action; <http://foodpolicyaction.org>)

Antibiotics

A report from The Organic Center says that **consumers can combat antibiotic resistance and protect themselves from antibiotic-resistant bacteria by choosing organic**. Conventional livestock animals raised for food consumption receive antibiotics to treat infections or prevent diseases – and sometimes just to increase growth and feed efficiency. This practice has been implicated in contributing to the emergence of antibiotic-resistant bacteria. Organic livestock production prohibits using antibiotics for growth promotion or prophylactic or other purposes and models how agriculture can contribute to a solution to the problem of antibiotic resistance. (“Organic Food and Farming as a Tool to Combat Antibiotic Resistance and Protect Public Health,” by Tracy Misiewicz, Ph.D., and Jessica Shade, Ph.D., The Organic Center, July 26, 2016;

<https://www.organic-center.org/scientific-resources/publication-archive/>)

Bacteria aren’t the only organisms that are becoming antibiotic-resistant; potentially deadly **fungal infections are also acquiring resistance to many medicines**, and researchers say the widespread use of fungicides on crops and in some paints and coatings is linked to that increase. Recent reports indicate that resistance to azole drugs is increasing in both aspergillus and candida fungi. In response, Britain’s Medical Research Council has opened a Centre for Medical Mycology at Aberdeen University. (“Millions at risk as deadly fungal infections acquire drug resistance,” by Robin McKie, The Guardian, Aug. 27, 2016;

https://www.theguardian.com/society/2016/aug/27/millions-at-risk-as-deadly-fungal-infections-acquire-drug-resistance?CMP=share_btn_tw)

Climate

Worldwide, one-third of food produced for human consumption is thrown out; in the United States, 40 percent. **Feeding that waste to livestock** can reduce the amount of land needed to produce livestock feed and can divert the material from landfills, which produce the potent greenhouse gas methane during decomposition. Methane makes up about 11 percent of greenhouse gas emissions, and about 25 percent of that comes from decomposing food. The United Nations estimates that using food waste for feed could free enough land to feed 3 billion people.

A guide called Leftovers for Livestock, from Harvard University's Food Law and Policy Clinic, helps farmers navigate the complex laws regulating feeding food waste to livestock. In addition, Maine Congresswoman and organic farmer Chellie Pingree has introduced a bill to change "sell by" dates and to expand tax breaks for donating food waste to food banks and shelters. ("Tackling Food Waste as a Way to Save the Climate, Too," inside climate news, by Georgina Gustin, Sept. 6, 2016;

<https://insideclimatenews.org/news/29082016/food-waste-global-problem-solutions-climate-change-recycling-landfills-greenhouse-gas-methane-global-warming>)

Scientists at the University of California Irvine using carbon dating found that **carbon stored in soils was generally a lot older** than many models had estimated, suggesting that sequestering carbon in soils can take much longer than previously thought – and possibly not fast enough to help counter climate change as quickly as thought. ("The Earth is soaking up less carbon than we thought — which could make it warm up even faster," by Chelsea Harvey, The Washington Post, Sept. 22, 2016;

https://www.washingtonpost.com/news/energy-environment/wp/2016/09/22/the-earth-is-soaking-up-less-carbon-than-we-thought-which-means-global-warming-may-go-faster/?utm_term=.cd3d0e2b9ce8 [Original study: Radiocarbon constraints imply reduced carbon uptake by soils during the 21st century, by Yujie He et al., Science, 9/23/2016; <http://science.sciencemag.org/content/353/6306/1419>]

Feeding the World?

The Environmental Working Group (EWG) has found that **the United States is not feeding needy parts of the world** but instead exports to countries where people can afford our food and where obesity rates are increasing, including Canada, China, Mexico, the European Union and Japan. In 2015, less than 1 percent of U.S. agricultural exports went to the 19 countries with the most undernourished populations. In addition, 40 percent of U.S. agricultural exports in 2015 were animal feed. The most important thing the United States can do to help combat global hunger and poverty, says Krista Holobar in Civil Eats, is to help farmers in the hungriest countries produce enough of their own food while earning a living wage. ("Does Big Ag Really Feed the World? New Data Says Not So Much," Civil Eats, by Krista Holobar, Oct. 5, 2016; <http://civileats.com/2016/10/05/does-big-ag-really-feed-the-world/>)

Nitrates in Drinking Water

In September 2016 the Iowa Environmental Council (IEC) released a report, “Nitrate in Drinking Water: A Public Health Concern for All Iowans.” The overview of research in Iowa, the United States and abroad indicates that **health risks associated with nitrate in drinking water may go beyond blue-baby syndrome.**

Since the 1960s, elevated levels of nitrate in water used for baby formula have been known to pose the risk of methemoglobinemia, or blue-baby syndrome, a serious, potentially fatal condition that decreases the ability of blood to carry vital oxygen through the body. The new report cites a growing body of research that suggests nitrate pollution may pose additional risks to public health, including birth defects, bladder cancer, thyroid cancer and other problems.

Most of the research reviewed by IEC found significant negative health outcomes at levels higher than the drinking water standard (10 mg/L nitrate-N). Some research, however, suggests that even lower concentrations may be harmful – especially when water is also polluted with other harmful chemicals such as agricultural pesticides or naturally occurring arsenic.

The findings offer compelling reasons to accelerate efforts to reduce pollution from nitrate flowing into surface and ground water from farms, yards, livestock facilities, water treatment plants and other sources. The report emphasizes the importance of reducing nitrate pollution at the source and recommends a watershed approach to bring urban and rural citizens together to solve pollution problems. It notes that sustainable agricultural practices reduce pollution and build the capacity of the soil to retain water and nutrients. (“New Report Raises Concerns about Health Impacts from Nitrate in Drinking Water,” National Sustainable Agriculture Coalition, Oct. 4, 2016;

http://sustainableagriculture.net/blog/iec-water-quality-report/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29)

Genetic Engineering

Note: Organic production does not allow the use of genetically engineered (GE or GMO – genetically modified organism) inputs.

In June 107 Nobel laureates wrote a letter accusing Greenpeace of a “crime against humanity” for opposing **GE golden rice**. Responding to that letter, two scientists, Angelika Hilbeck and Hans Herren, said in Independent Science News that few of the laureates had “a solid scientific track record in agriculture, food production, development, or the socio-ecological and political causes of poverty and hunger,” while many scientists with those qualifications were not among the signatories. The laureates’ letter also used claims that have not been scientifically substantiated.

Hilbeck and Herren point out that after more than 20 years of generously supported research, no GE rice varieties exist that reliably and stably express enough beta-carotene over many generations of seed saving. They add that golden rice has not been medically documented to

relieve symptoms of vitamin A deficiency; that combating hunger and malnutrition one vitamin and mineral at a time is a failed ideology; that underlying place-based causes of hunger include lack of access to food, money, education and secure living conditions, and that under those circumstances, cheap vitamin A pills do the job much better, in a more targeted, controlled, and effective way than any patented GE crop.

Even if quality, stable GE golden rice did exist, Hilbeck and Herren ask how the developers will get the rice to the urban and remote rural areas where it's needed daily; whether they'll bring along the fat that malnourished people need to eat with the rice to absorb beta-carotene and convert it to vitamin A; and why existing beta carotene-rich foods aren't just brought to areas of need rather than waiting for development of GE golden rice. A non-GE orange sweet potato compatible with improved crop rotations is an example; its developers received the 2016 World Food Prize. If a few patented GE rice varieties are introduced, they are unlikely to perform well in all the local conditions where rice is grown. Where they might be grown, they may destroy thousands of existing, locally adapted varieties. ("Millions Spent, No One Served: Who Is to Blame for the Failure of GMO Golden Rice?" By Angelika Hilbeck and Hans Herren, Independent Science News, Aug. 10, 2016;

<https://www.independentsciencenews.org/health/millions-spent-who-is-to-blame-failure-gmo-golden-rice/>)

The USDA Food Safety and Inspection Service (FSIS) now allows companies to make “negative claims” about GE use – i.e., to state on a label that a product was produced from livestock or poultry that were not fed GE feed – if those claims

comply with standards established by certain third-party certifying organizations.

Previously FSIS allowed use of the terms “genetically modified organism” or “GMO” on product labels or labeling only if the name of the third-party certifying organization contains these terms (e.g. “Non-GMO Project”). Many organic stakeholders expressed an interest in using “Non-GMO” label claims to clearly communicate to consumers that organic products do not contain GE ingredients and that animals raised organically were not fed GE feed. In the 2016 National Bioengineered Food Disclosure Act, Congress stated that organic certification is sufficient to make claims about the absence of bioengineered ingredients, such as “non-GMO.” Also, the FDA recently clarified its policy to accept claims that products do not contain GE ingredients, including “non-GMO” statements. This lets USDA grant additional labeling flexibility to organic producers and processors. The label approval procedures appear on the FSIS website. (“Statements That Bioengineered or Genetically Modified (GM) Ingredients or Animal Feed Were Not Used in Meat, Poultry, or Egg Products,” USDA Food Safety and Inspection Service, Aug. 19, 2016;

<http://www.fsis.usda.gov/wps/portal/fsis/topics/regulatory-compliance/labeling/claims-guidance/procedures-nongenetically-engineered-statement>; “New Allowances for Including a ‘Non-GMO’ Statement on Certified Organic Meat and Poultry Products,” by Miles McEvoy, USDA National Organic Program, Sept. 21, 2016; <http://blogs.usda.gov/2016/09/21/new-allowances-for-including-a-“non-gmo”-statement-on-certified-organic-meat-and-poultry-products/>)

In July 2016, 22 **GE Roundup Ready wheat plants were found growing** on a farm in Washington state. While Monsanto's GE wheat was trialed in the Pacific Northwest from 1998 to 2001, no GE wheat has been approved for commercial production or sale in the United States.

(“GMO wheat found in Washington state could affect US trade,” AP, KTAR News, 7/29/2016; <http://ktar.com/story/1201548/gmo-wheat-found-in-washington-state-could-affect-us-trade/>)

Scientists at Iowa State University analyzed data collected by a private company about **insecticide and herbicide use** (by weight of active ingredient) among 5,000 randomly selected corn and soybean farmers from 1998 to 2011. They found that growing GE Bt corn resulted in less insecticide use to fight corn rootworms and European corn borers – but that rootworms have evolved resistance to one of the engineered genes. [Ed. note: The amount of Bt toxin engineered into the plants as an insecticide was not included in the measure of insecticide used.]

Farmers growing GE glyphosate-tolerant corn initially used less herbicide than those who continued to grow non-GE corn, until 2007, when they started using more. Those growing GE glyphosate-tolerant soy used larger amounts of herbicides than those growing non-GE soy since GE soy was introduced.

The study used an environmental impact quotient (EIQ) to try to assess the impact of the toxicity of the herbicides used, but that measure was criticized by University of Wyoming weed scientist Andrew Kniss in an NPR report as being a poor measure of environmental impact, with EPA’s “risk quotient” being better. (“How GMOs Cut The Use Of Pesticides — And Perhaps Boosted It Again,” by Dan Charles, NPR, Sept. 3, 2016; <http://www.npr.org/sections/thesalt/2016/09/01/492091546/how-gmos-cut-the-use-of-pesticides-and-perhaps-boosted-them-again>; Original study: “Genetically engineered crops and pesticide use in U.S. maize and soybeans,” by Edward D. Perry et al., Science Advances, 8/31/2016; <http://advances.sciencemag.org/content/2/8/e1600850>)

Genetically modified enzymes, increasingly used in food (for flavoring, cheese ripening, faster baking), perfumes, medicine and cleaning products, should be tested for allergenic properties, say researchers. Instead they are used without such testing in products often labeled as “natural.” The researchers measured antibodies to GE enzymes in 813 workers exposed to GE enzymes for three months to 10 years and found that 23 percent had specific antibodies to the GE enzymes to which they were regularly exposed. Many had job-related symptoms of rhinitis or asthma. (“Enzymes used in cleaning products and food 'are potent allergens', warns study,” by Haroon Siddique, The Guardian, Sept. 21, 2016; <https://www.theguardian.com/environment/2016/sep/21/enzymes-used-in-cleaning-products-and-food-are-potent-allergens-warns-study>; Original study: “Sensitising effects of genetically modified enzymes used in flavour, fragrance, detergent and pharmaceutical production: cross-sectional study,” by Lygia T. Budnik et al., Occupational & Environmental Medicine, 9/21/2016; <http://oem.bmj.com/content/early/2016/08/23/oemed-2015-103442>)

Monsanto has licensed CRISPR-Cas9 genome-editing technology from the Cambridge, Mass.-based Broad Institute for its seed development. CRISPR refers to “clustered regularly interspaced short palindromic repeats.” Monsanto is not allowed to use the gene editing technology for gene drive, which can spread an engineered trait throughout a population by passing traits (such as insecticidal properties) to offspring, nor may it use the technology to create “terminator” (sterile) seeds, nor for smoking-related tobacco R&D.

Pre-CRISPR GE technology inserts foreign genes at random sites in a plant's genome, reports Sharon Begley in STAT, adding that Monsanto's Tom Adams says the vast majority of those insertions don't work as intended. Genome editing with CRISPR is more specific, he says. Also, because CRISPR deletes or modifies the existing genome of a plant rather than inserting foreign genes, the USDA says it need not be approved.

DuPont and others are also using CRISPR technology on crop plants. ("Monsanto licenses CRISPR technology to modify crops — with key restrictions," by Sharon Begley, STAT, Sept. 22, 2016;

<https://www.statnews.com/2016/09/22/monsanto-licenses-crispr/>)

Pesticides

In a 96-page **in-depth review of glyphosate** and inert ingredients used with the herbicide, Pesticide Action Network details the health effects, acute and chronic toxicity, and environmental effects of the product; effects of climate on the product; and nonchemical alternatives.

The review covers reports of kidney and liver damage where glyphosate products are widely used; evidence for the carcinogenicity of glyphosate products; of endocrine disruption; of reproductive and developmental effects, including birth defects; of neurological effects; and of interference with the immune system. In addition, in 2010 Monsanto patented glyphosate as an antimicrobial; now "studies show it can cause imbalances in the normal gastrointestinal microbiome, increasing vulnerability to pathogenic bacteria and influencing the response to antibiotics and intestinal functioning, in humans and animals," says PAN.

Also covered: effects on plants (including mineral deficiencies), animals and soils; development of glyphosate-resistant weeds; effects of "inert" ingredients and metabolites; use for "pre-harvest desiccation of cotton, cereals, peas, beans, and other crops, resulting in elevated residues in food and animal fodder from these crops"; persistence in soils and water; and alternatives methods of weed management. Watts et al. also note alternative ways of thinking of weeds in some situations: "Invasive species can help ecosystems, and people, adapt to climate change by maintaining ecosystem processes such as productivity, carbon storage, and nutrient cycling in a context of altered land cover." ("Glyphosate," by Dr. Meriel Watts et al., Pesticide Action Network, Oct. 2016;

<http://pan-international.org/wp-content/uploads/Glyphosate-monograph.pdf>)

The FDA has found **residues of glyphosate**, the active ingredient in Monsanto's Roundup herbicide and in some other herbicides, **in all of the U.S. honey** it sampled. Some levels were twice the E.U. limit of 50 ppb. Similarly, the research company Abraxis sampled honey in 2015 and found glyphosate residues in 41 of 69 samples, ranging from 17 to 163 ppb and with a mean of 64 ppb. The United States does not have a legal tolerance level for glyphosate in honey. Glyphosate residues have also been found in U.S. corn, soy and wheat. ("FDA Finds Monsanto's Weed Killer In U.S. Honey," by Carey Gillam, The Huffington Post, Sept. 15, 2016; http://www.huffingtonpost.com/carey-gillam/fda-finds-monsantos-weed_b_12008680.html)

The U.S. EPA proposes, now, that glyphosate is not likely to cause cancer in humans at doses relevant to human health risk assessment. The EPA has acknowledged research linking glyphosate to cancer but believes those results are not significant and/or are outweighed by other studies. Regarding a possible link between glyphosate and non-Hodgkin lymphoma, the EPA says insufficient data are available to reach a conclusion.

In October the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) Scientific Advisory Panel was to review the 86 documents that EPA used in that assessment. However, under pressure from the agricultural chemical industry, the EPA postponed that review meeting just days before it was scheduled. CropLife America, which represents that industry, petitioned the EPA to scrutinize panel member Dr. Kenneth Portier of the American Cancer Society for “preformed conclusions” about glyphosate; and it asked that epidemiologist Dr. Peter Infante be replaced. Infante has decades of experience working for the Occupational Safety and Health Administration; for the National Institute for Occupational Safety and Health; and as a consultant for EPA, the World Trade Organization, and others.

Conversely to EPA’s latest proposal, more than 90 scientists reviewing glyphosate for the World Health Organization International Agency for Research on Cancer concluded that **glyphosate is “probably carcinogenic to humans,”** that glyphosate is associated with non-Hodgkin lymphoma; that lab animals exposed to glyphosate develop kidney and other types of tumors and that glyphosate can be toxic to genes. The European Food Safety Authority (relying in part on industry studies that were not peer-reviewed) says glyphosate is “unlikely to pose a carcinogenic hazard to humans.”

EPA expects to publish its final assessment of glyphosate in spring 2017, and it has already acknowledged that more studies are needed – including studies using formulations that include glyphosate rather than the active ingredient alone. (“EPA says glyphosate, used in Monsanto herbicide, likely not carcinogenic,” by P.J. Huffstutter, Reuters, Sept. 16, 2016; <http://www.reuters.com/article/us-usa-epa-glyphosate-idUSKCN11M28X>; “Upcoming EPA Meetings on Safety of Monsanto Weed Killer Drawing Scrutiny,” by Carey Gillam, The Huffington Post, Sept. 29, 2016; http://www.huffingtonpost.com/carey-gillam/upcoming-epa-meetings-on_b_12245584.html; “EPA Bows to Chemical Industry in Delay of Glyphosate Cancer Review,” by Carey Gillam, The Huffington Post, Oct. 19, 2016; http://www.huffingtonpost.com/carey-gillam/epa-bows-to-chemical-indu_b_12563438.html)

California has added **atrazine**, the second most commonly used herbicide in the United States, to its Prop 65 list of toxic chemicals since it’s **known to cause reproductive harm**. The EPA is in the process of re-evaluating atrazine after saying in 2006 that “the risks associated with the pesticide residues pose a reasonable certainty of no harm.” Atrazine, made by Syngenta, is widely used on Midwestern row crops and is used elsewhere on golf courses and lawns. It can persist for long periods in bodies of water, can contaminate drinking water and has been banned in the European Union since 2004 because of ubiquitous contamination of water. (“California Adds Atrazine to List of Toxic Chemicals, But No Ban,” by Lindsey Hoshaw, KQED, July 28, 2016;

<http://ww2.kqed.org/science/2016/07/28/california-adds-atrazine-to-list-of-toxic-chemicals-but-no-ban/>)

Neurodevelopment was harmed in children of mothers who, during pregnancy, lived within approximately 1 km of agricultural fields in California where five potentially neurotoxic pesticide groups (organophosphates, carbamates, pyrethroids, neonicotinoids, and manganese fungicides) and five individual organophosphates (acephate, chlorpyrifos, diazinon, malathion and oxydemeton-methyl) were used. At age 7, these children had a decrease of 2.2 points in full-scale intelligence quotients (IQ) and 2.9 points in verbal comprehension for each standard deviation increase in toxicity-weighted use of organophosphate pesticides. Similar decreases in full-scale IQ occurred with each standard deviation increase of use for two organophosphates (acephate and oxydemeton-methyl) and three neurotoxic pesticide groups (pyrethroids, neonicotinoids, and manganese fungicides). Because the pesticides were almost always used in combination, researchers could not determine whether the reductions in IQ and comprehension were caused by organophosphate use alone or by the interactions with other classes of pesticides. They noted that each one point decrease in IQ is estimated to decrease worker productivity by approximately 2 percent and to reduce lifetime earnings by \$18,000 (in 2005 market standards). (“Study Adds to Findings That Link Prenatal Pesticide Exposure to Lower IQs,” Beyond Pesticides, July 29, 2016;

<http://beyondpesticides.org/dailynewsblog/2016/07/prenatal-exposure-organophosphates-linked-lower-iq-children/>; Original study: “Prenatal Residential Proximity to Agricultural Pesticide Use and IQ in 7-Year-Old Children,” by Robert B. Gunier et al., Environmental Health Perspectives, 7/25/2016; <http://ehp.niehs.nih.gov/wp-content/uploads/advpub/2016/7/EHP504.acco.pdf>)

Twenty-three percent of the **ornamental plants** from stores and nurseries in 14 North American cities were pre-treated with systemic **neonicotinoid insecticides** at levels that could harm bees, according to data collected and reported by environmental activists. Reports in 2013 and 2014 found that more than half of the samples contained neonicotinoids. About 65 retailers, including Home Depot, Whole Foods, BJ’s and Lowe’s, have pledged to phase out neonicotinoids in plants they purchase from nurseries. Neonicotinoids, including imidacloprid, are still widely used on ornamentals sold by some other retailers, by fruit, vegetable and cotton growers, and by the urban pest-control industry. Wal-Mart, Ace Hardware and True Value Hardware have not change their practices, according to the report. Bayer, which manufactures neonicotinoids, denies that they harm bees. (“Bee-harming pesticides are declining at plant nurseries, report shows,” by Geoffrey Mohan, Los Angeles Times, Aug. 16, 2016;

<http://www.latimes.com/business/la-fi-bees-pesticides-20160816-snap-story.html>; “Big drop found in neonicotinoid content of home stores' 'bee-friendly' flowers,” by Ron Meador, MinnPost, Aug. 16, 2016;

<https://www.minnpost.com/earth-journal/2016/08/big-drop-found-neonicotinoid-content-home-stores-bee-friendly-flowers>)

Unpublished field trials by Bayer and Syngenta show that high concentrations of their **neonicotinoid insecticides harm honeybees**, according to information submitted to the EPA and obtained by Greenpeace. Syngenta’s thiamethoxam harmed colonies at 50 ppb or above, and Bayer’s clothianidin at 40 ppb and above. Syngenta previously had told Greenpeace that “none of the studies Syngenta has undertaken or commissioned for use by regulatory agencies have

shown damages to the health of bee colonies.” (“Pesticide manufacturers' own tests reveal serious harm to honeybees,” by Damian Carrington, The Guardian, Sept. 22, 2016; <https://www.theguardian.com/environment/2016/sep/22/pesticide-manufacturers-own-tests-reveal-serious-harm-to-honeybees>)

Honeybees that ate treated pollen containing the **neonicotinoid** insecticides thiamethoxam and clothianidin produced 39 percent **less live sperm and had shorter lifespans** than control bees, Swiss researchers found. (“Two neonicotinoid insecticides may have inadvertent contraceptive effects on male honey bees,” University of Bern, ScienceDaily, July 27, 2016; <https://www.sciencedaily.com/releases/2016/07/160727090733.htm>)

Data collected from 1994 to 2011, much by citizen scientists, on 62 **wild bee species** in England found that **losses among those foraging on pesticide-treated oilseed rape crops**, widely treated with neonicotinoid insecticides, were three times greater than among bees foraging on other plants. (“Nearly two decades of data reinforce concerns that pesticides are really bad for bees,” by Chelsea Harvey, The Washington Post, Aug. 16, 2016; https://www.washingtonpost.com/news/energy-environment/wp/2016/08/16/nearly-two-decades-of-data-reinforce-concerns-that-pesticides-are-really-bad-for-bees/?utm_term=.0ce6950c3ac9; “Impacts of neonicotinoid use on long-term population changes in wild bees in England,” by Ben A. Woodcock et al., Nature Communications, Aug. 16, 2016; <http://www.nature.com/ncomms/2016/160816/ncomms12459/full/ncomms12459.html>)

Researchers supported by the National Honey Board studied multiple pesticides that accumulate within 91 migratory honeybee colonies. They found that **the number of different pesticides within a colony, regardless of dose, closely correlates with colony death**. The results also suggest that some fungicides, often regarded as safe for bees, correlate with high rates of colony deaths.

"Our results fly in the face of one of the basic tenets of toxicology: that the dose makes the poison," said Dennis vanEngelsdorp, an assistant professor of entomology at the University of Maryland and senior author on the study. "We found that the number of different compounds was highly predictive of colony death, which suggests that the addition of more compounds somehow overwhelms the bees' ability to detoxify themselves."

A total of 93 different pesticide compounds found their way into the colonies over the growing season, accumulating in wax, in processed pollen (“bee bread”) and in bodies of nurse bees. At every stop along the beekeepers' itinerary, the researchers assessed for each colony the total number of pesticides; the total number of "relevant" pesticides (those above a minimum threshold of toxicity); and each colony's "hazard quotient," a measure that integrates the total hazard posed to each colony by the cumulative toxicity of all pesticides present.

All three measures correlated with a higher probability of colony death or queen failure. In addition, the researchers found between five and 20 different pesticide residues in every sample of bee bread that exceeded a hazard quotient's safety threshold. The highest number of pesticides accumulated in the colonies early on, shortly after beekeepers placed colonies into early-season

flowering crops such as apples and blueberries. Honey production stopovers and holding areas offered the bees some respite from further contamination.

The results also suggest that some fungicides could have toxic effects on colony survival in the field. Fungicides most closely linked to queen deaths and colony mortality disrupted sterols – compounds essential for fungal development and survival.

The research did not find a significant contribution from neonicotinoid pesticides, although they did not test nectar. (“High number of pesticides within colonies linked to honey bee deaths,” University of Maryland press release, by Matthew Wright, Oct. 7, 2016; https://eurekaalert.org/pub_releases/2016-10/uom-hno100716.php; “In-hive Pesticide Exposome: Assessing risks to migratory honey bees from in-hive pesticide contamination in the Eastern United States,” by Kirsten Traynor et al., Nature Scientific Reports, Sept. 15, 2016; <http://www.nature.com/articles/srep33207>)

Spring 2017

Maine Board of Pesticides Control 2016 Recap

By Jean English and Katy Green

Sidebar

Carol Eckert, M.D.

In October 2016, Mainers mourned the loss of Carol Eckert, M.D., who died from injuries sustained in a bicycle riding accident in Windsor. Carol, a doctor, served on the Maine Board of Pesticides Control for 30 years and on various other boards of important nonprofits, including the Environmental Health Strategy Center and the Maine Labor Group on Health. She was a long-time Common Ground Country Fair volunteer as well, and her husband, Jeff Frankel, has been a MOFGA volunteer, helping us with IT challenges over the years. We miss her presence and her contributions to Maine.

Maine statute specifies the composition of the board, including requiring one member with medical expertise, which is the post Eckert held. At the December 2016 BPC meeting, Anne Gibbs, Animal and Plant Health Division director for the Maine Department of Agriculture, Conservation and Forestry, said the process to fill this seat was underway.

Sidebar

Staff Changes

Two longtime BPC staff members moved to new posts within the Department of Agriculture, Conservation and Forestry this year. Henry Jennings, who was the director of the BPC, became the Maine State Harness Racing director. Gary Fish, previously manager of pesticides programs for the BPC, is now the state horticulturist.

End of sidebar

This is our annual report covering all 2016 meetings of the Maine Board of Pesticides Control (BPC). Complete documents relating to BPC meetings are posted at <http://www.maine.gov/dacf/php/pesticides/meetings.shtml>. MOFGA posts time-sensitive action alerts related to the BPC throughout the year at <http://www.mofga.org/Programs/PublicPolicyInitiatives/MaineBoardofPesticidesControl/tabid/3073/Default.aspx>, in our weekly Bulletin Board (<http://mofga.org/Publications/BulletinBoard/tabid/2535/Default.aspx>) and on our Facebook page.

The BPC, Maine's lead agency for pesticide oversight, is attached to the Maine Department of Agriculture, Conservation and Forestry. Its seven-member public board makes policy decisions.

Katy Green, MOFGA's organic transitions coordinator, attends BPC meetings to represent MOFGA's views. This summary is taken from BPC minutes and Green's notes.

Promoting Integrated Pest Management Among Homeowners

The board and staff discussed ways to reduce pesticide use among homeowners – including promoting integrated pest management (IPM) and proper use of pesticides – through its website, social and other media, garden centers, municipalities and various Maine groups.

The BPC staff listed topics it thought pertinent to homeowner IPM so that the board could clarify which messages to promote. Topics included identifying pests; the threshold and to what extent they warrant control; which control measures are most effective according to reputable sources; knowing what a pesticide is and how to choose and use one safely; minimizing risks from pesticide exposure, and from mechanical control (in dealing with poison ivy, for example); and knowing the risk of not controlling the pest. The BPC directed the staff to work on these strategies and ways to measure outreach success.

When BPC Director Henry Jennings noted that information given out has to be from reputable scientific sources, such as university or governmental entities, Katy Green noted that it should not come from science paid for by chemical companies.

Gary Fish, formerly with the BPC staff and now Maine state horticulturist, said that everything on the list had already been done and that the key is to have a concerted, repeated effort. Presenting at garden centers takes a lot of staff time for little return, he said, but the GotPests website and other online and big media ventures have greater impact.

The staff took several actions, including writing “A Homeowner Guide to Managing Ticks” and sponsoring public presentations by Dr. Tom Mather (<http://www.tickencounter.org/>) about managing ticks and Lyme disease; creating a webpage, <http://www.maine.gov/dacf/php/gotpests/lawns/>, with information for homeowners; and staff and BPC members gave some talks.

Jennings said the BPC needs to help municipalities understand what pesticides are, what regulations exist and the law regarding adopting municipal ordinances. Lacking that knowledge, municipalities, he said, tend to write ordinances that prohibit such items as repellents, pool chemicals, paints and stains.

Board member John Jemison referred to a letter from Jo Ann Myers, chair of MOFGA's Public Policy Committee, stating that the BPC is not fulfilling its statutory responsibilities regarding tracking pesticides purchased and used in Maine. Jemison asked about the origin of Myers' citation of a 700 percent increase in pesticide use, given that the BPC does not track use and that the Maine Legislature repealed the requirement for the BPC to publish reports tracking pesticide use.

Board member Curtis Bohlen said the 700 percent number keeps appearing because it is the only number people have.

Fish explained that to estimate Maine lawn and landscape use trends, he began recording pesticide sales in 1995 using data from a few reports, including yearly dealer reports of pesticides sold into Maine. These do not tell how much was sold to an end user or how much was used. He also used restricted use pesticide dealer reports because those dealers usually sold general use pesticides as well. He used annual reports from commercial applicators to try not to double count products sold to commercial applicators. He searched all of these reports for information on products he knew homeowners used. He used this same process annually to estimate pounds of pesticide products (not of active ingredients) sold into Maine, so the trend line showing an increase is probably accurate, he said. He thought that changing attitudes about landscaping, pesticides and insect-borne diseases contributed to the upward trend.

Megan Patterson, manager of the BPC pesticide programs, said many items are exempt from reporting requirements, such as indoor household use items, all aerosols, insect repellents, pet products, disinfectants, any products with less than 3 percent active ingredient, and others. Problems with the collected data include inaccurate EPA registration numbers, data discrepancies, and trying to compare liquid and solid products. In 2000-2001 the BPC was directed to research methods to improve data, with the Legislature then asking for reports based on pounds of active ingredient. One BPC staff member dedicated all of her time for three months calculating that data and compiled a database for 500 products, while the BPC currently registers over 11,000 products. Because of this difficulty and because the Legislature had not found the information useful, it repealed the reporting requirement, said Jennings.

Patterson said that California collects pesticide sales and use data electronically using a sophisticated program, and it checks each report and frequently returns reports to companies to be fixed, resubmitted and rechecked.

Fish said the EPA compiles reports on pesticide distribution throughout the country, not specifically in Maine, but its reports are usually three years behind.

Board member Clark Granger said he was skeptical about spending staff time on data reports, but Bohlen said the information is important and asked why the staff was collecting it if it was not

being used. Jennings said it has been used qualitatively for various purposes, including estimating agricultural pesticide use in Maine in order to guide groundwater surveys and estimating the amount of neonicotinoid insecticides used. Jennings added that he was unsure about what policy decisions this information would help guide.

Regarding media outreach, Paul Schlein, a member of MOFGA's Public Policy Committee and former BPC staffer, wrote to the BPC asking about a successful, award-winning "Think Blue Maine Ducky II Ad" created to teach the public about the risks to water quality from runoff polluted with fertilizer and pesticides. Chris Turmelle of Atlantic Pest Solutions complained to the LePage administration that the ad was "anti-lawncare," and Deven Morrill, licensed arborist with Lucas Tree Experts of Portland and public member of the BPC, also contacted Governor LePage about the ad. The LePage administration then removed the ad from the state DEP website. (See "Troubled Waters: Damage to Maine's Lake Protection Program Under the LePage Administration," Natural Resources Council of Maine, Sept. 2013; <http://www.nrcm.org/our-maine/publications/troubled-waters/>) Some BPC members had heard that the ad had aired on TV recently. Jennings said even if the board voted to run the ad and could pay for it, the administration needed to make that decision. The ad is posted on YouTube (<https://www.youtube.com/watch?v=JDaakOQtCqo>).

Gulf of Maine Coastal Pesticide Study

In February 2014 the Environmental Risk Advisory Committee (ERAC) was convened to examine whether current pesticide residues can affect the lobster industry in Maine. At the same time, the BPC initiated stormwater and sediment sampling.

Mary Tomlinson, pesticides registrar/water quality specialist with the BPC, reported that based on the 2014 sediment sampling results, on characteristics of juvenile lobster behavior and habitat, and on budgetary constraints, the ERAC limited sediment sampling in 2015 to 13 intertidal sites in Casco Bay. One site on the Saco River, below Biddeford, was sampled to follow up a 2014 cypermethrin detection there. No detections occurred in sediments collected from sites previously identified as juvenile lobster habitat or adjacent to lobster habitat.

Stormwater was sampled at 19 sites from Kittery to Whiting during one storm event in August 2015, and in September 2015, one stormwater sample was collected in Ellsworth. Twenty-two pesticides and fipronil degradates were detected in stormwater as follows:

Pesticides and degradates	Number of sites with detects
fipronil	12
fipronil sulfone	12
fipronil desulfinyl	11
imidacloprid	11
fipronil sulfide	8
hexazinone	7
bifenthrin	7

2,4-D		5
MCPP		4
imazapyr		3
MCPA	2	
metolachlor		2
prometon		2
terbacil		2
bentazon		1
carbaryl		1
cis/trans-permethrin		1
diuron		1
hydroxy atrazine		1
propiconazole	1	
triclopyr		1

In one Portland site selected for a four-hour time series, 2,4-D, bifenthrin, fipronil, fipronil desulfinyl, fipronil sulfone, imidacloprid and MCPP were detected every hour; fipronil sulfide the first three hours; and imazapyr, triclopyr and cis/trans-permethrin the first two hours.

The number of pesticides detected in each community were:

- 14 Portland
- 9 South Portland, Rockland
- 8 Biddeford
- 7 Kittery, Belfast
- 6 Boothbay Harbor
- 5 Ogunquit, Freeport, Bath, Camden
- 4 Yarmouth, Brunswick
- 2 Blue Hill
- 2 Cherryfield, Columbia Falls
- 1 Ellsworth, Jonesboro, Machias, Whiting

Bifenthrin and cis/trans-permethrin totaled were the only pesticides detected that exceeded EPA aquatic life benchmarks (ALB). Cis-permethrin and trans-permethrin concentrations were totaled for each sample to obtain the total permethrin concentration for comparison with the ALB. Bifenthrin exceeded one ALB at seven sites and three samples at the Portland time-series site. Permethrin exceeded two ALBs in two samples at the Portland site.

Mosquito-borne Diseases

Sara Robinson of the Maine Center for Disease Control and Prevention reviewed the incidence of mosquito-borne diseases in Maine in recent years. In 2015 the Maine CDC found two positive pools for Eastern Equine Encephalitis and for West Nile Virus, both in York County. Robinson said that Zika is more likely to be found earlier in humans than in mosquitos, so the Maine CDC would increase testing of people who travel to infected countries. The BPC approved a one-year increase in funding from \$25,000 to \$50,000 to the Maine CDC for monitoring mosquitoes – an

increase for which MOFGA had advocated so that any decisions about using or not using insecticides to address mosquito-borne diseases would be based on meaningful data.

Moth Population Trends in Maine

Based on 2016 Maine Forest Service (MFS) surveys, browntail moth (BTM) populations are projected to surge in 2017 across a broad swath of southern Maine. Board rules regulate the use of pesticides to control BTM within 250 feet of marine waters. The MFS suggested reviewing the list of approved active ingredients.

Charlene Donahue, a forest entomologist with the MFS, said the BTM caterpillar can cause a rash and respiratory effects in humans and, in trees, branch dieback and sometimes mortality. The moth arrived in Maine in 1897 and spread rapidly. In 1920 its population collapsed, possibly due to a fungus. It remained on a few coastal islands until the 1980s, when it returned to the mainland. The population expanded in 2015, and in 2016 Donahue received multiple requests from towns to talk with residents. In 2017 the footprint of the BTM area will be similar to that of 2016, but the impact will be much more intense as populations continue to grow and toxic hairs build up in the environment.

Past efforts to control BTM and gypsy moth have included spraying, biocontrol and a federal quarantine in place until the mid-80s. In 2015 an aerial survey found about 64,000 acres of trees defoliated by BTM, as noted by their rusty, skeletonized appearance, primarily in Sagadahoc and Cumberland counties, where BTM is worst. It is spreading south and north and is in Kittery, Kennebunk, Turner and Monmouth. Donahue said BTM is impacting tree health significantly. Adult BTMs were collected in light traps as far away as Eliot, Skowhegan, Exeter and Topsfield. The pest targets hardwoods primarily, favoring oaks and apple but also attacking other hardwoods, including shrubs.

The BTM larvae forage between April and June and begin making cocoons in July. The caterpillars make small, tight webs in the fall at the tips of branches, while the native fall webworm makes large, filmy webs and does not kill trees. Deven Morrill of the BPC said affected trees look like they still have leaves at the top in January and February, and Donahue added that the white film is shiny and easy to spot.

Traditionally chemical control occurs in the spring as soon as caterpillars leave the webs, but there is some thought of trying treatments in August 2017. Some arborists are clipping webs that can be reached in winter. Donahue always advises people that they need to contract with commercial applicators for any chemical treatment.

Microscopic hairs from the caterpillars cause rashes and respiratory problems in humans, said Donahue, and chemicals in the hairs remain toxic for one to three years. Individuals need not contact caterpillars to be affected; just being in the area is enough. Cold temperatures do not kill BTM, but wet, cool spring weather when they have high population densities allows disease to spread more easily, resulting in higher rates of mortality.

Lawn mowing stirs up the hairs, as do fall and spring cleanup and turning up mulch beds.

The MFS lists precautions to take when doing yard work, at http://maine.gov/dacf/mfs/forest_health/insects/browntail_moth_precautions.htm.

Donahue and Kathy Murray, Integrated Pest Management Program coordinator, created a free webinar to teach schools about BTM, and Donahue has done considerably more outreach. She noted that applicators in Sagadahoc County already have all the clients they can handle.

Lebelle Hicks, BPC pesticide toxicologist, listed new types of products available for BTM control and their methods of action and efficacy (based on applicators' reports). She asked if the BPC rule needs to be changed to allow or not allow some newer chemistries.

Donahue noted that the area within 50 feet of the high water line is a concern because when the rule was created, the only biological was Bt, *Bacillus thuringiensis*. Now other biologicals are available, but the board has not evaluated their environmental fate and toxicity to crustaceans. Jennings said that rulemaking may be prudent in the long term, but the short-term priority is to list acceptable chemistries to use in the 50- to 250-foot zone and clarify the definition of biologicals for the 0- to 50-foot zone.

In December the board further discussed biological options. Ultimately the board likely will initiate rulemaking to change the language dictating what can happen within 0 to 50 feet of the high water mark. The short-term fix for 2017 was to include guidance from the board by February 2017 of products that applicators can use this year.

Pesticide Safety for Migrant Workers

The BPC approved a \$3,675 grant to the Maine Migrant Health Program and Eastern Maine Development Corporation for continued support of their Migrant and Seasonal Farmworker Safety Education program. In 2015, 308 individuals received Worker Protection Standard training – 11 percent more than in 2014; 308 were trained in limiting pesticide exposure to families – an increase of 22 percent; and 310 received heat stress training for the first time. Tractor training was added in 2016.

Environmental Risk Assessment Committee (ERAC) Membership

The board approved adding Kathleen Reardon, a lobster biologist with the Maine Department of Marine Resources, and Lawrence Mayer, Ph.D., from the Darling Marine Center, to the Environmental Risk Assessment Committee.

Registration Renewals and Variance Requests

The board reviewed Central Maine Power (CMP) Company's Transmission Right-of-Way Drift Plan for 2016. The company planned to hire contract crews to treat approximately 10,000 acres with formulations of the herbicides Garlon and Milestone, treating tree stumps in some cases and using a backpack sprayer elsewhere. A no-spray zone, maintained around wells, municipal water supplies or any open water, varies in size depending on the topography, with a minimum of 25 feet from all water and of 100 feet from drinking water supplies. A landowner maintenance

agreement is available to any landowner or municipality objecting to the use of herbicides. The landowner agrees to keep brush height under 10 feet, and a CMP inspector checks each area annually.

The BPC approved (but Jemison opposed) a Special Local Need request from Jasper Wyman and Son for Sandea Herbicide to control perennial broadleaf weeds in lowbush blueberry in the nonbearing year, given resistance of some weeds to the herbicide hexazinone. Sandea must be applied before blueberry growth begins; otherwise it is toxic to the blueberry plants.

The BPC unanimously approved Special Local Need requests to extend the use of Bravo ZN and Echo ZN (chlorothalonil fungicides) to control late blight in long-season potatoes and a Special Local Need request for Omega 500F Fungicide (Fluazinam) as an in-furrow, banded application on potatoes at planting to control powdery mildew scab.

The BPC staff issued variance permits to

- Acadia National Park to treat invasive plants within 25 feet of various water bodies
- The Woodlands Club in Falmouth for its pest management program
- Dasco Inc. in Presque Isle to treat invasive plants within 25 feet of water at the Howland Dam Bypass Channel Project in Howland, Maine
- Dubois Contracting of Fort Kent to broadcast herbicides (while adhering to certain precautions) along portions of the Ft. Kent levee along the St. John and Fish Rivers
- Jeffrey M. Taylor of Vegetation Control Service, Inc., in Athol, Mass., to treat invasive plants within 25 feet of water at two sites in the town of Cumberland, Maine, while adhering to certain precautions; to treat invasive plants along public roadside rights-of-way in Falmouth; and to add the herbicide Milestone to the treatment
- Maine Coast Heritage Trust in Topsham to treat Phragmites on the trust's preserve on Owls Head Harbor so that the site reverts to native species
- Rosemary Roy, North Yarmouth town manager, to treat Japanese knotweed in Old Town House Park so that the site reverts to native species

Correspondence

Carol Laboissonniere, a NOFA-certified Organic Land Care Professional, Maine Master Gardener and owner of CL Design and Landscape, which works in southern Maine, expressed concern in an email about the potential for increased pesticide use with Roundup resistant grasses (which are not on the market yet). Katy Green asked if Roundup Ready turf grass would come before the board if it did come on the market. Hicks said it would not because it does not produce a pesticidal compound.

Karen A D'Andrea, executive director of Physicians for Social Responsibility (PSR) Maine Chapter, wrote to the BPC to endorse MOFGA's work to reduce pesticide reliance and use in Maine. The letter cited several studies connecting pesticide use with certain diseases. It noted that over two dozen Maine municipalities ban or restrict pesticide uses.

In response to an email from Cynthia Ladderbush asking how Maine can be made more organic, BPC member Carol Eckert noted that the state Legislature, not the BPC, decides how farming is done in Maine.

The BPC received an informational email from Nancy Oden about the effects of neonicotinoid insecticides on bees and one from Jody Spear about an article entitled “‘Femme fatale’ emerald ash borer decoy lures, kills males” from Penn State University. Male emerald ash borers that land on the decoys in an attempt to mate are killed by high-voltage current (<http://news.psu.edu/story/326413/2014/09/15/research/femme-fatale-emerald-ash-borer-decoy-lures-kills-males>). Spear also sent an article from the Bangor Daily News entitled “Vineyard, orchard rising from old County potato farm” about using ionized water to manage fungal pests of grapes (and possibly for late blight on potatoes; <http://bangordailynews.com/2016/08/08/news/aroostook/vineyard-orchard-rising-from-oldcounty-potato-farm/>).

Enforcement Actions

Applicator/Company	Violation	Penalty
Jacob Boyington, Appleton Ridge Construction, Appleton	Lab-confirmed drift of malathion to residential property during application to a Palermo blueberry field	\$500
Priority Real Estate Group, LLC, Topsham	Unlicensed and unauthorized application of Roundup Weed and Grass Killer herbicide to curbs and sidewalks of Providence Merrymeeting and Achieve Program School, Brunswick, while school was in session. (Neither the company nor the applicator was licensed, and the applicator did not know Roundup was a pesticide.)	\$500
Joseph Lemar, Dresden	Unlicensed application of Roundup Herbicide to a blueberry field	\$300
Moark, Turner	Application rate of Golden Malrin fly bait exceeded the maximum label rate, and the applicator did not wear the correct personal protective equipment	\$650

	required by the pesticide label.	
Kendall Cooper, Buckfield	Purchase of Lumax EZ Herbicide by unlicensed applicator; dealer did not ask to see a license for purchase of the restricted use pesticide.	\$200
Orkin Exterminating Company Inc., Portland	An Orkin applicator applied Bifenthrin and a botanical pyrethroid insecticide to the exterior of the wrong residence.	\$1,000
Sports Fields Inc., Monmouth	Did not provide IPM coordinators at more than one school with required records of applications	\$350
Black Bear Lawn Care, Orono	Company with no licensed applicators made spot treatments of Roundup Weed and Grass Killer herbicide at Walgreens stores	\$500
Maine Seed Co., Wales	Two sales of a total of 50 2.5-gallon jugs of Lumax EZ Herbicide (atrazine) to a grower with an expired license	\$500
Alfred Fugazzi of Stone Wall Farms	Use of a pesticide (Lannate) in a careless, negligent or faulty manner; in a manner inconsistent with its label; and failing to keep records of the application. Two dogs died in Lincoln, Maine, after ingesting bread treated with the pesticide. The bread was used as bait to kill crows.	The board reviewed a case investigation summary of this event and asked the staff to pursue a consent agreement, which had not been finalized when we went to press.
Granite Bay Care, Inc., Portland	An unlicensed in-house maintenance employee purchased and applied Bed Bug Bully (unregistered in Maine; active ingredients: soybean oil and cinnamon) inside a	\$250

	Granite Bay Care residential facility in Raymond, in an area open to the public. Staff at the Raymond facility also used Raid Roach Traps and Raid Spray.	
Plants Unlimited, Inc., Rockport	Private applicator failed to maintain sufficient application records, to provide Worker Protection Standard training for agricultural workers, to post pesticide application information at a central location, and used a pesticide in a manner inconsistent with its label directions. Bayer Advanced All-In-One Rose & Flower Care (active ingredients tebuconazole and imidacloprid), labeled for outdoor residential use only, was applied inside a commercial greenhouse on three dates.	\$500
TruGreen Lawncare, Westbrook	Commercial applicator failed to notify an individual listed on the Maine Pesticide Notification Registry before conducting an outdoor, non-agricultural pesticide application of TruPower 3 Selective Herbicide and Barricade R4L herbicide within 250 feet of the property boundary of the listed residence in Cape Elizabeth. This was TruGreen's third such violation in four years.	\$2,750, and the company shall submit a written policy to the board containing procedures to ensure that persons on the Pesticide Notification Registry are given proper notice.
Jasper Wyman & Son, Milbridge	Alleged unauthorized herbicide application to blueberry land in Charlotte	\$500

	<p>owned by the Damon family that Greg Bridges, owner of Cole G. Bridges Wild Blueberries LLC, subleased from Wyman & Son. (Wyman & Son neither admitted the alleged violation nor commented further because of ongoing litigation.)</p>	
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The Good News

The European Parliamentary Research Service has reviewed scientific evidence regarding **the impact of organic food on human health** and the potential contribution of organic management to developing healthy food systems. The few existing studies suggest that organic food may reduce the risk of allergic disease and obesity, may be better for early development, and may contain more potentially beneficial nutrients.

Consumers of organic food tend to have healthier dietary patterns overall, notes the report. The Soil Association says these patterns are associated with reduced risk of type 2 diabetes and cardiovascular diseases, and reduced greenhouse gas emissions.

Animal experiments, says the report, suggest that identically composed feed from organic or conventional production impacts early development and physiology differently, but the significance of these findings for human health is unclear.

Epidemiological studies point to negative effects of certain insecticides on children's cognitive development at current levels of exposure. Such risks can be minimized with organic food, especially during pregnancy and in infancy, and by protecting plants without using pesticides, according to the report.

Few compositional differences have been identified between organic and conventional crops. Perhaps most importantly, according to the Research Service, organic crops appear to contain less cadmium than conventional due to differences in fertilizer use and soil organic matter, an issue highly relevant to human health. Organic milk, and probably meat, has more omega-3 fatty acids than conventional.

The prevalent use of antibiotics in conventional animal production is a key driver of antibiotic resistance. Preventing animal disease and

restricting use of antibiotics, as practiced in organic production, could minimize this risk, with potentially considerable benefits for public health. (Original study: “Human health implications of organic food and organic agriculture,” European Parliamentary Research Service, 12/2016; [http://www.europarl.europa.eu/RegData/etudes/STUD/2016/581922/EPRS_STU\(2016\)581922_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2016/581922/EPRS_STU(2016)581922_EN.pdf); “Organic farmers, consumers and businesses receive best Christmas gift ever,” The Soil Association, Ecologist, Dec. 23, 2016; http://www.theecologist.org/News/news_round_up/2988474/organic_farmers_consumers_and_businesses_receive_best_christmas_gift_ever.html; “New Study Reveals Organic Food Is Worth It!” Soil Association, Jan. 6, 2017; <https://www.soilassociation.org/news/2017/new-study-reveals-organic-food-is-worth-it/>)

Antonio DiTommaso and his coworkers at Cornell University have shown through modeling that **letting some milkweed plants grow in cornfields can minimize yield losses from the European corn borer (ECB)** because aphids on the milkweed secrete honeydew, which feeds the Trichogramma wasps that parasitize corn borer eggs. Especially at high ECB population densities (more than one egg mass per leaf), maintaining low milkweed densities (less than one stem per square meter) helps minimize yield losses from ECB, say the researchers. Smaller infestations can be addressed with fewer milkweed stems. As an additional benefit, having a few milkweed plants in a corn field provides a breeding place and food source for monarch butterflies. (“Integrating Insect, Resistance, and Floral Resource Management in Weed Control Decision-Making,” by A. DiTommaso et al., Weed Science, Oct.-Dec. 2016; <http://www.wssa-journals.org/pinnacle.allenpress.com/doi/abs/10.1614/WSS-D-16-00052.1?code=wssa-site>)

A study published in Landscape Ecology shows that **organic farming leads to greater yields and pest control by supporting natural predators**. Furthermore, researchers demonstrated that these benefits are maintained regardless of the surrounding landscape. Researchers sampled pests, such as aphids, and their predators, such as spiders, in conventional barley fields, in barley fields that had been organic for less than five years and in barley fields that had been organic for 14 to 20 years in Sweden. They also categorized differences in the complexity of the surrounding landscape. They found pest infestation was affected by the diversity of habitats and land use surrounding the farms (some pests increased with complexity while others decreased). However, pest control from beneficial insects was consistently greater on organic farms regardless of the surrounding landscape, due to higher predation rates. (“Organic farming increases biological control of pests and yields in barley,” The Organic Center, Oct. 14, 2016;

<https://www.organic-center.org/hot-science/organic-farming-increases-biological-control-of-pests-and-yields-in-barley/> ; “Organic farming affects the biological control of hemipteran pests and yields in spring barley independent of landscape complexity,” by K. Birkhofer et al., Landscape Ecology, March 2016; <http://link.springer.com/article/10.1007/s10980-015-0263-8>)

The Maine Department of Agriculture, Conservation and Forestry hired a **new state apiarist** last fall. Jennifer Lund has a master’s degree in entomology and over 15 years of entomological experience. She started managing her own hives eight years ago and was the primary hive manager for the Stationary Hive Project at the University of Maine. Lund will take over the honeybee inspection program and help Maine beekeepers protect their hives. The Apiary program (<http://www.maine.gov/dacf/php/apiary/>) helps prevent the introduction and spread of regulated honey bee diseases, parasites and undesirable genetic material in resident and migratory honey bee colonies. It also helps facilitate the movement of honey bees for crop pollination and honey production.

Two national nonprofit advocacy groups, Beyond Pesticides and Organic Consumers Association (OCA), have launched a **Map of Local Pesticide Reform Policies**, a resource for communities and activists that documents pesticide policies adopted by local communities to protect people, pollinators and the environment. The map spotlights over 115 communities in 21 states that have taken local action to protect their communities from the adverse effects of pesticides by substituting a range of alternative tactics, from eliminating highly toxic chemicals to adopting organic practices.

The Map of Local Pesticide Reform Policies provides public and local leaders with the names and locations of the localities that have passed policies, the type of policy passed, a short description of the scope of the policy and a link to the entire text. Policy types covered do not include those relating to the use of pesticides for mosquito control, in schools or in agriculture; they will be addressed in updates to the project.

The current edition of the map includes 18 communities with pesticide-free parks programs, 29 with restrictions to protect pollinators, 66 with policies that restrict pesticide use on all publicly owned property, and 24 that extend restrictions to private land. (Only seven states do not preempt local jurisdictions from restricting pesticide use on private land). (“Beyond Pesticides, Organic Consumers Launch Pesticide Policy Reform Mapping Tool,” Organic Consumers Association, Dec. 6, 2016; <https://www.organicconsumers.org/press/beyond-pesticides-organic-consumers-launch-pesticide-policy-reform-mapping-tool>)

The Maine Department of Agriculture, Conservation and Forestry is accepting applications until April 1 to grow **industrial hemp** for the 2017 growing season. Applications, fees (\$100 for application; \$500 for a license; plus \$50/acre) and information about submitting proof of a certified seed source (which is limited in availability) are posted at <http://www.maine.gov/dacf/php/hemp/index.shtml>. Despite the recent referendum that legalized recreational marijuana, the licensing and THC testing requirements for growing industrial hemp remain unchanged, notes the department. FMI: Gary Fish, 207-287-7545, gary.fish@maine.gov or <https://content.govdelivery.com/accounts/MEDACF/bulletins/17cea2a>.

Food Safety

An article published in the Journal of Food Protection examined **foodborne disease outbreaks** associated with organic foods and reported to the Centers for Disease Control and Prevention. The Organic Center has criticized both the research and coverage of the article in the mainstream media.

The research did not compare the few instances of pathogens in organic products with the numerous outbreaks from conventional products. The study found 18 outbreaks associated with organic between 1973 and 2014 – less than one every three years. The researchers confirmed USDA organic certification for only 11 of the 18 outbreaks, and at least three of the outbreaks were from non-certified operations. Had the study included data on the total number of outbreaks reported from conventional products, the conclusion likely would have been that outbreaks occur much less frequently with organic products than with their conventional counterparts, said The Organic Center.

The article did not note the many safety regulations imposed by the USDA National Organic Program on organic growers on top of federal standards, nor did it note the reduced risk of exposure to pesticides and to antibiotic-resistant bacteria associated with choosing organic. For example, each certified organic farm must have an Organic System Plan that describes all aspects of the farm, including measures taken to prevent pathogenic contamination of crops and water. Certified organic producers and processors must keep extensive records so that they can trace their products from the field to point of sale. Organic production allows antimicrobial steps such as pasteurization, equipment sanitation and steam sterilization to lower pathogen contamination. The National List of Allowed and Prohibited Substances for organic production also allows use of critical cleaners and sanitizers such as phosphoric acid, chlorine, hydrogen peroxide and peracetic acid.

Also, manure use is regulated more strictly on organic than on conventional farms. No raw manure is used in organic systems without a waiting period between application and harvest of 90 days for crops that do not contact the soil and 120 days for those that do. The use of sewage sludge is prohibited in organic farming but is allowed in conventional.

The diversified cropping systems, hedgerows and vegetative buffers used on many organic farms improve microbial balance and water filtration. That microbial balance provides good nutrition to crops and keeps pathogens and other microbes in check.

Organic regulations do not allow confined cattle feeding operations, considered one of the primary sources of pathogenic *E. coli* O157. Organic standards also do not allow routine use of antibiotics, which can lead to antibiotic-resistant strains of pathogenic *E. coli* and other foodborne pathogens. The Centers for Disease Control reports that over 2 million illnesses and 23,000 deaths are caused by antibiotic-resistant bacteria every year.

Toxic synthetic pesticides are prohibited in organic farming, and avoiding dietary pesticide residues reduces health risks. Multiple studies have shown that choosing organic products can significantly decrease exposure to pesticides.

The Organic Center said, “While the organic community encourages improved research into reducing human health risks associated with diet, this study does not add to our knowledge about improving food safety, and there are many other important aspects of organic that support the health of our community.” (CDC Study Misses the Mark,” The Organic Center, Nov. 4, 2016;

<https://www.organic-center.org/news/cdc-study-misses-the-mark/>;

“Foodborne Disease Outbreaks Associated with Organic Foods in the United States,” by Harvey et al., *J. Food Protection*, Nov. 2016;

<http://www.ingentaconnect.com/content/iafp/jfp/2016/00000079/00000011/art00018>)

Measuring Sustainability

The Barilla Foundation, in collaboration with The Economist Intelligence Unit, has published a **Food Sustainability Index** measuring the sustainability of the food system. The foundation focused on 58 criteria related to nutrition, agriculture and food waste in 25 countries representing two-thirds of the world’s population and 87 percent of the world gross domestic product. “Sustainability” referred to the ability of the food system to be maintained without depleting and exhausting its natural resources or compromising its health and integrity.

France led the index, in part due to its innovative policies to fight food waste and to the balanced diets of its population. Japan and Canada were second and third due to policies regarding sustainable agriculture and the widespread adoption of healthy, balanced diets. Italy, in sixth position, had the lowest greenhouse gas emissions from agriculture in Europe. Its principle challenges relate to over-nutrition, especially childhood obesity. The United Arab Emirates, Saudi Arabia and the United States (which ranked eleventh) had the highest levels of obesity and food waste per person. In the United States, 67.3 percent of the population is obese or overweight.

Regarding sustainable agriculture, Germany ranked first, with excellent management of water resources and relatively low use of pesticides and fertilizers.

According to the World Wildlife Fund, one-third of all food produced is wasted – either going bad in storage, being lost or becoming inedible during distribution, or being thrown away by retail food stores, restaurants and kitchens. This represents about four times the quantity of food needed to feed the 800 million people around the world who do not have enough to eat. (“The BCFN reveals the results of the Food Sustainability Index (FSI),” Barilla Center for Food & Nutrition, Dec. 1, 2016;

<https://www.barillacfn.com/en/media/the-bcfn-reveals-the-results-of-the-food-sustainability-index-fsi/> ; “Fixing Food – Towards a More Sustainable Food System,” Barilla Center for Food and Nutrition, The Economist Intelligence Unit, <https://www.barillacfn.com/en/publications/fixing-food-towards-a-more-sustainable-food-system/>;
<https://www.barillacfn.com/m/publications/bcfn-fixingfood.pdf>)

Soils

University of New Hampshire scientists have uncovered evidence that **microbial pathways – not plants – are the chief originator of the organic matter found in stable soil carbon pools.** The scientists suggest that soil organic matter (SOM) accumulates from inputs of dead microbial cells and microbial byproducts formed when microbes eat plant roots and residues, rather than from plants themselves, as previously thought. The new insight provides promise for designing agricultural systems that promote microbial communities to optimize SOM formation.

The research was conducted by Cynthia Kallenbach, former UNH graduate student now at Colorado State University; her advisor, Stuart

Grandy, associate professor of natural resources at UNH; and Serita Frey, professor of natural resources at UNH.

Previously scientists thought the best way to build SOM was to slow or inhibit decomposition using plants that soil microbes find difficult to decompose. The undecomposed plant parts supposedly would gradually become SOM, especially if the soil microbial community was inactive. However, this pool of SOM, decomposing plant parts, doesn't last long and can quickly disappear as carbon dioxide, sometimes within a year. This left the question of how to form pools of SOM that persist for decades to help sustain healthy, productive soils.

In the lab, the scientists demonstrated the accumulation of significant amounts of chemically complex, persistent SOM from microbial materials in the absence of any plant inputs. Microbes fed nothing but table sugar unexpectedly produced SOM that was almost identical to natural, field-derived soil organic matter. Further, SOM accumulation is greatest when more – not less – active microbial biomass is formed. This is especially true when that biomass is produced more efficiently, meaning more of the substrate is converted to biomass than to carbon dioxide.

Kallenbach, says Grandy, showed that the amount of OM formed depends heavily on the characteristics and physiology of the microbial community and that the characteristics of the microbial community are even more important for SOM formation than is soil type. (“UNH Research Finds Microbial Traits, Not Plants, Determine Abundance of Soil Organic Matter,” University of New Hampshire press release, Dec. 5, 2016; <https://www.unh.edu/unhtoday/news/release/2016/12/05/unh-research-finds-microbial-traits-not-plants-determine-abundance-soil>; “Direct evidence for microbial-derived soil organic matter formation and its ecophysiological controls,” by Cynthia Kallenbach et al., Nature Communications, Nov. 28, 2016; <http://www.nature.com/articles/ncomms13630>)

Climate

A study that simulated the effects of **extreme weather** from the Dust Bowl era found that **destruction of today's corn, soy and wheat crops would be similar to that of the 1930s**, despite increased irrigation and movement of corn to less drought-stricken places. In the study, corn and soy yields declined by about 40 percent and wheat by about 30 percent. Also, increased temperatures could cause worse crop losses by the mid-21st century, even with normal precipitation. Technological advances have optimized yields in normal years but have not added resilience to extreme weather events, say the researchers. (“Tech wouldn't save US

crops from another Dust Bowl,” by Robert Mitchum, *Futurity*, Jan. 3, 2017; <http://www.futurity.org/dust-bowl-crops-climate-1328842-2/>; “Simulating US agriculture in a modern Dust Bowl drought,” by Michael Glotter and Joshua Elliott, *Nature Plants*, Dec. 12, 2016; <http://www.nature.com/articles/nplants2016193>)

Organic

In an article for *New Scientist*, Michael Le Page says not to eat organic if you care about the planet. However, Tom MacMillan of the Soil Association counters Le Page’s claim and cites evidence that **organic farming is generally the better choice for the planet.**

Models show that simply producing food more efficiently will not cut greenhouse gas (GHG) emissions sufficiently nor fast enough but that eating a different mix of foods, particularly less but better meat, can, says MacMillan. The organic label ensures consumption of better meat, fed mainly on grass and not on crops from deforested land.

Even with optimistic yield assumptions, agriculture and land use will take about three-quarters of the total emissions budget and produce about 50 percent more GHGs in 2050 than in 2009. Whatever happens with yields, says MacMillan, the picture starts to look plausible only if we change what we eat and how much food we waste. Changing both could get emissions below 2009 levels, even with current yield trends.

Eating a lot less meat than people average in the United States and Europe, and eating meat from animals fed largely on grass and other forage, would be a big help, says MacMillan, since growing crops for animal feed is the main driver of tropical deforestation.

Genetically engineered crops, about which Le Page is excited, are grown largely as feed crops, so are implicated in the problem and appear to have had little if any productivity advantage over non-GE crops, MacMillan continues.

Le Page wrongly suggests, says MacMillan, that organic food has a higher GHG footprint because of lower yields. Rather, organic farming produces lower GHGs per hectare even without accounting for its greater carbon sequestration.

Meanwhile, the yield gap is closing, and organic can yield better than non-organic in stressed conditions and in developing countries. And organic certification assures the highest standards of animal welfare, says MacMillan. Organic farming does not have all the answers, he concludes, and more can be done to reduce emissions and reduce our impact on the

environment, but organic can help. (“‘New Scientist’ Attack On Organic Is Unscientific,” by Tom MacMillan, Soil Association, Dec. 2, 2016; <https://www.soilassociation.org/blogs/2016/december/new-scientist-attack-on-organic-is-unscientific/>)

In November 2016, the **National Organic Standards Board (NOSB)** voted 10-3, with one abstention, to remove carrageenan from the list of substances approved for use in food items labeled “USDA Organic.” Carrageenan is commonly used to thicken and stabilize numerous foods. Concern exists about its potential link to inflammation and colon cancer.

The NOSB, a citizen advisory group, considers and makes recommendations about organic certification rules to USDA, which will make the final decision about carrageenan use in organic products.

Regarding whether to continue allowing certification of crops raised with bioponics (hydroponics and aquaponics), the NOSB sent the controversy back to a subcommittee for more discussion.

The NOSB rejected petitions to approve use of 1-Methylcyclopropene (1-MCP) to delay aging and ripening of apples post harvest and use of soy wax plugs and sealant in organic mushroom production.

Also in November 2016, the NOSB voted unanimously to update U.S. organic standards to exclude ingredients derived from next generation genetic engineering and gene editing, including synthetic biology. Synthetic biology includes using synthetic DNA to re-engineer organisms to produce substances they would not normally produce or to edit DNA in order to silence expression of certain traits. Synthetic biology ingredients are entering food and consumer products, many of which are marketed as “natural.”

In other action in November, then-Secretary of Agriculture Tom Vilsack appointed five new NOSB members whose five-year terms began on January 24, 2017: Asa Bradman, a California environmental health scientist; Steve Ela, an organic farmer in Colorado; Sue Baird, an organic consultant in Missouri; David Mortensen, a plant ecology and weed management professor at Penn State; and Joelle Mosso, a product line manager for Olam International in Fresno, California. They replaced Carmela Beck, organic program manager for Driscoll Strawberry Associates in Watsonville, California; Tracy Favre, sustainable land management consultant from Texas; Jean Richardson, retired University of Vermont professor of environmental studies and environmental law; Harold Austin of Zirkle Fruit Company in Selah, Washington; and Zea Sonnabend, a California organic farmer and farm inspector. (“Organic

standards will exclude next generation of GMOs,” by Kate Colwell, Friends of the Earth, Nov. 21, 2016; <http://www.foe.org/news/news-releases/2016-11-organic-standards-will-exclude-next-generation-of-gmos>; “Board nixes use of carrageenan in organic food production,” by Cathy Siegner, Food Safety News, Nov. 18, 2016; <http://www.foodsafetynews.com/2016/11/board-nixes-use-of-carrageenan-in-organic-food-production/#.WDIEgpErJo4>; National Organic Standards Board transcript and voting summary, November 3, 2016; <https://www.ams.usda.gov/event/nosb-fall-2016-meeting-st-louis-mo>)

The Organic Trade Association (OTA) has announced a new partnership with USDA for farmers transitioning to certified organic agricultural production. Using standards developed by OTA, the **National Certified Transitional Program** will provide oversight to approved accredited organic certifying agents offering transitional certification to producers. The OTA says this will help ease the transition process to organic, will allow farmers to sell their products as certified transitional at a premium price and will help encourage more organic production. The program will not provide standards or criteria for labeling products certified under the program. It is intended to help meet the growing demand that far exceeds the domestic supply of organic ingredients. Farmers will need to prove their land has been free of prohibited substances (synthetic pesticides and fertilizers) for a minimum of 12 months and must follow all other organic production standards to achieve transitional certification. Once eligible for organic certification, land can enter into the transitional certification program only one more time. The USDA also announced in December 2016 that it would expand the reach of the National Organic Certification Cost Share Program to include transitional certification fees. MOFGA Certification Services LLC is watching the development of this transition program carefully. (“USDA approves new transitional certification program to foster organic growth,” by Maggie McNeil, Organic Trade Assoc., Jan. 11, 2017; <http://ota.com/news/press-releases/19470>)

In early January the White House signed off on **final rules on treatment of animals** whose meat will be sold as “certified organic.” The USDA Agricultural Marketing Service (AMS) said the rule strengthens the integrity of the organic label by clarifying production requirements for organic livestock and poultry. Major provisions of the rule include clarifying how producers and handlers must treat livestock and poultry to ensure their health and well-being throughout life, including transport and slaughter; specifying which physical alterations are allowed and prohibited in organic livestock and poultry production; and establishing minimum indoor and outdoor space requirements for poultry. The final

rule was published in the Jan. 19, 2017, Federal Register, and can be viewed via <https://www.ams.usda.gov/rules-regulations/organic-livestock-and-poultry-practices>. The rules will be phased in over one to five years. MOFGA and MOFGA Certification Services LLC will be alerting our community to these changes.

Genetic Engineering

Note: Organic production does not allow the use of genetically engineered (GE or GMO – genetically modified organism) inputs.

A analysis by The New York Times of United Nations data indicates that **GE in the United States and Canada has not accelerated increases in crop yields nor reduced overall use of synthetic chemical pesticides** when measured against Western Europe, which generally rejected GE crops over the past 20 years. However, herbicide use has increased 21 percent in the United States in that time, and the United States lags France in reducing overall use of herbicides and insecticides. While insecticide and fungicide use has decreased by one-third in the United States, it has fallen by 65 percent in France, where herbicide use has decreased by 36 percent. Similarly, a recent National Academy of Sciences report found little evidence that GE crops in the United States had led to yield gains greater than those in conventional crops. (“Doubts About the Promised Bounty of Genetically Modified Crops,” by Danny Hakim, The New York Times, Oct. 29, 2016; http://www.nytimes.com/2016/10/30/business/gmo-promise-falls-short.html?_r=0)

The USDA has approved commercial planting of J.R. Simplot Co.’s Ranger Russet and Atlantic varieties of Innate **GE potatoes**, which resist late blight and have reduced bruising and black spots. The potatoes were to be reviewed by the FDA and EPA next.

A GE Russet Burbank was previously approved, and Simplot’s GE White Russet has been on the market for over a year. (“U.S. Department of Agriculture approves two types of genetically engineered potatoes,” by Keith Ridler, The Register-Guard, Nov. 1, 2016; <http://registerguard.com/rg/news/local/34942740-75/u.s.-department-of-agriculture-approves-two-types-of-genetically-engineered-potatoes.csp>)

In December 2016 judges on the U.S. Court of Appeals for the Ninth Circuit ruled that state law regulating potentially harmful plants supersedes a Maui County, **Hawaii, voter-approved moratorium on cultivating, growing or testing GE crops**. While the court ruled that federal law does not prevent state or local governments from passing local laws regulating or banning commercial GE crop cultivation, it also ruled that under Hawaii state law, unlike under other states’ laws, counties and municipalities do not have the authority to regulate or ban

GE crops. The court also ruled that only the USDA, not state or local governments, can regulate field trials and experimental GE crops.

Major GE seed and chemical companies have long conducted research and development in Hawaii. The judges acknowledged concerns about cultivating and testing GE plants, including contamination of conventional and wild plants, potentially increased pesticide use, reduced biodiversity and development of resistance to pesticides. According to Mint Press, these companies spray 17 times more restricted-use pesticides per acre than is recommended for farmland in the continental United States. (“Anti-GMO law is effectively dead,” by Lee Amada, The Maui News, Nov. 20, 2016; <http://www.mauinews.com/news/local-news/2016/11/anti-gmo-law-is-effectively-dead/>; “Court Rules Feds Cannot Prevent Local Governments From Banning GMO’s,” by Whitney Webb, Mint Press News, Dec. 14, 2016; <http://www.mintpressnews.com/court-rules-local-governments-can-ban-gmo-crops-spite-federal-laws/223137/>)

Molecular profiling has shown that **Monsanto’s glyphosate-tolerant GE corn NK603** is not “substantially equivalent” to its isogenic, non-GE counterpart. “Substantial equivalence,” a vague and poorly defined term, was used to gain approval of the GE crop, but the new profiling showed that GE maize kernels had a different complement of proteins, different levels of enzymes that break down glucose, and different respiration pathways, reflecting an imbalanced energy metabolism.

“We conclude,” write the researchers, “that NK603 maize **is not compositionally equivalent to its non-GM isogenic counterpart** as previously claimed.” They also found that the GE transformation process rather than environmental factors, such as spraying a pesticide or the growing season, was the major contributor to variation in the protein and metabolite profiles.

Transgene insertion resulted in production of one new protein and altered 117 proteins and 91 metabolites. Also, the expression of one protein and 31 metabolites was significantly altered by Roundup spraying. A single, early application of Roundup appeared to change plant metabolism for the life of the plants.

The authors add that the metabolic disturbances seen in their study may help to understand the health problems suggested in a study after rats ate NK603 Roundup-tolerant GE corn for two years. (“An integrated multi-omics analysis of the NK603 Roundup-tolerant GM maize reveals metabolism disturbances caused by the transformation process,” by Robin Mesnage et al., Nature, Dec. 19, 2016; <http://www.nature.com/articles/srep37855>)

The first long-term field test of Bt corn, involving 20 years of observations, found that **the corn earworm** (the same insect as the cotton bollworm) **can now survive multiple GE Bt traits**. The researchers expect the resistance to increase. (“New Research Shows Failings of GMO Insect Resistance, Corn Crop in Jeopardy,” by Carey Gillam, The Huffington Post, Jan. 6, 2017; http://www.huffingtonpost.com/carey-gillam/new-research-shows-failin_b_14003604.html; “Field-Evolved Resistance in Corn Earworm to Cry Proteins Expressed by Transgenic Sweet Corn,” by Galen P. Dively et al., PLOS One, Dec. 30, 2016; <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0169115>)

Pesticides

Molecular profiling has shown that **Roundup causes serious liver damage** to rats fed low doses of the herbicide – far below those permitted by regulators worldwide – over two years. The peer-reviewed study published in Nature suggests that residues of glyphosate-based herbicides in food could be linked to rises in the incidence of non-alcoholic fatty liver disease (NAFLD), obesity, diabetes and metabolic syndrome. NAFLD currently affects 25 percent of the U.S. population and similar numbers of Europeans. (“Roundup residues in food cause fatty liver disease,” by Claire Robinson, The Ecologist, Jan. 9, 2017; http://www.theecologist.org/News/news_analysis/2988500/roundup_residues_in_food_cause_fatty_liver_disease.html; “Multiomics reveal non-alcoholic fatty liver disease in rats following chronic exposure to an ultra-low dose of Roundup herbicide,” by R. Mesnage et al., Scientific Reports, 1/9/2017; <http://www.nature.com/articles/srep39328>)

Glyphosate, the active ingredient in Roundup herbicide, has been found in a wide range of best-selling foods in the United States, according to Food Democracy Now! and The Detox Project. Their in-depth, well referenced report, “Glyphosate: Unsafe on Any Plate,” summarizes the first independent glyphosate residue testing of 29 favorite American food products, performed using the gold standard testing method of liquid chromatography-tandem mass spectrometry at Anresco Laboratories, an independent, accredited, FDA-registered private lab headquartered in San Francisco.

At the time of the report, glyphosate residues had been found in General Mills’ Cheerios and Honey Nut Cheerios, Kellogg’s Corn Flakes, Raisin Bran and Frosted Flakes, PepsiCo’s Doritos Cool Ranch, Ritz Crackers and Stacy’s Simply Naked Pita Chips, as well as many other products. Even two organic products tested positive for glyphosate residues, as did products labeled as not being made with genetically engineered

ingredients, indicating widespread contamination of the environment with the herbicide. Other studies have found glyphosate in urine, breast milk, rainwater, rivers, tap water and Tampons.

According to the report, new scientific evidence shows that probable harm to human health could begin at levels of glyphosate as low as 0.1 parts per billions (ppb), while popular foods tested for glyphosate in the current project measured between 289.47 and 1,125.3 ppb. Currently U.S. regulators allow a very high level of daily glyphosate residue in U.S. food. The acceptable daily intake limit is 1.75 mg/kg of bodyweight per day in the United States and at 0.3 mg/kg of bodyweight per day in the European Union. (“Glyphosate – Unsafe on any Plate,” by David Murphy and Henry Rowlands, Food Democracy Now! and The Detox Project; https://s3.amazonaws.com/media.fooddemocracynow.org/images/FDN_Glyphosate_FoodTesting_Report_p2016.pdf)

Glyphosate residues appeared in honey from Iowa that the FDA tested in 2016 – the first time FDA has tested foods for such residues. Residues were detected at up to 653 parts per billion; the EU limit is 50 ppb, but the United States has not yet set a legal tolerance level for glyphosate in honey. Jay Feldman, executive director of Beyond Pesticides, told reporter Carey Gillam, “Until U.S. regulatory agencies prohibit Monsanto and other manufacturers of glyphosate from selling pesticides that end up in the food supply, we need to protect consumers by demanding truth and transparency in labeling.” In November 2016 the FDA suspended testing for glyphosate residues in foods due to equipment problems and a lack of a standard methodology among FDA’s U.S. labs. (“More Bad News for Honey as U.S. Seeks to Get Handle on Glyphosate Residues in Food,” by Carey Gillam, The Huffington Post, Nov. 2, 2016; http://www.huffingtonpost.com/carey-gillam/more-bad-news-for-honey-a_b_12769698.html; “FDA Suspends Testing for Glyphosate Residues in Food,” by Carey Gillam, The Huffington Post, Nov. 11, 2016; http://www.huffingtonpost.com/carey-gillam/fda-suspends-glyphosate-r_b_12913458.html)

In 2015 the World Health Agency’s International Agency for Research on Cancer (IARC) reported that the herbicide **glyphosate is a probable carcinogen**. In December 2016 a 15-member panel of scientists gathered by the EPA reviewed their scientific evaluation of the cancer-causing potential of glyphosate. Conflicting and sometimes flawed data impaired their ability to reach a consensus. They had until mid-March 2017 to make an official, nonbinding report to the EPA that could affect glyphosate use.

The panel asked why EPA discounted some data showing statistically significant, positive correlations between glyphosate and cancer. The EPA

considered published studies as well as industry-conducted unpublished studies, while the IARC focused on published, peer-reviewed studies.

Peter Infante, a respected epidemiologist and expert in cancer risks associated with toxic substances, was no longer on the EPA panel when it met in December after pesticide industry group CropLife America asked the EPA to remove him from the panel. Also, in October 2016 CropLife America and Monsanto tried to eliminate U.S. funding for the IARC.

Infante said, as a member of the public at the December 2016 EPA hearing, that enough evidence exists relating glyphosate exposure to non-Hodgkin lymphoma to classify glyphosate as having limited evidence of carcinogenicity in humans.

Meanwhile, Monsanto faces several lawsuits by people claiming that Roundup caused their non-Hodgkin lymphoma. (“Future of Top Pesticide Uncertain After Grueling Cancer Review,” by David Schultz, Bloomberg, Dec. 16, 2016;

<https://www.bna.com/future-top-pesticide-n73014448761/>; “Cancer Questions, Controversy and Chorus at EPA Glyphosate Meetings,” by Carey Gillam, The Huffington Post, Dec. 16, 2016;

http://www.huffingtonpost.com/carey-gillam/cancer-questions-controver_b_13679052.html; “IARC Scientists Defend Glyphosate Cancer Link; Surprised by Industry Assault,” by Carey Gillam, The Huffington Post, Oct. 31, 2016;

http://www.huffingtonpost.com/carey-gillam/iarc-scientists-defend-gl_b_12720306.html)

To combat Asian long-horned beetles and emerald ash borers in New York City’s Central Park elms, **neonicotinoids** were applied to thousands of trees – **leading to an explosion of spider mite populations** that sickened trees. Texas A&M University agricultural entomologist Ada Szczepaniec found that treated elms hosted fewer spider mite predators, and mites that fed on treated elm leaves had 40 percent more offspring than those that fed on untreated leaves. She also found that corn, cotton and tomatoes treated with neonics supported larger populations of mites, and that the activity of hundreds of genes used to produce cell walls and hormones that defend against pests was altered (generally reduced) in neonic-treated soybeans. Neonic manufacturer Bayer CropScience, however, reported that the neonic imidacloprid reduced fertility in some spider mites. (“Widely Used Pesticides Are Causing Huge Spider Mite Outbreaks,” by Douglas Main, Newsweek, Nov. 2, 2016;

http://www.newsweek.com/2016/11/11/neonicotinoid-pesticides-alter-plant-genetics-prompt-spider-mite-outbreaks-515965.html?google_editors_picks=true)

Bumblebees exposed to 10 ppb of the neonicotinoid thiamethoxam failed to learn how to vibrate flowers well and thus collected less pollen, according to research at the University of Stirling in Scotland. The researchers said this concentration was similar to those common in crop fields, but thiamethoxam manufacturer Syngenta said that residues in pollen and nectar of thiamethoxam seed-treated oilseed rape was typically less than 3 ppb and had never reached 10 ppb in its records. (“Pesticides stop bees buzzing and releasing pollen, says study,” by Damian Carrington, The Guardian, Dec. 13, 2016; <https://www.theguardian.com/environment/2016/dec/13/pesticides-stop-bees-buzzing-releasing-pollen-neonicotinoid-study>)

In 2015 the USDA approved **genetically engineered (GE) dicamba-tolerant cotton, soy and corn** to help farmers fight weeds that had become resistant to the herbicide glyphosate, widely used with GE crops. However, the EPA had not yet approved use of new dicamba formulations for those crops. When farmers who had planted the dicamba-tolerant crops used existing formulations of highly volatile dicamba off-label, hundreds of cases of crop and landscape damage from drift were reported in southeastern and midwestern states. The issue even led to charges of murder in a shooting death of a farmer who had met a neighbor regarding damage from spray drift. (“Dicamba drift dispute cited in murder charge for Missouri man,” by Stephen Davies, Agri-Pulse Communications, Inc., Nov. 1, 2016; <http://www.agri-pulse.com/Dicamba-drift-dispute-cited-in-murder-charge-for-Missouri-man-11022016.asp>)

The EPA has found **residues from the toxic pesticide chlorpyrifos on many foods** at levels up to 14,000 percent higher than “safe” limits. Exposure to low levels of chlorpyrifos in early life can lead to increased risk of learning disabilities.

The EPA proposed to ban chlorpyrifos from use on food more than a year ago, primarily based on contamination of drinking water. Now studies have indicated that much smaller concentrations of the pesticide than previously believed – levels found on many common fruits and vegetables eaten across the United States daily – are dangerous. These residues have been found on some produce even after it was washed and peeled, and on some nuts. The EPA is under a court-ordered deadline to take final action on the proposed ban by March 31.

The Natural Resources Defense Council says that the best way to protect children is to go organic as much as possible when you’re pregnant and when feeding them. (“EPA: Toxic Pesticide on Fruits, Veggies Puts Kids at Risk,” by Miriam Rotkin-Ellman and Veena Singla, NRDC, Jan. 6, 2017;

<https://www.nrdc.org/experts/miriam-rotkin-ellman/epa-toxic-pesticide-fruitsveggies-puts-kids-risk>; “Chlorpyrifos Revised Human Health Risk Assessment (2016),” U.S. EPA, <https://www.regulations.gov/document?D=EPA-HQ-OPP-2015-0653-0454>)

Summer 2017

The Good News

In 2015-2016 a coalition of organic farming organizations, including MOFGA, instigated a survey of certified organic farmers in the United States that discovered widespread interest in and a sense of urgency to create a national organic farmer association. That organization now exists. Representing organic farmers at the national level, the **Organic Farmers Association (OFA)**, sponsored by Rodale Institute, was created to stand as the strong independent voice for U.S. certified organic farmers. The grassroots effort is led by certified organic farmers and focuses on improving American organic farmers' viability by raising their profile and policy positions at the national level.

An interim steering committee composed of a majority of certified organic farmers is leading OFA and is establishing the organizational foundation needed to ensure an authentic farmer-led voice for all U.S. organic farmers and ranchers. The committee expects OFA farm members to elect the first governing council in early 2018. While the governing council will consist of both certified organic farmers and representatives from organic farmer organizations, just as with the steering committee, only certified organic farmers get to vote. Those who are not certified organic farmers can join OFA as supporters and receive the same benefits, such as New Farm magazine, webinars and discounts to events and workshops. For more information please visit OrganicFarmersAssociation.org.

The latest global data on organic farming worldwide, according to the 2017 edition of the statistical yearbook "The World of Organic Agriculture" (published by FiBL and IFOAM – Organics International) shows that **consumer demand for organic products continues to increase**. As of the end of 2015, more than 125 million acres were cultivated organically, and the world organic market was estimated at \$81.6 billion. The U.S. organic market (the world's largest – followed by Germany, France and China) grew 11 percent in 2015. Switzerland has the highest organic per-capita spending, while Denmark has the highest organic market share (8.4 percent of the total food market). And 179 countries (up from 172) report organic farming activities.

In 2015, 2.4 million organic producers were reported. India had the highest number (585,200), followed by Ethiopia (203,602) and Mexico (200,039).

Australia had the largest organic agricultural area (56 million acres), followed by Argentina (7.7 million acres) and the United States (4.9 million acres).

Countries with the largest percentage of organic agricultural land relative to their total farmland were Liechtenstein (30.2 percent), Austria (21.3 percent) and Sweden (16.9 percent). In 11 countries, 10 percent or more of all agricultural land is organic.

The USDA, which counts certified organic operations, announced data for the end of 2016 showing 24,650 certified organic operations in the United States (13 percent more than at the end of 2016), and 37,032 around the world. (“The World of Organic Agriculture 2017,” by Helga Willer and Julia Lernoud, Research Institute of Organic Agriculture (FiBL), Feb. 9, 2017; <http://www.ifoam.bio/sites/default/files/press-release-world-2017-english.pdf>; “2016 Count of Certified Organic Operations Shows Continued Growth in U.S. Market,” USDA, April 19, 2017; <https://www.ams.usda.gov/press-release/2016-count-certified-organic-operations-shows-continued-growth-us-market>)

Local farmers (including MOFGA-certified organic North Branch Farm) and other food producers provide 15 to 20 percent of the food served at **Waldo County General Hospital** in Belfast. The hospital is trying to model good eating while also providing fresher, tastier, local foods, says Sheila Costello, the hospital’s nutrition services manager. Likewise, Pen Bay Medical Center in Rockport spends about \$75,000 – about 15 percent of its food budget – on local foods, including a commercial-sized CSA share from MOFGA-certified organic Hatchet Cove Farm in Warren. Many of these changes resulted from the national Hospital Healthy Food Initiative. (“Maine hospitals are bringing farm-to-table to patients,” by Abigail Curtis, Bangor Daily News, April 17, 2017; <http://bangordailynews.com/2017/04/17/homestead/these-maine-hospitals-are-bringing-farm-to-table-to-patients/>)

The Center for Food Safety (CFS) has launched its **Global Seed Network**, an online tool where small growers can swap diverse, rare and heirloom seeds. The new site was developed by the same company that created match.com. Users can fully access the network free and can create profiles, rate interactions with one other and search for seeds by frost tolerance, disease resistance, regional climates and more. The site also outlines state and federal seed-sharing laws, has a primer on seed saving and will be listing in-person seed and plant swaps. (“The Match.com of Seed Saving,” by Lela Nargi, Civil Eats, April 26, 2017; <http://civileats.com/2017/04/26/the-match-com-of-seed-saving/>)

According to a story in the Pacific Standard, **more than 400 seed libraries exist in the United States** – a benefit for local gardeners, for genetic diversity and for locally adapted varieties as the commercial seed industry consolidates and some seed companies limit use of their genetic material. Many of these seed libraries are hosted by public libraries, which ask that patrons who “borrow” the seed return some of their saved seed from each variety after the growing season. When some of those libraries were threatened by state officials for possibly violating statutes regarding seed dissemination, the Sustainable Economies Law Center of Oakland, California, helped local groups get laws passed in Minnesota and Nebraska exempting the libraries from seed registration laws, and in 2016 the Seed Exchange Democracy Law passed in California, providing legal status to seed libraries and exchanges. (“**Will Open-Source Plants Spur Better Agriculture?**” by Mark Shapiro, Pacific Standard, March 17, 2017; <https://psmag.com/seed-librarians-are-fighting-to-protect-the-u-s-resilient-and-diverse-food-system-7c1b6a1bd98d#.tiu84as6p>)

Organic foods were found in the kitchens of 82.3 percent of American households in 2016, according to a Nielsen study of 100,000 U.S. households. In some states, 90 percent or more of households now buy organic on a regular basis, with even the lowest levels all hovering around 70 percent. Organic food sales in the United States totaled \$39.7 billion in 2015 and account for around 5 percent of total U.S. food sales. (“New state data shows organic now in the kitchens of over 80 percent of U.S. households,” Organic Trade Assoc., March 23, 2017; <https://www.ota.com/news/press-releases/19567>)

In February regional networks and independent Community Supported Agriculture Farms (CSAs) in the United States and Canada launched a **Charter for CSAs** to unite and provide a clear definition of such farms. In the past 30 years, over 7,500 CSAs have been established in the United States, and many thousands more in Canada. CSAs that endorse the charter are publically committing to uphold the principles and practices in the charter. FMI: <http://csaday.info/csa-charter/> or Elizabeth Henderson, elizabethhenderson13@gmail.com, 585-764-8471.

The National Agricultural Statistics Service has reported **farm data for 2016**, with the following for Maine:

Number of farms	Number of farms	Number of acres	Mean farm size, acres
Total	8,200	1,450,000	177
w/\$1,000-\$9,999 in sales	5,000	480,000	96
w/\$10,000-\$99,999 in sales	2,400	400,000	167
w/\$100,000-\$249,999 in sales	340	100,000	294
w/\$250,000-\$499,999 in sales	220	110,000	500
w/\$500,000-\$999,999 in sales	110	90,000	818
w/\$1,000,000 or more in sales	130	270,000	2,077

The report defines a farm as “any place from which \$1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the year.” Government payments are included in sales. Ranches, institutional farms, experimental and research farms, and Indian Reservations are included as farms. (“Farms and Land in Farms,” National Agricultural Statistics Service, Feb. 17, 2017; <http://usda.mannlib.cornell.edu/usda/current/FarmLandIn/FarmLandIn-02-17-2017.pdf>)

Jennifer Burns Gray has been selected as director of advocacy and public relations for the Maine Association of Nonprofits, which represents more than 800 Maine nonprofit organizations. Gray has more than 20 years of public policy experience as Maine Audubon’s former staff attorney and advocate. She is a graduate of the University of Maine School of Law. In her new position Gray will strengthen the collective voice of the nonprofit sector and increase awareness of its value and impact.

New Agriculture Secretary

New U.S. Secretary of Agriculture Sonny Perdue responded to Congress during his confirmation hearings that he wants USDA to continue promoting organic and local food, establish a USDA undersecretary for trade, and give school districts more power over decisions on students' meals, according to a review of questions and answers from 10 Senate Agriculture Committee members, obtained and reviewed by Politico.

Regarding organic, Perdue wrote in response to congressional questions, “I think our system and the demands of the future best suit an all-of-the-above approach where we support those who identify high-margin local consumer-driven markets as well as those producing the safe abundance necessary to meet the economic and humanitarian challenge of providing for the food-insecure.” [Ed. note: We have noted frequently in The MOF&G that producing local foods and “feeding the world” are not mutually exclusive. In his keynote speech at the 2014 Common Ground Country Fair, for example, André Leu of the International Federation of Organic Agricultural Movements noted that the agribusiness chain produces only 30 percent of the world’s food; “70 percent is produced by most of us here – family farmers, and particularly in the developing world by people with very small areas of land – 5 acres or less, and they live on \$400 or less per year. That’s 87 percent of the world’s farmers. In the developing world they produce 80 percent of the food in their countries. But globally we produce 70 percent. Because in the developing world we can get 100 percent increases in yield and greater, you can take 70 percent of the world’s food production and double it to 140 percent – that’s something GMOs can’t do. We do that. We feed the world.”)

Regarding schools, Perdue’s suggestion would undermine the 2010 Healthy Hunger-Free Kids Act, which requires that schools provide nutritious meals with more fruits and vegetables – something that frozen- and junk-food companies have opposed. Perdue also said, “the jury is still out on whether humans are causing climate change.” And he told Sen. Chuck Grassley (R-Iowa) that he will “insist that USDA be more aggressive in supporting advancements in biotech.” All this, while President Trump has proposed slashing USDA funding by 21 percent. (“What Perdue told Congress after his hearing,” by Jason Huffman, Politico, April 20, 2017; <http://www.politico.com/tipsheets/morning-agriculture/2017/04/what-perdue-told-congress-after-his-hearing-219881>; “Will Sonny Perdue, Trump's agriculture pick, stand up for the little guy? Don't bank on it,” by Ricardo J. Salvador, The Guardian, April 25, 2017; <https://www.theguardian.com/sustainable-business/2017/apr/25/sonny-perdue-trump-agriculture-secretary>; “Top 10 points from Perdue's written responses to Senate Ag,” by Jenny Hopkinson and Catherine Boudreau, Politico Pro, April 20, 2017; <https://www.politicopro.com> – subscription needed to access)

Organic

Organic agriculture shows many potential benefits, including greater biodiversity and improved soil and water quality per unit area, enhanced profitability and higher nutritional value, and many potential costs, including lower yields and higher consumer prices. So say University of British Columbia researchers Verena Seufert and Navin Ramankutty, who analyzed literature

on organic crop farming across 17 criteria such as yield, impact on climate change, farmer livelihood and consumer health.

The researchers argue that in countries such as Canada, with stringent pesticide regulations and diets rich in micronutrients, the health benefits of choosing organic may be marginal, but the benefits may be much greater for consumers and farmworkers in countries where pesticide use is not carefully regulated and people are micronutrient deficient. Still, the report highlights benefits of organic farming associated with farmer and farmworker health as “one of the most important advantages of organic management for farm workers.”

Previous research has shown the mean yield of an organic crop is 19 to 25 percent lower than one under conventional management, and Seufert and Ramankutty found that many environmental benefits of organic agriculture diminish once lower yields are considered, as farmers will need more land to grow the same amount of food – contributing to habitat loss and climate change.

The researchers also found the following:

- “the benefits of organic management for biodiversity of wildlife on farmland are clear, with a typical increase in organism abundance of 40 to 50% across different taxa.”
- Organic uses materials that are less harmful to the environment, so can help prevent negative impacts on native species and preserve drinking water quality.
- Soils on organic farms have higher organic carbon content, reduced erosion, greater health and fertility parameters, and more abundant soil fauna.
- The same proportion of organic as conventional farmers use reduced tillage.
- On average, N leaching per unit area in organic agriculture appears to be lower, but further research is needed, as variation in N runoff data is high. More research is also needed on the impact of organic management on phosphorus runoff.
- Most organically managed crops put out lower N₂O and total greenhouse gas emissions per unit area.
- Organic is more energy efficient (primarily because of the ban on synthetic fertilizers) and improves soil carbon sequestration – although more research is needed on the climate impacts of carbon sequestration, and lower yields in organic can reduce these benefits when analyses are conducted on a per-yield-output basis.
- Organic management results in soils better able to absorb and hold water, so organic farming may lead to higher yields and water use efficiency under drought and excessive rainfall conditions and to lower water limitation of organic yields.
- Organic farming is more profitable than conventional because organic products receive a higher price premium, and production costs are similar between organic and conventional. Organic also uses techniques that can provide more stable yields.
- On average, studies examining organic crops show they have higher levels of secondary metabolites, vitamins and mineral nutrients than their conventional counterparts – but due to the large amount of variability among studies, the authors say more research is needed in this area.
- Some organic products cost about the same as conventional, while others cost up to 60 percent more. Consumers can reduce those costs by joining organic Community

Supported Agriculture farms. As research on organic methods increases, farmers should be able to reduce production costs.

- More research is needed to improve stable, high-output yield in organic agriculture. Already, as more research details best practices, the yield gap between organic and conventional is shrinking. The authors note that many organic farms are located in marginal areas, while large-scale conventional farms are in areas with prime fertility. If the scale of organic increased to encompass some of these high-fertility areas, a dramatic increase in organic yield may result. Research focused on breeds optimized for organic farming would also help to increase organic yields; 95 percent of current crop varieties have been developed for high-input conventional management and may not be well suited for organic systems.
- nutrient availability must be considered when scaling up organic systems. Many organic farms now rely on nutrient inputs from conventional farms, so analyzing alternative nutrient sources, including biological N fixation, will be critical as conventional farms became less abundant.

The authors say that organic is one way that consumers have control over and knowledge of how their food is produced, since it is the only farming system regulated in law. They advocate for better practices for organic and conventional in order to meet the world's food needs sustainably. They recommend continued focus on incorporating environmental best practices and labor rights into organic standards, more research and extension services on organic best practices, continued development of domestic organic markets and certification, subsidies for organic farmers, coupling organic and fair trade labels, and improved access to organic for low-income consumers. They show that organic has positively impacted all of agriculture, influencing more than the approximately 1 percent of agricultural land it now covers. Many conventional farms have, in recent years, increased the use of organic practices such as conservation tillage, cover cropping or composts. They conclude that “organic agriculture offers many benefits and could be an important part of a suite of strategies to improve the sustainability and equity of our food system.” (“What the latest research actually says (and doesn't) about organic,” The Organic Center, March 14, 2017; <https://www.organic-center.org/news/what-the-latest-research-actually-says-and-doesnt-about-organic/>; “Many shades of gray – The context-dependent performance of organic agriculture,” by Verena Seufert and Navin Ramankutty, Science Advances, 3/10/2017; <http://advances.sciencemag.org/content/3/3/e1602638.full>; “Organic is only one ingredient in recipe for sustainable food future,” University of British Columbia press release, March 10, 2017 https://www.eurekalert.org/pub_releases/2017-03/uobc-oio030617.php)

“Breaking New Ground: Farmer Perspectives on Organic,” a joint report by Oregon Tilth and Oregon State University’s Center for Small Farms & Community Food Systems, identifies farmers’ motivation to transition from conventional to organic farming, the major barriers to transitioning, and the support farmers need to make transitioning easier. Key recommendations are these:

- Adopt a values-based approach to appeal to a wider audience of farmers. Farmers pursuing transition are generally motivated to do so through an alignment of their personal values with benefits they ascribe to organic production.

- Provide individualized, in-person support. The top two methods of support desired were mentoring from experienced organic farmers and one-on-one technical assistance.
- Develop more effective pest management strategies. Effective outreach and support on weed and pest management in organic systems should include long-term trials, on-farm demonstrations and help farmers engage in participatory research.
- Learn more about the relationship between yield and successful transition. When discussing barriers to organic transition, farmers and agricultural professionals commonly cite concerns involving reduced yield. However, survey respondents consistently ranked this obstacle far below many others.

The report is based on survey responses from over 600 farmers who participated in USDA's Natural Resources Conservation Service Environmental Quality Incentives Program Organic Initiative between 2010 and 2015, with a focus on transition. Given the demographics of the survey sample, the report particularly highlights opportunities and barriers for beginning and small-scale diversified growers.

The motivation to transition to organic was largely driven by farmers' values. In fact, 91 percent of respondents said they had or are transitioning simply because it aligns with their values, and 87 percent cited their belief that organic production can address concerns about the environment and enhance farm sustainability. In addition, over 60 percent cited both accessing the growing market for organics and the potential to increase their profit as reasons to transition.

Two major challenges for a majority of survey participants were weed management and the cost of organic certification. Obstacles considered minor were the learning curve associated with transitioning, recordkeeping requirements associated with certification, managing soil health, and the availability of organic inputs such as seed and fertilizer. Other proposed barriers, including reduced yields, finding buyers and markets for organic products, and accessing knowledge and expertise, were not seen as obstacles by a majority of surveyed farmers – but more obstacles were identified as major by those who were no longer pursuing organic farming.

Asked which resources would be most helpful with the transition to organic, respondents noted these top five, in order of preference: information on organic pest, disease and weed management; information on soil health management for organic farms; information on organic markets (trends, opportunities, pricing); information on effective organic crop rotations for their region; and market development for organic products. (“Breaking New Ground: Farmer Perspectives on Organic Transition,” Oregon Tilth and Oregon State University's Center for Small Farms & Community Food Systems, March 8, 2017; <https://tilth.org/resources/breakingground/> ; “Report Highlights Barriers and Opportunities for Farmers Interested in Organic,” National Sustainable Agriculture Coalition, March 16, 2017; http://sustainableagriculture.net/blog/organic-transition-report-oregon-tilth/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29)

Biochar, a charcoal created from organic materials burned at high temperatures and added as a soil amendment, has been shown to increase pH and soil fertility in areas with more-weathered,

acidic soils, such as the tropics. Its impact on productive soils may be quite different, and adding biochar to a field is an irreversible decision, so understanding its long-term impacts is essential.

A four-year study conducted at UC Davis showed an increase in corn yields in the second year after adding biochar, but through different means than observed elsewhere. The study used biochar made from walnut shells cooked at 900 C, from a California orchard. The material was added to a plot where tomatoes and corn were rotated. In the second year after adding biochar, corn yields increased 8 percent. That delay may be because biochar repels water when first in the ground and may start to interact with soil only after significant time. After year two, the yield benefits of biochar dropped, and by year four showed no difference compared with plots without biochar.

According to Deirdre Griffin, Ph.D. candidate at UC Davis and lead author of the study, “The benefits that we saw were from direct fertilization from biochar, in which case growers might be able to see the same boost in yield if they applied a little more fertilizer. We didn't see much change in the soil properties that could have more lasting effects. But those things could still be impacted in the coming years as the biochar continues to age.”

To see continued yield increases, growers may need to apply biochar regularly, which is not its intended purpose and may pose challenges for growers. Biochar can be dusty, dispersing black soot as it is applied. Growers can wet biochar to limit its dust, but without overcoming that challenge, repeatedly adding biochar to the soil may limit its appeal.

Like compost, different biochars act differently in the soil. Different sources of organic material, treated at different temperatures and added to varying soil types, can all impact observed benefits.

More information on biochar is on the UC Division of Agriculture and Natural Resources' Biochar Blog, the Solution Center for Nutrient Management, and the Biochar Database managed by associate professor Sanjai Parikh at UC Davis. (“In a new study biochar helps yields, but only in the short term,” UC Davis;

<http://asi.ucdavis.edu/blog/posts/russell-ranch/in-a-new-study-biochar-helps-yields-but-only-in-the-short-term>; “Short-lived effects of walnut shell biochar on soils and crop yields in a long-term field experiment,” by Deirdre E. Griffin et al., *Agriculture, Ecosystems & Environment*, Jan. 2, 2017; <http://www.sciencedirect.com/science/article/pii/S0167880916305394>)

Bees

In March the **rusty patched bumblebee**, an important pollinator, became the first officially **endangered** bee species in the continental United States. The name reflects the rusty reddish patch on the backs of workers and males. Over the past two decades, the previously common bee has disappeared from about 90 percent of its range in the East Coast and much of the Midwest, possibly due to disease, pesticides, habitat loss and climate change. The Xerces Society for Invertebrate Conservation petitioned for the endangered designation. The listing was approved by the U.S. Fish and Wildlife Service during President Obama's term but was delayed by the Trump administration. That delay was reversed after a Natural Resources Defense Council suit.

Now Fish and Wildlife will work on conservation plans. (“Rusty patched bumblebee first of species called endangered,” by John Flesher, The Washington Post, March 21, 2017; https://www.washingtonpost.com/national/energy-environment/rusty-patched-bumblebee-joins-endangered-species-list/2017/03/21/82848a3c-0e54-11e7-aa57-2ca1b05c41b8_story.html?utm_term=.0818ed88f7c5)

Pesticides

True or false: The federal government prohibits use of pesticides known to cause cancer. Find the answer to this and 18 other questions about pesticides in “**A Pesticides Quiz and Primer: 2017 Update**” at

<http://www.mofga.org/Programs/PublicPolicyInitiatives/PesticidesAction/PesticidesQuiz/tabid/527/Default.aspx>. Sharon Tisher, a member of MOFGA’s Public Policy Committee and former MOFGA president, created this valuable educational quiz and recently updated it with the latest information related to Roundup herbicide, chlorpyrifos, “inert” ingredients in pesticides, the South Portland pesticide ordinance and much more.

The Canadian Food Inspection Agency, in “Safeguarding with Science: Glyphosate Testing in 2015-2016,” reports that the agency found **traces of glyphosate (the active ingredient in Roundup herbicide) in 29.7 percent** of 3,188 domestic and imported food products it tested, and residue levels above the acceptable limits in 1.3 percent of the samples. Glyphosate is used to kill weeds and to dry grains and legumes before harvest.

Dr. Warren Bell, a family physician from British Columbia and founding president of the Canadian Association of Physicians for the Environment, told CBC Nova Scotia, “Glyphosate residues have been found in California wine, in menstrual pads, in German beer, in the urine of 99.6 per cent of Germans tested.” Glyphosate in the body may mimic the essential amino acid glycine and affect protein function. It may also affect antibiotic resistance and harmfully increase metal availability. (“Nearly a third of food samples in CFIA testing contain glyphosate residues,” CBC News, April 13, 2017; <http://www.cbc.ca/news/health/cfia-report-glyphosate-1.4070275>)

Researchers who tested and tracked expectant mothers in a small, preliminary study found **glyphosate levels in their bodily fluids that correlated with unfavorable birth outcomes**. Of the 69 women tested, glyphosate was detected in the urine of 63, and higher glyphosate concentrations in women correlated with significantly shorter pregnancies and lower adjusted birth weights. (“Moms Exposed to Monsanto Weed Killer Means Bad Outcomes for Babies,” by Carey Gillam, The Huffington Post, April 4, 2017; <http://www.huffingtonpost.com/entry/58e3f715e4b02ef7e0e6e172>)

Last year the USDA, EPA and FDA began preparing to **test samples of corn syrup for glyphosate and AMPA (a glyphosate metabolite) residues** on April 1, 2017, but in March 2017, a USDA spokesman said the agency would do no glyphosate residue testing this year. When the FDA did limited testing last year, it found glyphosate in many samples of U.S. honey and oatmeal. (“USDA Drops Plan to Test for Monsanto Weed Killer in Food,” by Carey Gillam, The Huffington Post, March 23, 2017;

http://www.huffingtonpost.com/entry/usda-drops-plan-to-test-for-monsanto-weed-killer-in_us_58d2db4ee4b062043ad4af84)

Monsanto reportedly is facing more than 700 individual claims filed in U.S. courts alleging that it failed to warn consumers and regulators about the risk that its Roundup herbicide can cause non-Hodgkin lymphoma. According to The New York Times, documents unsealed by a federal court in March included Monsanto emails that suggest the company had ghostwritten research published under academics' names; information that senior EPA official Jess Rowland tried to counter a U.S. Department of Health and Human Services review of Roundup's main ingredient, glyphosate; and communications from EPA staff who disagreed with the EPA's safety assessment. ("Monsanto weed killer caused cancer, Californians allege in new lawsuit," by Annie Sciaccia, The Mercury News, March 23, 2017;

<http://www.mercurynews.com/2017/03/23/monsanto-weed-killer-caused-cancer-californians-allege-in-new-lawsuit/>; "Unsealed Documents Raise Questions on Monsanto Weed Killer," by Danny Hakim, The New York Times, March 14, 2017;

https://www.nytimes.com/2017/03/14/business/monsanto-roundup-safety-lawsuit.html?_r=1; "Monsanto Cancer Suits Turn to EPA Deputy's 'Suspicious' Role," by Joel Rosenblatt, Bloomberg, Feb. 27, 2017;

<https://www.bloomberg.com/news/articles/2017-02-27/monsanto-cancer-suits-turn-to-alleged-whitewash-by-epa-official>)

French researchers who analyzed the urine of 287 pregnant women and of their children six years later found that higher levels of a **synthetic pyrethroid insecticide** in the urine of the mothers were correlated with **behavioral disorders** in the children. Pyrethroids damage nerves and are found in some head lice treatments, scabies creams, mosquito repellents, flea control products for pets and other products. The study did not show that the insecticide caused the disorders. ("Pyrethroid insecticides linked to abnormal behaviour in children, study shows," by Esther Han, The Sydney Morning Herald, March 2, 2017;

<http://www.smh.com.au/business/consumer-affairs/pyrethroid-insecticides-linked-to-abnormal-behaviour-in-children-study-shows-20170301-guoldd.html>)

Environmental Protection Agency administrator **Scott Pruitt refused in March to ban the insecticide chlorpyrifos** (trade names Lorsban, Dursban), used on some conventionally grown fruits and vegetables. The Obama administration had sought to ban chlorpyrifos due to a petition filed by the Natural Resources Defense Council and Pesticide Action Network North America and because evidence increased that prenatal exposure can pose risks to fetal brain and nervous system development. In 2001 the EPA banned most home uses of the insecticide. ("Trump EPA declines to ban pesticide that Obama had proposed outlawing," by Brady Dennis, The Washington Post, March 29, 2017;

<https://www.washingtonpost.com/news/energy-environment/wp/2017/03/29/trump-epa-declines-to-ban-pesticide-that-obama-had-proposed-outlawing/>)

The **Environmental Working Group (EWG)** analyzed USDA data to find that nearly 70 percent of samples of 48 types of conventionally grown **produce were contaminated with pesticide residues**. The USDA found a total of 178 different pesticides and pesticide breakdown products

on the thousands of produce samples it analyzed. The pesticides persisted on fruits and vegetables even when they were washed and, in some cases, peeled.

The EWG's annual Shopper's Guide to Pesticides in Produce™ lists the Dirty Dozen™ fruits and vegetables with the most pesticide residues, and the Clean Fifteen™, for which few, if any, residues were detected. It suggests that when buying organic produce is not an option, consumers use the Shopper's Guide to choose foods lower in pesticide residues.

This year the list of produce with the highest loads of pesticide residues includes, starting with the highest, strawberries, spinach, nectarines, apples, peaches, celery, grapes, pears, cherries, tomatoes, sweet bell peppers and potatoes. Each tested positive for a number of different pesticide residues and contained higher concentrations of pesticides than other produce.

More than 98 percent of samples of strawberries, spinach, peaches, nectarines, cherries and apples tested positive for residue of at least one pesticide. A single sample of strawberries showed 20 different pesticides. Spinach samples had, on average, twice as much pesticide residue by weight as any other crop.

Again this year, EWG expanded the Dirty Dozen list to highlight hot peppers, which do not meet its traditional ranking criteria but were found to be contaminated with insecticides toxic to the human nervous system. USDA tests of 739 samples of hot peppers in 2010 and 2011 found residues of three highly toxic insecticides – acephate, chlorpyrifos and oxamyl – on a portion of sampled peppers at concentrations high enough to cause concern. In 2015, California regulators tested 72 unwashed hot peppers and found that residues of these three pesticides are still occasionally detected on the crop.

The EWG's Clean Fifteen list of produce least likely to contain pesticide residues included sweet corn, avocados, pineapples, cabbage, onions, frozen sweet peas, papayas, asparagus, mangoes, eggplant, honeydew melon, kiwis, cantaloupe, cauliflower and grapefruit. Relatively few pesticides were detected on these foods, and tests found low total concentrations of pesticide residues on them.

People who eat organic produce eat fewer pesticides, the EWG says. A 2015 study by Cynthia Curl of the University of Washington found that people who report they "often or always" buy organic produce had significantly less organophosphate insecticides in their urine samples – even though they reported eating 70 percent more servings of fruits and vegetables per day than adults reporting they "rarely or never" purchase organic produce. Several long-term observational studies have indicated that organophosphate insecticides may impair children's brain development.

In 2012, the American Academy of Pediatrics issued an important report that said children have "unique susceptibilities to [pesticide residues'] potential toxicity." The pediatricians' organization cited research that linked pesticide exposures in early life to "pediatric cancers, decreased cognitive function, and behavioral problems." It advised its members to urge parents to consult "reliable resources that provide information on the relative pesticide content of various fruits and vegetables." A key resource it cited was EWG's Shopper's Guide to Pesticides in Produce.

The EWG says that its Shopper's Guide is not built on a complex assessment of pesticide risks but instead reflects the overall pesticide loads of common fruits and vegetables. This approach best captures the uncertainties about the risks and consequences of pesticide exposure. Since researchers are constantly developing new insights into how pesticides act on living organisms, no one can say that concentrations of pesticides assumed to be safe today are, in fact, harmless. (“EWG's 2017 Shopper's Guide to Pesticides in Produce™,” Environmental Working Group, March 9, 2017; <https://www.ewg.org/foodnews/summary.php>)

Fall 2017

The Good News

In May, Friends of the Earth (FOE) and its allies (including MOFGA) announced that **Walmart and True Value have decided to eliminate neonicotinoid insecticides**, a leading driver of global bee declines, from company garden retail supply chains. This follows an ongoing campaign by Friends of the Earth and allies urging garden retailers to stop selling plants treated with neonicotinoids and to remove products containing them from store shelves.

In an email to FOE, Walmart confirmed that its growers have eliminated neonics from approximately 80 percent of its garden plants. Walmart has also eliminated neonicotinoids in almost all its off-the-shelf gardening products. True Value announced that it will phase out products that contain neonicotinoids by spring 2018 and that the company is working with its growing partners to remove neonics from its plants. More than 110 U.S. retailers, including Home Depot and Lowe's, have committed to eliminate neonicotinoids. As of May, says FOE, Ace Hardware was the only leading garden retailer that had not done so. (“Walmart and True Value to phase out bee-killing pesticides while Ace Hardware lags behind,” Friends of the Earth, May 3, 2017;

<http://www.foe.org/news/news-releases/2017-05-walmart-and-true-value-to-phase-out-bee-killing-pest>)

A study by the Union of Concerned Scientists (UCS) found that modified **three- and four-crop farming systems could be scaled up and adopted widely in Corn Belt states, generating benefits to farmers and taxpayers worth hundreds of millions of dollars.**

The analysis, “Rotating Crops, Turning Profits: How Diversified Farming Systems Can Help Farmers While Protecting Soil and Preventing Pollution,” builds on the long-term Marsden Farm study at Iowa State University, which demonstrated that adding combinations of alfalfa, cover crops and small grains such as oats to a typical corn-soy rotation can increase farmers’ yields and maintain profits while reducing herbicide and fertilizer use. The UCS analysis shows that pairing these longer rotations with soil-conserving no-till practices and scaling the system up strategically would have dramatic results.

For example, adopting the no-till three- or four-year rotation system, compared with tilled corn-soy, in the 25 Iowa counties with the most erodible soils would slash erosion by as much as 91 percent. For those counties, the diversified rotation would also keep fertilizers out of lakes and

streams. Iowa taxpayers would see water pollution cleanup savings of nearly \$200 million annually and net reductions in heat-trapping gases valued at up to \$78 million annually.

Over time, and with the expansion of markets for small grains in the rotation, the system could be scaled up to nearly 40 percent of Iowa's current farmland without driving farmers back to predominantly corn-soy. The results can be generalized across the 12-state Corn Belt.

The longer rotation system would benefit farmers, who are increasingly squeezed by today's dominant Midwest corn-and-soy system. U.S. growers of these crops achieved record-high harvests in 2016, but the prices farmers receive for these crops have plummeted; U.S. farm incomes for 2017 are expected to drop to their lowest levels since 2002. Diversifying production would leave farmers less vulnerable to such price shifts, and expanding markets for additional crops would create new business opportunities. In addition, the system improves farmers' soils, ensuring they can keep farming.

The diverse rotation system keeps soil covered and undisturbed year-round, minimizing soil erosion and reducing the need for fertilizers and herbicides, which keeps pollutants out of lakes and streams. Every year, nitrogen use in U.S. agriculture causes \$157 billion in environmental damage – more than double the value of the entire 2011 U.S. corn harvest – and taxpayers, fishing and recreation industries, and under-resourced water utilities pay the tab.

The UCS report says federal farm policies can help farmers reap the benefits of diversified cropping system by funding additional research, education and technical assistance. Other policy changes that would expand adoption include strengthening up-front financial support for farmers to shift to diverse rotations – through the Conservation Stewardship Program, the Environmental Quality Incentive Program, and additional funding for USDA Farm Service Agency loans – and boosting federal crop insurance coverage for diversified farms, not just traditional commodity-driven monocultures. ([“New Study Shows Diversified Crop Rotation System Could Be Adopted Widely Across Corn Belt And Increase Corn-Soy Yields While Slashing Soil Erosion and Water Pollution,” Union of Concerned Scientists, May 9, 2017; <http://www.ucsusa.org/press/2017/new-study-shows-diversified-crop-rotation-system-could-be-adopted-widely-across-corn-belt#.WRS9B1orK1v>](#))

The report **“Back to Grass: The Market Potential for U.S. Grassfed Beef”** – a collaboration of Bonterra Partners and SLM Partners with Stone Barns Center for Food and Agriculture – says grassfed systems could become large and numerous enough to compete with the U.S. grain-fed feedlot system. Feedlots have environmental issues, including methane emissions from manure pits, and soil and water pollution, while grassfed systems can build soil health, sequester carbon, provide for animal welfare and produce healthier meat. Sales of grassfed meat in the United States almost doubled annually from 2012 to 2016 but still represent less than 1 percent of the U.S. beef market – much of that imported. The report says more than enough U.S. land is available to replace grain-finished feedlot beef with grassfed by using land now growing grain for feedlot animals as well as unused grassland and conservation land. Cover crops could also provide seasonal grazing. ([“Despite Many Challenges, Grassfed Beef Could Go Mainstream,” by Lisa Held, Civil Eats, June 7, 2017; <http://civileats.com/2017/06/07/despite-many-challenges-grassfed-beef-could-go-mainstream/>](#))

Researchers with the N.H. Agricultural Experiment Station at the University of **New Hampshire** have **quadrupled the length of the state’s strawberry growing season**, which traditionally lasts only four to six weeks. In the multi-state TunnelBerries project, researchers harvested strawberries grown in low tunnels in Durham, N.H., for 19 consecutive weeks from mid-July through the week of Thanksgiving. Also, the low tunnels significantly increased the percentage of marketable fruit, from an average of about 70 to 83 percent. Graduate student Kaitlyn Orde is working with experiment station researcher Becky Sideman on the project. For more information, visit <https://www.tunnelberries.org>. (“UNH Researchers Extend N.H. Growing Season for Strawberries,” University of N.H., July 10, 2017; <https://www.unh.edu/unhtoday/news/release/2017/07/10/unh-researchers-extend-nh-growing-season-strawberries>)

According to the Organic Trade Association’s 2017 Organic Industry Survey of more than 200 companies, **sales of organic products reached \$47 billion in 2016, an increase of 8.4 percent over 2015** (compared with an increase in overall food sales of 0.6 percent). Organic sales included the following:

- \$43 billion for organic food – 5.3 percent of U.S. food sales
- \$15.6 billion for organic produce – an 8.4 percent growth rate and almost 15 percent of the produce that Americans eat
- \$3.9 billion for non-food products – primarily fiber, supplements and personal care products
- \$991 million for organic meat and poultry – more than 17 percent greater than in 2015
- \$193 million for organic spices – up 35 percent from 2015
- \$57 million for organic dips – 41 percent more than in 2015

People’s primary reason for choosing organic is to avoid products not allowed in organic production, including synthetic pesticides, says the association.

More than 60 percent of all organic businesses with more than five employees reported an increase of full-time employment during 2016 and said they planned to continue boosting their full-time work staff in 2017.

Laura Batcha, CEO and executive director of OTA, said the organic sector is facing challenges to continue its growth. “We need more organic farmers in this country to meet our growing organic demand, and the organic sector needs to have the necessary tools to grow and compete on a level playing field. That means federal, state and local programs that help support organic research, and provide the organic farmer with a fully equipped tool kit to be successful.” (“Robust organic sector stays on upward climb, posts new records in U.S. sales,” Organic Trade Assoc., May 24, 2017; <https://www.ota.com/news/press-releases/19681>)

Allagash Brewing Company has pledged to buy 1 million pounds per year by 2021 of **Maine-grown grain**. Of the 5 million pounds the company expected to use in 2017, it forecasted using about 115,000 pounds of local grain – including two-row malted barley from Maine Malt House and Blue Ox Malt House, raw (unmalted) red wheat from Maine Grains, and oats from MOFGA-certified organic Aurora Mills. The company uses all local grains to brew its Sixteen Counties

and uses partial amounts of Maine-grown grain in its Hoppy Table Beer, White, Saison, Tripel, Curieux, and Black. (“Allagash Brewing Company Pledges to Buy One Million Pounds of Maine-Grown Grain per Year, by 2021,” Allagash Brewing Co. press release, June 9, 2017)

A study from 2009 to 2014 found **higher antioxidant activity and concentrations of flavonols in organic** (per European Commission standards) than conventional Red Baro and Hyskin onions. Some studies suggest that these flavonoids and others benefit human health. The researchers suggest that conflicting results from previous research on the phytochemical content of organic and conventional crops could be due to short study periods and variables such as weather. (“Organic conditions boost flavonoids and antioxidant activity in onions,” American Chemical Society, June 14, 2017; www.sciencedaily.com/releases/2017/06/170614091816.htm)

Markets

In June **Amazon agreed to buy Whole Foods** for \$13.7 billion. Amazon said the 431 stores will continue to operate under the Whole Foods Market brand, will remain headquartered in Austin, Texas, and that John Mackey will continue as CEO. Food analyst David Portalatin told NPR that the deal will enable Amazon to sell fresh foods and to deliver them locally. (“After The Amazon Deal: What Will Shopping At Whole Foods Feel Like?” by Allison Aubrey, NPR, June 17, 2017; <http://www.npr.org/sections/thesalt/2017/06/17/533239065/after-the-amazon-deal-what-will-shopping-at-whole-foods-feel-like>)

In July, **Danone Group agreed to sell its N.H.-based Stonyfield Organic to Groupe Lactalis** for \$875 million, pending approval by federal regulators. France-based Lactalis, the world's largest dairy corporation, represents such cheese brands as President, Sorrento, Precious, rondele and Galbani. The U.S. Department of Justice forced the sale to counter a potential monopoly as Danone acquired WhiteWave Foods, which makes Horizon Organic milk and Silk soy milk. (“New Hampshire yogurt maker Stonyfield Organic sold to world's largest dairy corporation,” by Mary C. Serreze, MassLive, July 3, 2017; http://www.masslive.com/business-news/index.ssf/2017/07/new_hampshire_yogurt_maker_stonyfield_fa.html)

Food Sovereignty

In June, Maine Gov. Paul LePage signed L.D. 725, a **food sovereignty bill** giving municipalities the right to regulate local food systems, thus enabling farmers to sell directly to consumers without being penalized for violating state or federal laws regarding licensing and inspections. Twenty Maine towns currently have local food sovereignty ordinances, which allow, for example, consumers to purchase raw milk or cheese from an unlicensed dairy. The Maine Cheese Guild opposed the bill due to concern that dairy products could be produced and sold without any testing. Supporters opposed increasing and changing regulations that harm local farmers and producers. For example, Heather Retberg told Maine Public that a state inspector had said she was not allowed to use a friend's facility to slaughter chickens but would have to build her own facility. The Maine Department of Conservation, Agriculture and Forestry is reviewing the implications of the bill. (“Fresh from the farm: Maine takes lead in ‘food sovereignty’ movement,” by Mary Pols, Portland Press Herald, June 21, 2017; <http://www.pressherald.com/2017/06/21/fresh-from-the-farm-maine-takes-lead-in-food->

[sovereignty-movement/](#); “Fresh Maine Law Lets Municipalities Regulate Local Food Production,” by Jennifer Mitchell, Maine Public, June 28, 2017; <http://mainepublic.org/post/fresh-maine-law-lets-municipalities-regulate-local-food-production#stream/0>

Organic

The USDA Agriculture Marketing Service **delayed implementing the final organic animal welfare rule** from May 19 to November 14, 2017. The delay allowed the public to comment – again – on the rule. This was the second time the Trump administration delayed the rule, originally to have taken effect on March 20. Among its provisions, the rule would limit tail docking and beak clipping, require that livestock have year-around access to the outdoors, and require enough indoor space for animals to stand and stretch their limbs.

The National Pork Producers Council and the United Egg Producers opposed the rule, says Bloomberg BNA, but more than 300 organic farmers, the Organic Trade Association and animal rights groups opposed the delay.

Congresswoman Chellie Pingree said in a May 9 press release, “It’s disappointing to see the USDA once again kick the can down the road on the Organic Livestock and Poultry Practices rule. The agency does not need to solicit additional public comments on a rule that was consumer-driven and took 14 years to finalize. The organic market is thriving and creating new opportunities for American farmers. Now more than ever we need to maintain organic integrity and push for a uniform standard that levels the playing field for all farmers. I urge USDA to preserve consumers’ trust in the organic label and let the Organic Livestock and Poultry Practices rule go into effect as soon as possible.”

(“Organic Livestock Rule Has Uncertain Future After Second Delay,” by Casey Wooten, Bloomberg BNA, May 10, 2017; <https://www.bna.com/organic-livestock-rule-n73014450724/>; “Pingree Disappointed in Further Delay of USDA Organic Animal Welfare Rule,” press release, Congresswoman Chellie Pingree, May 9, 2017)

A May article in The Washington Post cited **weaknesses in use of the organic label by Aurora Organic Dairy in Colorado** and other large operations. Aurora has more than 15,000 cows and supplies house brand milk for Walmart, Costco and other large retailers. The Post reporter visited Aurora’s High Plains facility on eight days during the grazing season and found few signs of grazing – a federal requirement for certified organic operations. When the Post had Aurora and other organic milk tested by Virginia Tech, levels of beneficial fatty acids were lower in Aurora’s milk than in milk from cows known to be raised on pasture. Aurora’s milk was similar to conventional in fatty acid composition. Aurora was found 10 years ago to be in violation of grazing and other organic standards but was allowed to continue to operate and was supposed to change its practices.

The Post quoted Mark Kastel of The Cornucopia Institute: “About half of the organic milk sold in the U.S. is coming from very large factory farms that have no intention of living up to organic principles. Thousands of small organic farmers across the United States depend on the USDA

organic system working. Unfortunately, right now, it's not working for small farmers or for consumers.”

Aurora is inspected and certified as organic by the Colorado Department of Agriculture, which was faulted by USDA in the past.

Another Washington Post investigation found that 36 million pounds of conventional soybeans shipped last year from Ukraine to Turkey to California had been labeled as organic by the time they reached California, increasing their value by about \$4 million. About two-thirds of the beans had been distributed to retailers before USDA tested those remaining in storage for pesticide residues. The Post found two similar incidents of falsely labeled imported corn or soy in the past year. Most of these grains were to become feed for organic poultry and livestock.

The Post also found widely varying results when different inspection agencies tested for pesticide residues on Chinese products.

In response to the discovery of fraudulent corn and soy imports from Turkey, USDA's National Organic Program (NOP) revoked the organic certification of Turkish grain exporter Beyaz Agro, and the Organic Trade Association is working to help prevent future fraudulent imports, including by convening a task force to develop a best practices guide for the private sector to use in verifying international supply chains.

According to the Organic Trade Association (OTA), imports of organic corn quadrupled from \$36.6 million in 2013 to \$160 million in 2016. Organic soybean imports jumped from \$110.2 million to \$250.5 million in the same period. Both crops are used primarily for organic livestock feed. The increase in the amount of imported grain labeled as organic has led to price drops of more than 25 percent, harming U.S. organic growers, according to the Post. The OTA says these figures point to the possibility of increasing U.S. production of these crops.

The Post is not the first to raise the fraud issue. According to Beyond Pesticides, “the Organic Farmers’ Agency for Relationship Marketing (OFARM), an organization that ‘coordinates the efforts of producer marketing groups to benefit and sustain organic producers,’ has been very vocal on the issue of false representation of commodities. Last fall, OFARM joined with Food and Water Watch to urge the USDA Office of the Inspector General “to investigate the integrity of imported organic grains.”

Beyond Pesticides notes that it has long advocated for policies and programs that would help close the gap between domestic demand and supply. “Investment by the federal government in educational and transitional programs that help reduce the financial burden of conventional farmers that wish to transition to organic production (a process that takes three years) could help close the gap. Additionally, increased funding for organic research has the potential to help domestic organic farmers increase their yields while still adhering to the organic standards maintained by USDA, with input from the National Organic Standards Board (NOSB).”

Congresswoman Chellie Pingree (D-Maine), an organic farmer, said that clearer standards for organic, including implementing a new organic animal welfare rule, are needed, and that the

USDA National Organic Program needs the resources to strengthen its oversight of organic certification, rather than budget reductions proposed by the Trump administration. ([“Why your ‘organic’ milk may not be organic,”](https://www.washingtonpost.com/business/economy/why-your-organic-milk-may-not-be-organic/2017/05/01/708ce5bc-ed76-11e6-9662-6eedf1627882_story.html?utm_term=.ed1cfa194198) by Peter Whoriskey, The Washington Post, May 1, 2017; https://www.washingtonpost.com/business/economy/the-labels-said-organic-but-these-massive-imports-of-corn-and-soybeans-werent/2017/05/12/6d165984-2b76-11e7-a616-d7c8a68c1a66_story.html?utm_term=.d0aa8e13c52a; [“The labels said ‘organic.’ But these massive imports of corn and soybeans weren’t,”](http://beyondpesticides.org/dailynewsblog/2017/05/fraudulent-claims-undermine-organic-integrity/) by Peter Whoriskey, The Washington Post, May 12, 2017; [https://www.washingtonpost.com/business/economy/the-labels-said-organic-but-these-massive-imports-of-corn-and-soybeans-werent/2017/05/12/6d165984-2b76-11e7-a616-d7c8a68c1a66_story.html?utm_term=.d0aa8e13c52a](http://beyondpesticides.org/dailynewsblog/2017/05/fraudulent-claims-undermine-organic-integrity/); [“Fraudulent Claims Undermine Organic Integrity,”](http://beyondpesticides.org/dailynewsblog/2017/05/fraudulent-claims-undermine-organic-integrity/) Beyond Pesticides, May 17, 2017; [http://beyondpesticides.org/dailynewsblog/2017/05/fraudulent-claims-undermine-organic-integrity/](https://www.agri-pulse.com/articles/9304-livestock-production-driving-organic-corn-soybean-imports/); [“Livestock production driving organic corn, soybean imports,”](https://www.agri-pulse.com/articles/9304-livestock-production-driving-organic-corn-soybean-imports/) by Spencer Chase, AgriPulse, May 31, 2017; [https://www.agri-pulse.com/articles/9304-livestock-production-driving-organic-corn-soybean-imports](http://civileats.com/2017/06/22/rep-chellie-pingree-we-must-act-to-protect-integrity-of-the-certified-organic-label/); [“Rep. Chellie Pingree: We Must Act to Protect Integrity of the Certified Organic Label,”](http://civileats.com/2017/06/22/rep-chellie-pingree-we-must-act-to-protect-integrity-of-the-certified-organic-label/) by Chellie Pingree, Civil Eats, June 22, 2017; <http://civileats.com/2017/06/22/rep-chellie-pingree-we-must-act-to-protect-integrity-of-the-certified-organic-label/>; National Organic Coalition email, June 16, 2017; forwarded from Organic Trade Association)

Representatives Chellie Pingree (D-ME), Dan Newhouse (R-WA) and Jimmy Panetta (D-CA) are sponsoring the **Organic Agriculture Research Act of 2017**, which calls for an increase in mandatory funding for the USDA’s Organic Research Extension Initiative (OREI). In the 2008 and 2014 Farm Bills, Congress allocated just \$20 million annually to this program, which funds multidisciplinary agroecological research and practice. The new bill, supported by MOFGA, proposes \$50 million annually in future years – still small relative to other federal programs.

A press release from Congresswoman Pingree’s office noted, “Organic farms are 35 percent more profitable than the average farm. Premiums paid to organic farmers can range from 29 to 32 percent above non-organic prices. The difference in on-farm net income in many cases is what makes staying on the farm possible.

“Unfortunately, domestic production is not keeping up with consumer demand for organic products – a missed opportunity for American farmers. One problem is that the dramatic increase in consumer demand has not been met with an increase in public investment in organic research. Funding for OREI has remained around the same level since 2010.

“Additional funding would address organic research gaps. The 2016 National Organic Research Agenda identified three topics where organic farmers’ research needs are still unmet: soil health, weed control, and fertility methods. Organic and non-organic farmers alike benefit from this research. For example, cover cropping is standard practice on organic farms but has been widely adopted by non-organic farms as well. ([“Three Reasons Congress Should Support a Budget Increase for Organic Agriculture Research](http://www.ucs.org/press-releases/2017/05/16/three-reasons-congress-should-support-a-budget-increase-for-organic-agriculture-research) Union of Concerned Scientists,” by Marcia Delonge, May 16, 2017;

<http://blog.ucsusa.org/marcia-delonge/three-reasons-congress-should-support-a-budget-increase-for-organic-agriculture-research>; Press release, Congresswoman Chellie Pingree, May 16, 2017)

Pesticides

In May the Maine Legislature's State and Local Government Committee voted 13-0 without discussion to **reject L.D. 1505**, introduced by Walter Whitcomb, commissioner of the Conservation, Forestry and Agriculture Department, on behalf of Gov. Paul LePage. The measure **would have prohibited Maine municipalities from adopting pesticides restrictions** that are more stringent than those of the state – as at least 27 municipalities have done. MOFGA was among the 70-plus entities that commented against the bill. Wording of the bill was almost identical to legislation promoted by the American Legislative Exchange Council (ALEC) with input from such corporate members as CropLife America, Dow AgroSciences and the American Chemistry Council. Jay Feldman, executive director of Beyond Pesticides, was quoted in the Portland Press Herald as saying of ALEC, "Preemption is one of their main goals, preemption of the democratic process by having higher levels of government supersede the local level." ("Legislative panel unanimously rejects pesticides bill proposed by LePage," by Kevin Miller, Portland Press Herald, May 18, 2017; <http://www.pressherald.com/2017/05/18/legislative-panel-recommends-rejecting-pesticides-bill/>; "Pesticide-friendly bill from LePage mirrors model by secretive national group," by Colin Woodard, Portland Press Herald, May 9, 2017; <http://www.pressherald.com/2017/05/09/pesticide-bill-from-gov-lepage-mirrors-one-by-secretive-national-group/>)

A review study for the European Parliament discusses how **organic food and organic agriculture can contribute to public health**, and it suggests several policy options for promoting organic. The report notes that few studies have directly investigated the health effects of organic, but existing studies do indicate that organic food consumption is associated with a lower risk of childhood allergies and that adults who frequently eat organic food are less likely to be overweight or obese compared with other consumers (acknowledging that that population may be more apt to buy organic in the first place). A small number of in vitro studies point to different biological activities of organic and conventional crops on human cell lines, but effects of those differences are unknown. Two-generation animal studies indicate an effect of the feed production system on the offspring's immune system.

Regarding pesticides, the study says that organic farming largely relies on preventive measures for plant protection, so use of pesticides is low, and potential risks to human health are largely avoided. The small number of pesticides approved for organic are generally of low toxicity. "Overall, consumption of organic food substantially decreases the consumer's dietary pesticide exposure, as well as acute and chronic risks from such exposure," says the study, which also notes that important gaps exist in risk assessment of pesticides.

The nutritional value of plant foods, according to the study, is only slightly affected by organic vs. conventional management and, based on current knowledge, is limited to a moderately higher content of phenolic compounds in organic foods. Phenolic compounds are believed to mediate protective effects against certain chronic diseases in humans, but translating such differences into specific health benefits is not possible yet. Mineral and vitamin contents are generally similar

when conventionally and organically produced crops are compared, says the report, noting that crop variety, soil type, weather, climatic conditions and other factors also affect crop composition.

Long-term experiments indicate that cereal crops fertilized with mineral fertilizer tend to contain more cadmium than those fertilized with animal manure. (Cadmium accumulates in the body and can lead to kidney, bone and lung disease.)

Organic milk has about 50 percent more omega-3 fatty acids on average than conventional milk. Similar results exist for organic meat, but with less supporting evidence. The report notes, however, that dairy products and meat account for a minor proportion of dietary omega-3 intake in the human diet, so “the calculated additional human omega-3 intake from organic animal products cannot be extrapolated to any specific health benefit.”

The restricted use of antibiotics in organic systems could minimize the risk of developing antibiotic resistance. Organic broilers and pigs, but not dairy cows, are less likely to develop diseases related to intensive production compared with animals in conventional production, says the report, so less use of antibiotics for treating clinical diseases is required. (“Human health implications of organic food and organic agriculture,” European Parliamentary Research Service, Dec. 2016;

[http://www.europarl.europa.eu/RegData/etudes/STUD/2016/581922/EPRS_STU\(2016\)581922_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2016/581922/EPRS_STU(2016)581922_EN.pdf))

As Monsanto faces lawsuits from more than 1,000 plaintiffs throughout the United States, increased information about the **potential toxicity of glyphosate**, the active ingredient in its herbicide Roundup, is becoming available.

In a study conducted for Monsanto from 1980-1982, 400 mice were divided into groups and given three doses of glyphosate or no glyphosate. Some mice in the treatment groups developed tumors, while those in the control group apparently did not. A 1984 EPA memo said the findings indicated that glyphosate “is oncogenic, producing renal tubule adenomas, a rare tumor, in a dose-related manner,” and eight employees of the EPA toxicology branch classified glyphosate as “possibly carcinogenic to humans.”

Monsanto said the kidney tumors were unrelated to glyphosate. The company hired pathologists to check the control slides, and one pathologist said he found a small tumor in kidney tissue slides from the control group – while an EPA pathologist said those slides did not definitively show such a tumor. Other pathologists at Monsanto said that renal disease was common in older mice. The EPA asked Monsanto to repeat the mouse study, but Monsanto refused. In 1991, the EPA decided to classify glyphosate as showing “evidence of non-carcinogenicity for humans” but added that the classification “should not be interpreted as a definitive conclusion that the agent will not be a carcinogen under any circumstances.”

Now, U.S. District Judge Vince Chhabria is allowing plaintiffs in some 60 lawsuits filed in San Francisco to review the mouse tissue slides. The cases, focusing on the potential for glyphosate

to cause non-Hodgkin lymphoma, will be heard in December 2017. About 900 plaintiffs in other jurisdictions are also claiming that Monsanto hid or minimized the danger of glyphosate.

Meanwhile, the FDA, criticized in 2016 by the U.S. Government Accountability Office for its lack of annual testing for glyphosate residues in foods, began in June to analyze certain foods for those and some other herbicide residues. Also, the EPA Office of Inspector General is looking into possible collusion between Monsanto and former EPA official Jesudoss Rowland, who favorably assessed the safety of glyphosate while at the agency.

In yet another case involving Monsanto, six consumers filed a complaint in June in federal court in Wisconsin alleging that Roundup herbicide has been falsely promoted as uniquely safe when it can actually harm human gut bacteria critical to good health.

And in July, glyphosate was added to California's list of chemicals known to cause cancer, requiring companies selling the weed killer there to put warning labels on packaging within a year and requiring warnings if glyphosate is being sprayed at levels that regulators deem unsafe. Monsanto said it would fight the designation. (“Of mice, Monsanto and a mysterious tumor,” by Carey Gillam, Environmental Health News, June 8, 2017; <http://www.environmentalhealthnews.org/ehs/news/2017/june/of-mice-monsanto-and-a-mysterious-tumor>; “FDA Resumes Testing Foods For Weed Killer, Safety Questions Grow, by Carey Gillam, The Huffington Post, June 7, 2017; http://www.huffingtonpost.com/entry/fda-resumes-testing-foods-for-weed-killer-safety-questions_us_593843b2e4b014ae8c69dd1b?ncid=engmodushpimg00000004; “EU weed-killer evidence 'written by Monsanto’,” by Vincent Harmsne, EUobserver, May 2, 2017; <https://euobserver.com/environment/137741>; “Monsanto Spin Doctors Target Cancer Scientist in Flawed Reuters Story,” by Carey Gillam, The Huffington Post, June 16, 2017; http://www.huffingtonpost.com/entry/monsanto-spin-doctors-target-cancer-scientist-in-flawed_us_594449eae4b0940f84fe2e57; “Scientist writes to Juncker: new tumour evidence found in confidential glyphosate data,” Corporate Europe Observatory, May 29, 2017; <https://corporateeurope.org/food-and-agriculture/2017/05/scientist-writes-juncker-new-tumour-evidence-found-confidential>; letter posted at <https://corporateeurope.org/sites/default/files/attachments/letterjuncker28may2017.pdf>; “New Claims Against Monsanto In Consumer Lawsuit Over Roundup Herbicide,” by Carey Gillam, The Huffington Post, June 20, 2017; http://www.huffingtonpost.com/entry/new-claims-against-monsanto-in-consumer-lawsuit-over_us_59496379e4b0f500e5526088; “California to list herbicide as cancer-causing; Monsanto vows fight,” by Karl Plume, Reuters, June 27, 2017; <http://www.reuters.com/article/us-usa-glyphosate-california-idUSKBN19H2K1>)

Researchers at Michigan State University studied factors influencing summer populations of monarch butterflies in Illinois using data from a long-term citizen science monitoring program. Their study “provides the first empirical evidence of a negative association between glyphosate application and local abundance of adult monarch butterflies during 1994-2003, the initial phase of large-scale herbicide adoption in the Midwest,” according to MSU biologist Elise Zipkin. Glyphosate, the active ingredient in Roundup and some other herbicides, kills milkweed, the host plant for monarch eggs. This may be one factor in the decline of monarch populations.

(“Monarch butterflies: The problem with herbicides,” Michigan State University, ScienceDaily, May 17, 2017;

<https://www.sciencedaily.com/releases/2017/05/170517143600.htm>; “Local and cross-seasonal associations of climate and land use with abundance of monarch butterflies *Danaus plexippus*,” by Sarah P. Saunders et al., *Ecography*, May 16, 2017;

<http://onlinelibrary.wiley.com/doi/10.1111/ecog.02719/abstract;jsessionid=CC854C06334B205229C5D93CC1B521B4.f02t03>)

French researchers say exposure to certain synthetic **pyrethroid insecticides** at low environmental doses encountered by the general public may be associated with certain **behavioral disorders in children**, including attention deficit, hyperactivity and oppositionality. Pyrethroids are widely used in agriculture, in mosquito repellents and in treatments for head lice, scabies and fleas. (“**'Safe' Insecticides Tied to Neurobehavioral Problems in Kids**,” by Batya Swift Yagur, *Medscape*, March 6, 2017;

http://www.medscape.com/viewarticle/876681?nlid=113363_2051&src=WNL_mdplsnews_170310_mscpedit_psy&uac=267084EY&spon=12&impID=1305823&faf=1#vp_1; “Behavioural disorders in 6-year-old children and pyrethroid insecticide exposure: the PELAGIE mother–child cohort,” by Jean-François Viel et al., *Occupational & Environmental Medicine*, March 1, 2017; <http://oem.bmj.com/content/74/4/275>)

Researchers interested in the increasing **thyroid cancer** incidence in western countries found that personal use of the **pesticides dicamba, atrazine and metolachlor** may be associated with thyroid cancer risk among female spouses of pesticide applicators. They “noted a significant positive association with dicamba, an herbicide previously associated with self-reported hypothyroidism among male pesticide applicators in the AHS [Agricultural Health Study].” Atrazine, a suspected endocrine disruptor, was previously observed to increase the risk of thyroid cancer among male pesticide applicators who use that herbicide. (“**Pesticide use and thyroid cancer incidence among spouses of pesticide applicators in the agricultural health study**,” by Catherine Lerro et al., *Occupational & Environmental Medicine*, Sept. 2016; http://oem.bmj.com/content/73/Suppl_1/A47.2)

University of Guelph researchers linked exposure to the **neonicotinoid insecticide** thiamethoxam, at concentrations similar to those found in pollen and nectar in the wild, to **fewer fully developed eggs in queens from four wild bumblebee species** that forage in farmland. Queen bumblebees were exposed to thiamethoxam for two weeks in the spring, when they emerge from hibernation and are preparing to lay their first eggs and establish a colony.

Meanwhile researchers from York University in Toronto found a combination of agricultural pesticides in dead honeybees, forager bees, nurse bees, larvae, pollen and nectar near Canadian cornfields grown from neonicotinoid-treated seeds. The water-soluble neonics were detected throughout the 5-month study, mostly on pollen from plants other than corn, including willow trees, clovers and wildflowers. In another experiment, the researchers exposed bees to the neonicotinoid clothianidin for 12 weeks at concentrations similar to those found near farms. The treated bees spent less time cleaning their hives of dead and diseased bees, and queen bees tended to die in treated hives. Also, when bees were exposed to the fungicide boscalid and the

neonicotinoids clothianidin or thiamethoxam, half as much of the chemicals killed as many bees as individual chemicals alone.

Another study – of bumblebees in the United Kingdom, Germany and Hungary – found fewer bumblebee queens and less reproduction in all three countries after exposure to neonics, and reduced honeybee colony survival in the U.K. and Hungary. (Neonic Pesticides Threaten Wild Bees’ Breeding: Study,” University of Guelph News Service, May 3, 2017; <http://news.uoguelph.ca/2017/05/neonic-pesticides-threaten-wild-bees-spring-breeding-study-finds/>; “General and species-specific impacts of a neonicotinoid insecticide on the ovary development and feeding of wild bumblebee queens,” by Gemma L. Baron et al., Proceedings of the Royal Society B; <http://rspb.royalsocietypublishing.org/content/royprsb/284/1854/20170123.full.pdf>; “Why neonicotinoid pesticides are slowly killing bees,” by Roni Dengler, PBS, June 29, 2017; <http://www.pbs.org/newshour/rundown/neonicotinoid-pesticides-slowly-killing-bees/>; Chronic exposure to neonicotinoids reduces honey bee health near corn crops N. Tsvetkov et al., Science, June 30, 2017; <http://science.sciencemag.org/content/356/6345/1395>; “Country-specific effects of neonicotinoid pesticides on honey bees and wild bees,” B. A. Woodcock et al., Science, June 30, 2017; <http://science.sciencemag.org/content/356/6345/1393>)

According to EPA administrator **Scott Pruitt**'s schedule, he met with Dow Chemical Company CEO Andrew Liveris on March 9 and, 20 days later, decided to **deny a petition to ban Dow's chlorpyrifos** pesticide applications on food. Previously, EPA scientists concluded that ingesting even tiny amounts of the organophosphate insecticide can interfere with brain development in fetuses and infants. The Los Angeles Times reports that Liveris heads a White House manufacturing working group and that Dow provided \$1 million toward Trump's inaugural festivities. (“EPA chief met with Dow Chemical CEO before deciding not to ban toxic pesticide,” AP, Los Angeles Times, June 27, 2017; <http://www.latimes.com/business/la-fi-epa-pesticide-dow-20170627-story.html>)

Genetic Engineering

In May the Maine Board of Pesticides Control (BPC) unanimously **approved registration of three GE potatoes** – a Russet Burbank, Ranger Russet and Atlantic potato – developed by J.R. Simplot Company of Idaho. These potatoes were engineered with the Rpi-Vnt1 gene taken from a wild potato species, *Solanum venturii*, for protection from late blight conferred by the VNT1 protein. In its application for approval, Simplot said of these patent-protected varieties, “In order to prolong trait durability, late blight fungicide use may be recommended.”

Jim Gerritsen of MOFGA-certified organic Wood Prairie Farm told the Bangor Daily News, “These GMO potatoes run the very strong risk of depressing demand for potatoes of all types, both organic and conventional ... There’s a growing body of evidence that consumers do not want genetically engineered food. What I worry about is that there will be a vague recollection that new potatoes will be genetically engineered. That’s going to damage every potato farmer. Not just organic ones but regular ones, too.” (“Genetically engineered potatoes approved for Maine,” by Abigail Curtis, Bangor Daily News, May 13, 2017;

<http://bangordailynews.com/2017/05/13/homestead/genetically-engineered-potatoes-approved-for-maine/>

When Columbia University researchers used the gene editing tool **CRISPR** to successfully edit the gene responsible for blindness in mice, **mutations also occurred to more than 1,500 unintended genes**, and more than 100 unintended gene deletions and insertions occurred as well. Those changes caused no apparent harm to the mice, but some experts worry, says Gizmodo, that the technology is not well enough understood yet for use in humans. (“CRISPR May Not Be Nearly as Precise as We Thought,” by Kristen V. Brown, Gizmodo, May 30, 2017; <http://gizmodo.com/crispr-may-not-be-nearly-as-precise-as-we-thought-1795656361>)

Winter 2017-2018

The Good News

Compost extracts significantly reduced weed biomass in a study in Pennsylvania. Extracts prepared from compost made with 30 percent “browns,” 50 percent “greens” and 20 percent “high nitrogen” feedstocks (i.e., from legumes) were prepared 24 hours before applying a 1:3 dilution (V:V) of the extracts with distilled water to field plots using a backpack sprayer. Four replicates of four treatments were tested: post-planting compost extract application; pre- and post-planting extract application; in-season cultivation or hand-hoeing; and no cultivation or compost application.

Using compost extracts significantly reduced dry weed biomass by 43 percent compared with no treatment and by 11 percent compared with cultivation in turnip. In lettuce, extract applications reduced weed biomass by 19 and 34 percent, respectively, compared with cultivation and with no treatment. Weed biomass in cabbage plots receiving extracts was similar to that in cultivated plots.

Mean turnip yield was significantly greater in treatments that received compost extracts than with no treatment, and it did not differ from yield in cultivated plots. Lettuce yield was significantly greater with cultivation than with no treatment and did not differ from yield in plots treated with compost extract. (“Compost Effects On Weed Suppression Biocycle,” by Gladis Zinati, July 17, 2017; <https://www.biocycle.net/2017/07/05/compost-effects-weed-suppression/>)

Penn State researchers tested the effectiveness of **shallow disc injection of manure** into soil instead of spreading the liquid slurry on a corn field. They took samples from nine runoff events over eight months. Much higher levels of estrogen and phosphorus came from plots with surface-applied manure than from those with injected manure. The cost of injection equipment is one factor limiting this practice. (“Simply injecting manure into soil dramatically reduces estrogen pollution,” by Emma Bryce, Anthropocene, Sept. 4, 2017; <http://www.anthropocenemagazine.org/2017/09/simply-injecting-manure-into-soil-dramatically-reduces-estrogen-pollution/>; “Relative role of transport and source-limited controls for estrogen, TDP, and DOC export for two manure application methods,” Mina et al., Agriculture,

Ecosystems & Environment, 2017;

<http://www.sciencedirect.com/science/article/pii/S0167880917302888?via%3Dihub>)

Adding 10 g daily of rosemary or lemongrass for 12 weeks to feed for lactating Damascus goats did not affect nutrient intake or ruminal pH but did enhanced nutrient digestibility and milk yield, with positive ruminal fermentation. The herbs increased organic matter and fiber digestion, ruminal concentration of short chain fatty acids, propionate, serum glucose concentration, milk production, milk fat and lactose concentration, total unsaturated fatty acids and total conjugated linoleic acid while decreasing serum cholesterol concentration and total saturated fatty acids. (“Rosemary and lemongrass herbs as phytogetic feed additives to improve efficient feed utilization, manipulate rumen fermentation and elevate milk production of Damascus goats,”

Livestock Science, by A.E.Kholif et al., Oct. 2017;

[http://www.livestockscience.com/article/S1871-1413\(17\)30224-X/abstract](http://www.livestockscience.com/article/S1871-1413(17)30224-X/abstract))

Dr. Jose Franco’s two-year study in Texas showed the **effects of intercropping** peanuts and watermelons; peanuts, watermelons and okra; peanuts, watermelon, okra and cowpeas; a row of all five plant species; and alternating single rows of peanuts and watermelons. Peanuts and cowpeas fix nitrogen; watermelons smother weeds and shade soil to conserve soil moisture; okra grows tall, and its large, showy flowers can attract pollinators; and hot peppers may serve as a pest barrier.

Franco found that three to four species consistently yielded higher per unit of land area than crops grown alone – with reduced inputs such as fertilizers and herbicides. “We actually used minimal fertilizer and no herbicides, and the only major input we utilized was irrigation,” he said

In the study, intercropping with three to four species did best, while productivity declined with one or two and more than four. Plots with peppers showed an overall decline in productivity. (“Intercropping boosts vegetable production,” by Adam Russell, Texas A&M AgriLife – Sept. 5, 2017;

<http://today.agrilife.org/2017/09/05/intercropping-boosts-vegetable-production/>)

Oregon State University plant pathologist Jennifer Parke has studied **soil solarization** – trapping the sun’s energy under a layer of plastic to heat the soil enough to kill pathogens and weeds – **using new horticultural film** with anti-condensation properties, developed for the greenhouse industry. Solarization using other plastics works in hotter climates but not in the cooler Pacific Northwest. Without condensed water droplets, more solar radiation can pass through the plastic.

With funding from the Western Integrated Pest Management Center and others, she tested the idea at 42 nursery sites from Southern California to Northern Washington. The film heated the ground about 10 degrees C higher than non-solarized plots.

Parke initially showed that the technique heated the soil enough to combat *Phytophthora ramorum*, the plant pathogen that causes sudden oak death and ramorum blight, but not enough to kill beneficial microorganisms.

She and her team then worked with the uspest.org website, a weather-based decision-support tool. Oregon State University postdoctoral scientist Fumiaki Funahashi and professor Leonard Coop of the university's Integrated Plant Protection Center built an online model that shows nursery growers how long they need to solarize their ground so that it's disease-free.

The team then tried solarization with the new films in field production nurseries to control other soilborne diseases – and the technique suppressed weeds for months (and even into the next year) after treatment and produced taller, healthier plants and thicker stands.

Parke's team is now testing solarization for vegetable growers – using it with and without a cover crop, and testing the minimum amount of time, from two to nine weeks, needed to solarize fields in the Pacific Northwest. The University of Maine is also researching solarization with greenhouse plastic, according to Mark Hutton, an associate professor there. (“Soil Solarization in the Pacific Northwest,” Western IPM Center;

<http://westernipm.org/index.cfm/ipm-in-the-west/agriculture/soil-solarization-in-the-pacific-northwest/>; Mark Hutton, personal communication, Oct. 11, 2017)

A survey of 2,012 farmers showed **acreage planted in cover crops has nearly doubled** over the past five years. The poll was conducted by the Conservation Technology Information Center with help from Purdue University and funding support from the USDA Sustainable Agriculture Research and Education program and the American Seed Trade Association.

Survey participants – 88 percent of whom use cover crops – reported that after cover crops, corn yields increased an average of 2.3 bushels per acre (1.3 percent); soybean, 2.1 bushels (3.8 percent); and wheat, 1.9 bushels (2.8 percent). This marks the fifth consecutive year in which the survey reported yield increases in corn and soybeans following cover crops.

Of the farmers who used cover crops, 85 percent said they have seen improved soil health, and 69 percent of respondents said cover crops always or sometimes improved control of herbicide-resistant weeds.

Since the annual cover crop survey began in 2012, cover crop acreage has steadily increased among participants. Farmers said they committed an average of 400 acres each to cover crops in 2016, up from 217 acres each in 2012. They expected to increase their cover crop planting in 2017 to an average of 451 acres.

The timing of cover crop planting is also evolving. Approximately three out of four cover crop acres in the survey were planted after harvesting a cash crop, but the practice of interseeding covers into growing cash crops is an emerging trend: 27 percent of the respondents said they seeded cover crops at sidedress fertilization time or in late summer.

And 39 percent of respondents “planted green” – seeded cash crops directly into living, green cover crops and then terminated the covers. (“Cover Crops Boost Yields and Weed Control, National Farmer Survey Says,” National Sustainable Agriculture Coalition, Sept. 16, 2017; www.sare.org/2017CoverCropSurvey)

Soil health practices such as **cover crops and no-till can result in an economic return of over \$100 per acre**, according to case studies by the National Association of Conservation Districts and Datu Research, LLC. During a three-year study, corn-soybean farmers experimented with cover crops and/or no-till. While planting costs increased by up to \$38 per acre, fertilizer costs decreased by up to \$50 per acre, erosion repair costs decreased by up to \$16 per acre, yields increased by up to \$76 per acre, and net farm income increased by up to \$110 per acre. Included in the farmers' calculations was the considerable time they spent attending workshops or searching the internet to learn about no-till or cover crop practices. ("Case Studies Show Big Economic Benefits of Soil Health Practices," National Association of Conservation Districts, Aug. 29, 2017; <http://www.nacdnet.org/newsroom/case-studies-show-big-economic-benefits-soil-health-practices/>)

Organic Issues

Miles McEvoy, deputy administrator of the USDA National Organic Program (NOP), **left his job** in October after eight years to return to Washington state. Agricultural Marketing Service acting administrator Bruce Summers and acting deputy administrator Jenny Tucker will oversee the program until agriculture secretary Sonny Perdue names a successor. In his letter of resignation, McEvoy noted several accomplishments of the NOP during his tenure, including the Organic Literacy Initiative, which trains USDA personnel and farmers about certification and market opportunities in the organic food industry; the NOP Handbook, which provides all NOP policies and guidance in one place; a Sound and Sensible certification process to make organic certification more affordable and attainable for organic operations; adding a requirement for some unannounced inspections and residue testing; improved auditing of certifiers; reduced appeal times; implementing civil penalties regularly for violations to USDA organic regulations (over 900 suspensions or revocations occurred over the last five years); negotiating the U.S.-EU Organic Equivalency Arrangement; and developing a robust database of certified organic producers, updated by certifiers in near real time. ("Head of USDA's organic program steps down after 8 years," Food Safety News, Sept. 13, 2017; <http://www.foodsafetynews.com/2017/09/head-of-usdas-organic-program-steps-down-after-8-years/#.We7mP5NKuCQ>)

A USDA National Organic Program audit by the Office of Inspector General found **problems with the program related to products imported from foreign countries**. Issues included fumigation of organic products at U.S. ports of entry with substances prohibited by the National Organic Program; a lack of transparency in determining equivalency of organic standards; and inability to verify that imported products labeled as organic were grown on certified organic farms. The audit said major changes were needed to strengthen control of international trade of organic products. ("OIG Audit Exposes Flaws in USDA Organic Program," by Teaganne Finn, Bloomberg, Sept. 19, 2017; <https://www.bna.com/oig-audit-exposes-n57982088113/>)

U.S. farmers and ranchers sold \$7.6 billion in certified organic agricultural products in 2016, up 23 percent from \$6.2 billion in 2015, according to the Certified Organic Survey 2016 Summary, released on Sept. 20, 2017, by the USDA National Agricultural Statistics Service (NASS). These figures represent what the producer received for the raw product. During 2016, the number of U.S. organic farms increased 11 percent to 14,217, according to NASS, and the

number of certified acres increased 15 percent to 5 million. Here are the NASS data for the United States and Maine:

Number of organic farms	Total Acres	Acres cropland	Acres pasture/ rangeland	Value of sales
U.S. 14,217	5,000,000	13,560	5,587	\$7,600,000,000
Maine 494	55,316	44,177	11,139	\$65,648,000

Note, however, that records from MOFGA Certification Services LLC show 523 MOFGA-certified growers by the end of 2016 – almost 6 percent more than the NASS figure. (Updated figures for 2017 appear in Chris Grigsby’s column in this MOF&G.)

Nationwide, according to NASS, crops accounted for 56 percent of organic sales; livestock, poultry and their products, 44 percent. Milk sales increased by 18 percent; eggs by 11 percent; broiler chickens, 78 percent.

As with MOFGA’s data, the Organic Trade Association notes that certifier-based estimates show even higher numbers. “For instance, NASS reported in December that information from U.S. accredited organic certifying agents showed 14,861 U.S. organic farms in operation in 2015, with 5.3 million acres farmed organically, compared to the 14,217 organic farms and 5.0 million organic acres NASS now counts for 2016. Overall growth in sales of organic agricultural production and acreage is positive news. However, the just released National Agricultural Statistics Service findings highlight that dramatic growth in livestock products does not parallel growth in livestock feed grains. This underscores the need to shore up import oversight and increase support for domestic producers through a stronger crop insurance safety net, organic research, market access, and organic data collection.”

The National Sustainable Agriculture Coalition says that “due to a lack of consistency in methodology and survey questions, these surveys have some limitations that make it difficult to assess certain indicators over time. In the future, USDA should focus on better coordinating methods and survey questions so that at least three years of comparable data can be collected.” (“U.S. organic sales jump 23 percent in 2016,” by Carol Ryan, Capital Press, Sept 21, 2017; <http://www.capitalpress.com/Organic/20170921/us-organic-sales-jump-23-percent-in-2016>; “Certified Organic Survey 2016 Summary,” USDA National Agricultural Statistics Service, Sept. 2017; https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Organic_Production/index.php; “2016 Certified Organic Survey released,” Organic Trade Assoc., Sept. 20, 2017; <http://www.newsfromota.com/ota-members/government-affairs-policy/2016-certified-organic-survey-released/>; “Gaps in Organic Data Make Projections a Challenge,” National Sustainable Agriculture Coalition, Oct. 18, 2017; <http://sustainableagriculture.net/blog/2016-organic-production-survey/>)

In the last year, **88 percent of U.S. households have purchased organic** (according to UPC codes) food and beverages – a growing trend. In the year ended Sept. 2, 2017, dollar sales of UPC-coded organic products grew 9.8 percent, and unit volume increased 11.4 percent. Supermarkets, mass merchandisers and discount grocery channels represent a combined 25 percent share of organic spending. (“Organic products are showing up in more places – and for less money,” Nielson, Sept. 14, 2017; <http://www.nielsen.com/us/en/insights/news/2017/organic-products-are-showing-up-in-more-places-and-for-less-money.html>)

Climate

The first effort to spatially quantify **global soil carbon loss** revealed that agriculture has removed 133 billion tons of carbon from the top 2 meters of soil, with the rate of loss increasing dramatically in the past 200 years. Those soil carbon losses nearly equal total carbon emissions due to forest clearing. The study also showed that cropping causes more soil carbon loss than grazing on a particular parcel of land, but because grazing covers so much land surface, total losses from cropping and grazing are nearly equal. The large soil carbon debt can be thought of as the maximum potential for soils to remove carbon from the atmosphere and act as a natural climate solution. (“New study finds soil carbon losses nearly equal to total emissions from deforestation,” Woods Hole Research Center, Aug. 21, 2017; <http://whrc.org/new-study-finds-soil-carbon-losses-nearly-equal-to-total-emissions-from-deforestation/>)

After steadily declining for over a decade, **global hunger is increasing** again, affecting 815 million people in 2016, or 11 percent of the global population, according to a United Nations report released on September 15. The increase is largely **due to proliferation of violent conflicts and climate-related shocks**, says “The State of Food Security and Nutrition in the World 2017, Building Resilience for Peace and Food Security.” Of those 815 million, 11.7 percent are in Asia, 20 percent in Africa and 6.6 percent in Latin America and the Caribbean. At the same time, 641 million (13 percent of all adults on the planet) are obese. (“World Hunger on the Rise Again Inter Press Service,” by Baher Kamal, Sept. 15, 2017; <http://www.ipsnews.net/2017/09/world-hunger-rise/>)

In collaboration with The Organic Center, a nonprofit organization, and with citizen scientists across the nation, Northeastern University scientists Geoffrey Davies and Elham Ghabbour collected and analyzed 659 organic soil samples from 39 states and 728 conventional soil samples from all 48 contiguous states. The **organic soil samples had 44 percent higher concentrations of humic acids than conventional soil samples**. Ghabbour said organic soil can hold more carbon because it has higher concentrations of humic acids. Humic acids bind to soil, making it more fertile, allowing it to retain water, and helping plants absorb nutrients.

The results also showed that soil from organic farms is 26 percent better at retaining carbon — and retaining it for longer periods of time — than soil farmed with conventional methods and synthetic fertilizers.

Ghabbour and Davies’ Humic Acid Research Group previously found humic acid molecules in a live plant. Before that, scientists thought it came only from decomposing plants. The structure of

humic acid remains unknown, and researchers don't know why organic soil has higher concentrations of humic acids than conventional. Davies speculates that that feeding soils with synthetic fertilizers kills humic acids, which act as natural fertilizers, selectively binding to toxins and releasing nutrients in the soil, while synthetic fertilizers do not build soil. ("Study Finds Organic Soil Captures, Holds More Carbon, by Allie Nicodemo, News@Northeastern, Oct. 3, 2017;

<https://news.northeastern.edu/2017/10/study-finds-organic-soil-captures-holds-more-carbon/>;

"National Comparison of the Total and Sequestered Organic Matter Contents of Conventional and Organic Farm Soils," by A. Elham et al., Advances in Agronomy, Volume 146, Oct. 1, 2017; <http://www.sciencedirect.com/science/article/pii/S0065211317300676>; "Organic Farms Could Help Fight Climate Change," by Shaun Chavis, howstuffworks, Sept. 25, 2017; <http://science.howstuffworks.com/environmental/conservation/issues/organic-farms-could-help-fight-climate-change.htm>)

Genetic Engineering

Note: Organic production does not allow the use of genetically engineered (GE or GMO – genetically modified organism) inputs.

The **diamondback moth**, a pest of cole crops, has been **genetically engineered** by the British biotech company Oxitec to attempt to disrupt the species' mating ability, since the insect has become resistant to insecticides. The engineered moths pass on a gene designed to kill the offspring that inherit it. Cornell University entomologist Anthony Shelton has released the moths in field trials – and the Northeast Organic Farming Association has called for a stop to such experimental release, given concern that when organic vegetables are spot checked, the GE materials may show up, and "the onus is on the organic grower to do everything in their power to minimize the likelihood of contamination." ("Scientists Try To Fight Crop Damage With An Invasive Moth's Own DNA," by Devin Powell, Maine Public, Aug. 28, 2017;

<http://mainepublic.org/post/scientists-try-fight-crop-damage-invasive-moths-own-dna>)

Researchers have found that a little over **90 percent of tortillas and 82 percent of all corn products sold in Mexico contain traces of GE corn**, and 27.7 percent of the samples containing GE corn also contained the herbicide glyphosate. Tortillas made using artisanal methods and with home-grown corn varieties had significantly lower frequency of GE contamination and had no glyphosate contamination. Finding GE traits in Mexico surprised the researchers, since cultivation of GE corn is not allowed in open fields in Mexico. ("GM corn found in over 90% of tortillas in MX," Mexico Daily News, Sept. 20, 2017;

<http://mexiconewsdaily.com/news/gm-corn-found-in-over-90-of-tortillas-in-mx/>)

Are GE pesticides supertoxins? The chief benefit claimed for GE pesticidal Bt crops (crops containing the toxin created by *Bacillus thuringiensis*) is that, unlike conventional pesticides, their toxicity is limited to a few insect species. But an analysis comparing GE and ancestral Bt proteins shows that many of the elements contributing to this narrow toxicity were removed by GE developers in the process of inserting Bt toxins into crops. Thus, developers have made GE pesticides that, in the words of one Monsanto patent, are "super toxins." Jonathan Latham et al. conclude that references to any GE Bt toxins being "natural" are incorrect and scientifically unsupportable. For example, all GE Bt toxins are soluble proteins rather than crystalline

structures; many GE Bt toxins are truncated proteins; parts of natural Bt toxins are often combined to make hybrid GE molecules that don't exist in nature; GE Bt toxins often have synthetic or unrelated protein molecules added to them; GE Bt toxins may be mutated to replace specific amino acids; and all GE Bt proteins are further altered inside plant cells.

These changes are poorly considered in GE risk assessment, say Latham et al. For example, regulators frequently refer to the "history of safe use" of specific natural Bt toxins. Regulators also controversially allow most tests of safety to be on surrogate toxins rather than GE crops themselves. For example, Ciba-Geigy measured its Bt-176 toxins to be 5 to 10 times more toxicologically active when inserted into plants. Monsanto patented novel Bt toxins with up to 7.9-fold enhanced activity and called these "super toxins" having "the combined advantages of increased insecticidal activity and concomitant broad spectrum activity." The most powerful of these is now found in commercial MON863 corn. Additionally, theoretical reasons exist to expect all GE Bt toxins to have broader spectrums of activity, say Latham et al. Natural Bt toxins are large, insoluble and nontoxic precursors requiring unusual chemical conditions to become active toxins, but processing undergone by all GE Bt proteins makes them far closer to the toxicologically active form having bypassed key specificity requirements. ("Have Monsanto and the Biotech Industry Turned Natural Bt Pesticides into GMO "Super toxins?" by Jonathan Latham, Ph.D., Independent Science News, October 9, 2017; <https://www.independentsciencenews.org/environment/have-monsanto-and-the-biotech-industry-turned-natural-bt-pesticides-into-gmo-super-toxins/#more-2262>; "The Distinct Properties of Natural and GM Cry Insecticidal Proteins," *Biotechnology and Genetic Engineering Reviews*, 33:1, 62-96, 9/13/2017, by Jonathan R. Latham, Madeleine Love and Angelika Hilbeck; <http://www.tandfonline.com/doi/full/10.1080/02648725.2017.1357295>)

Industrial Meat Production and Pollution

A report by the global environmental group Mighty Earth, chaired by former U.S. Rep. Henry Waxman, says that **much of the manure and fertilizer pollution contaminating waters from the Midwest to the Gulf of Mexico comes from the vast quantities of corn and soy raised as feed for meat animals.** To identify the companies responsible, the group overlaid maps of supply chains of top meat and feed companies with data showing elevated nitrate concentrations in waterways with high levels of fertilizer pollution. The report also mapped where these supply chains are driving destruction of natural grasslands, including native prairies.

Tyson Foods had an expansive footprint in all regions with the worst pollution from industrial meat and feed production. Tyson's top feed suppliers are behind the bulk of grassland prairie clearance, which magnifies the impacts of fertilizer pollution, with Cargill and ADM dominating the corn and soy market with their network of grain elevators and feed silos in all states with the highest losses.

So much pollution, coming mostly from industrial corn and soy fields, has run into the Gulf of Mexico this year that it is now one of the largest dead zones on record – nearly 8,200 square-miles, or about the size of New Jersey. Last year the U.S. Geological Survey reported that about

1.15 million metric tons of nitrogen pollution flowed into the Gulf of Mexico. For comparison, the BP oil spill was 670,800 metric tons, and is not an annual event.

The report urges Tyson and others to ensure that grain producers reduce pollution flowing into waterways by using cover crops and managing fertilizers more efficiently.

Tyson told The Guardian that it is constantly looking to improve and lead the industry. (“Mystery Meat II – The Industry Behind the Quiet Destruction of the American Heartland,” Mighty Earth, Aug. 2017; <http://www.mightyearth.org/wp-content/uploads/2017/08/Meat-Pollution-in-America.pdf>; “Meat industry blamed for largest-ever ‘dead zone’ in Gulf of Mexico,” by Oliver Milman, The Guardian, Aug. 1, 2017;

<https://www.theguardian.com/environment/2017/aug/01/meat-industry-dead-zone-gulf-of-mexico-environment-pollution>)

Pesticides

Monsanto documents released in relation to litigation reveal how the company **campaigned to force the journal Food and Chemical Toxicology to retract a study showing toxic effects of Monsanto’s Roundup herbicide**, according to Claire Robinson of GM Watch. The study, led by professor G.E. S eralini, showed that very low doses of Roundup were toxic to rats over a long-term period and included serious liver and kidney damage. The documents also show that A. Wallace Hayes, editor of Food and Chemical Toxicology, entered into a contract with Monsanto as a consultant shortly before the retraction campaign, and that Monsanto facilitated letters from “third party experts” to Hayes, demanding retraction. Bruce Chassy, who signed a petition demanding the retraction and who co-authored a Forbes article accusing S eralini of fraud, received over \$57,000 from Monsanto in less than two years to travel, write and speak about GE crops. After the paper was withdrawn from Food and Chemical Toxicology, it was published in another journal.

Carey Gillam also reported that when Monsanto thought that IARC would likely classify glyphosate as a “possible human carcinogen” or, less likely, a “probable carcinogen” (which IARC ultimately did), the company drafted teams of PR people, lobbyists, scientist and others to create a media campaign attacking the classification and discrediting the IARC evaluation – just as the EPA and the European Commission were evaluating reauthorizing glyphosate.

In addition, Danny Hakim of The New York Times wrote that the documents show that Henry I. Miller, an academic and proponent of GE crops, asked Monsanto to draft an article for him on the subject; his subsequent article on the website of Forbes largely mirrored that article – without noting Miller’s connection with Monsanto. The documents, continued Hakim, also show that Monsanto itself was debating the relative safety of glyphosate and Roundup. Carey Gillam reported that when Forbes learned of the deceit, it severed relations with Miller. (“Uncovered: Monsanto campaign to get S eralini study retracted,” by Claire Robinson, GM Watch, Aug. 2, 2017;

<http://gmwatch.org/en/news/latest-news/17764>; “Monsanto’s Sway Over Research Is Seen in Disclosed Emails,” by Danny Hakim, The New York Times, Aug. 1, 2017;

<https://www.nytimes.com/2017/08/01/business/monsantos-sway-over-research-is-seen-in-disclosed-emails.html?emc=eta1>; “How Monsanto Manufactured Outrage At Chemical Cancer

Classification It Expected,” by Carey Gillam, The Huffington Post, Sept. 19, 2017; http://www.huffingtonpost.com/entry/how-monsanto-manufactured-outrage-at-chemical-cancer_us_59c17c88e4b0f96732cbc9f3)

After **traces of glyphosate** (the active ingredient in Roundup and some other herbicides) were found in 13 of 14 of its sampled products in the UK, France, Germany and the Netherlands, **Ben & Jerry’s** says it will remove all glyphosate-tainted ingredients from its production chain and will introduce an organic dairy line in 2018. The herbicide may have been in wheat, barley, oats and/or peanuts used in cookie dough, peanut butter or other ingredients added to the ice cream. In addition to being used as a weed killer, glyphosate is used to dry many crops before harvest. Ben & Jerry’s is owned by Unilever.

(“Ben & Jerry’s to launch glyphosate-free ice-cream after tests find traces of weedkiller,” by Arthur Nelsen, The Guardian, Oct. 9, 2017; <https://www.theguardian.com/environment/2017/oct/09/ben-jerrys-to-launch-glyphosate-free-ice-cream-after-tests-find-traces-of-weedkiller>)

The Poison Papers, released by the Bioscience Resource Project and the Center for Media and Democracy, consist of over 20,000 rediscovered and newly digitized chemical industry and regulatory agency documents stretching back to the 1920s. The documents – most collected by author and activist Carol Van Strum – are posted at PoisonPapers.org.

The papers include scientific studies and summaries of studies, internal memos and reports, meeting minutes, strategic discussions and sworn testimonies. They show that both industry and regulators understood the extraordinary toxicity of many chemical products and worked together to conceal this information from the public and the press.

"In total, the stark truth revealed by these 50 years of documents is that the entire pesticide industry could not exist without lies, coverups, rampant fraud, and government enablers," said Van Strum, who authored the 1983 book “Bitter Fog: Herbicides and Human Rights.”

The chemicals most often discussed in the documents include dioxins, herbicides and pesticides (such as 2,4-D, dicamba, permethrin, atrazine and Agent Orange), and PCBs. Except for PCBs, almost every chemical discussed in the Poison Papers is still manufactured and sold, either as products or as product contaminants. (“The Poison Papers Expose Decades of Collusion between Industry and Regulators over Hazardous Pesticides and Other Chemicals,” by Jonathan Latham et al., Center for Media and Democracy, July 26, 2017; <https://www.poisonpapers.org/>)

Researchers from the University of California, Santa Barbara, looked at records of over 500,000 babies born between 1997 and 2011 in California’s San Joaquin Valley and found that the chance of **prematurely births** rose by about 8 percent and the chance of having a **birth abnormality** by about 9 percent **where pesticide use was greatest**. Those experiencing extreme exposures had an 11 percent increased probability of preterm birth and 20 percent increased probability of low birth weight. The researchers suggested that policies and interventions targeting areas with the greatest pesticide distribution near human habitation could largely eliminate such adverse outcomes. (“Agricultural pesticide use and adverse birth outcomes in the San Joaquin Valley of California,” by Ashley E. Larsen et al., Nature Communications, Aug. 29, 2017;

<https://www.nature.com/articles/s41467-017-00349-2>; “Pesticides linked to birth abnormalities in major new study,” by Ian Johnston, The Independent, Aug. 29, 2017; <http://www.independent.co.uk/news/science/pesticides-birth-abnormalities-linked-pregnancy-study-san-joaquin-valley-california-farms-a7918636.html>)

The environmental association Future Generations analyzed 30 food samples (cereals, pasta, beans and lentils) from supermarkets in France and found that 16 contained glyphosate residues. Concentrations were below the regulatory threshold for pesticide residues. (“Glyphosate, a herbicide in our plates,” by Aurore Coulaud, Liberation, Sept. 14, 2017; http://www.liberation.fr/futurs/2017/09/14/glyphosate-un-herbicide-dans-nos-assiettes_1596442; Original report: “Résultats exclusifs de recherche de glyphosate dans des aliments vendus en France,” Générations Futures, Sept. 14, 2017; <https://www.generations-futures.fr/actualites/glyphosate-residus-aliments-rapport/>)

In 2015, the international Task Force on Systemic Pesticides (TFSP) reviewed the science on the ecological effects of **neonicotinoid insecticides**. The scientists assessed more than 1,100 peer-reviewed studies and manufacturers’ data, and found clear evidence of **harm to honeybees and many other nontarget species**. In its September 2017 update of the assessment, the scientists reviewed more than 500 new peer-reviewed studies and found even broader impacts that threaten biodiversity and ecosystems worldwide. Jean-Marc Bonmatin, vice-chair of the TFSP, says these findings reiterate the need to stop all agricultural uses of systemic pesticides. (“Ban ‘neonic’ pesticides. Our food supplies are at risk,” by Jean-Marc Bonmatin, The Globe and Mail, Sept. 19, 2017; <https://beta.theglobeandmail.com/opinion/ban-neonic-pesticides-our-food-supplies-are-at-risk/article36291236/?ref=http://www.theglobeandmail.com&>)

Analyses of 198 samples of **honey** gathered from around the world from 2012 to 2016 found that 75 percent **contained measurable quantities of neonicotinoid insecticides**. Eighty-six percent of samples from North America contained one or more neonic, followed by Asia (80 percent) and Europe (79 percent). South America had the lowest figure (57 percent). Almost half the samples contained more than one neonic. Forty-eight percent exceeded concentrations of neonics great enough to harm bees significantly. All but two samples had total contamination levels below the maximum residue level that EU laws allow for human consumption. (“Honey tests reveal global contamination by bee-harming pesticides,” by Damian Carrington, The Guardian, Oct. 5, 2017; <https://www.theguardian.com/environment/2017/oct/05/honey-tests-reveal-global-contamination-by-bee-harming-pesticides>; “Nerve agents in honey,” by Christopher N. Connolly, Science, 10/6/2017; <http://science.sciencemag.org/content/358/6359/38.full>)

Twenty **florists** Belgium volunteered to wear cotton gloves for two to three hours per day on two consecutive days (one pair of gloves on each day) while handling flowers. When researchers tested the gloves for **residual pesticide deposits**, a total of 111 active substances (mainly insecticides and fungicides) were detected, with an average of 37 active substances per sample and a total concentration per glove sample of 22.22 mg/kg. In the worst cases, up to five active substances exceeded the Acceptable Operator Exposure Level (AOEL), indicating risk situations. The florist profession appears to be one in which workers are exposed regularly to very high numbers and rather high concentrations of toxic chemicals, say the researchers, who recommend

raising awareness among florists so that they use practices that minimize their exposure. (“Risk Assessment of Florists Exposed to Pesticide Residues through Handling of Flowers and Preparing Bouquets,” by Khaoula Toumi et al., *Int. J. Environ. Res. Public Health*, May 13, 2017;

<http://www.mdpi.com/1660-4601/14/5/526/htm>)

Biomass of airborne insects declined by 76 percent (82 percent in midsummer) over 27 years in 63 nature protection areas in Germany. Changes in land use and habitat cannot explain the overall decline. Destruction of wild areas and widespread pesticide use are the most likely factors, with climate change possibly involved as well, say the researchers. Flying insects may perish when they leave the reserves and encounter farmland with little food and/or with exposure to pesticides, said one. “Our results demonstrate that recently reported declines in several taxa such as butterflies, wild bees and moths, are in parallel with a severe loss of total aerial insect biomass, suggesting that it is not only the vulnerable species, but the flying insect community as a whole, that has been decimated over the last few decades,” according to the report. The decline “must have cascading effects across trophic levels and numerous other ecosystem effects,” the researchers add. (“More than 75 percent decline over 27 years in total flying insect biomass in protected areas,” by Caspar A. Hallmann et al., *PLOS ONE*, Oct. 18, 2017;

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0185809>; “Warning of 'ecological Armageddon' after dramatic plunge in insect numbers,” by Damian Carrington, *The Guardian*, Oct. 18, 2017;

<https://www.theguardian.com/environment/2017/oct/18/warning-of-ecological-armageddon-after-dramatic-plunge-in-insect-numbers>)

Spring 2018

Maine Board of Pesticides Control 2017 Recap

By Jean English and Heather Spalding

The Maine Board of Pesticides Control (BPC) addressed a new topic in 2017: the use of drones to apply pesticides. Beyond that, most of the meetings covered business as usual: granting variances and special registrations for pesticide uses, levying minimal fines for violators of pesticides rules, elucidating difficulties in tracking pesticide use in Maine, discussing budgets and more. The board canceled meetings scheduled for August, September and December, citing lack of business to discuss. The board also decided not to have a summer meeting/tour with a focus on a specific region of the state. MOFGA maintains that each meeting agenda should include an item addressing the public's concerns about pesticides.

The BPC, Maine's lead agency for pesticide oversight, is attached to the Maine Department of Agriculture, Conservation and Forestry (DACF). Its seven-member public board makes policy decisions. This report covers all 2017 BPC meetings. Complete documents relating to BPC meetings are posted at <http://www.maine.gov/dacf/php/pesticides/meetings.shtml>. MOFGA posts time-sensitive action alerts related to the BPC throughout the year at <http://www.mofga.org/Programs/PublicPolicyInitiatives/MaineBoardofPesticidesControl/tabid/3073/Default.aspx>, in our weekly Bulletin Board

(<http://mofga.org/Publications/BulletinBoard/tabid/2535/Default.aspx>) and on our Facebook page.

Representatives from MOFGA attend BPC meetings to represent MOFGA's views. This summary is taken from BPC minutes and from input from MOFGA staff members Heather Spalding and Katy Green.

Staff and Board Member Updates

Cam Lay became the BPC director this year. Walter Whitcomb, DACF commissioner, told the BPC that a board member was not on the selection committee in order to maintain fairness to the number of highly qualified candidates. Whitcomb noted that the board did have the final decision on the selection. The board approved Lay, with five in favor and one (Granger) opposed.

The board elected Deven Morrill (public member) as chair and Curtis Bohlen (public member) as vice-chair. Other members are Bruce Flewelling (agricultural expertise), Clark Granger (forestry expertise), John Jemison (water quality and soil specialist) and Richard Stevenson (commercial applicator expertise). Since the death of Carol Eckert, M.D., in October 2016, the position of a member with medical expertise has remained vacant. Retired family doctor Jack Waterman has been nominated to serve in this capacity. The Legislature will need to confirm Waterman's candidacy. Dr. Lebelle Hicks, longtime toxicologist with the BPC, announced her retirement from the Department of Agriculture. She intends to do consulting work as time allows.

Assistant Attorney General Mark Randlett also attends meetings.

Using Drones to Apply Pesticides

The BPC reviewed the potential use of drones (aka unmanned aerial vehicles, UAVs, or unmanned aerial systems, UASs) for aerial pesticide applications. To date, applying pesticides by drones has not been permitted in Maine, and the Federal Aviation Administration (FAA) has permitted such use in only a few locations nationwide. To make an application via drone, operators must apply to the FAA and comply with various regulations. Aerial pesticide applicators need to be commercial operators or masters and have the aerial category.

Current BPC rules do not distinguish between manned and unmanned aircraft.

Randlett said that the aerial pest control category and the drift rule would apply to applications by drones, but other issues may arise.

Jesse Gibbons of Coutts Brothers, a Randolph, Maine-based company that uses drones elsewhere for mapping and surveying electrical projects, said the drone creates a three-dimensional map using GIS and then that map is used to program the drone's path. Once programmed, the agricultural drone Coutts uses sprays from a height of 1 meter above crops. The droplet size can be adjusted, and pesticides can be applied to precise locations. The battery must be recharged every 45 minutes.

Heather Spalding asked if Coutts Brothers could work with the board to determine where drift occurs. Gibbons said that could be a great application.

Megan Patterson, BPC manager of pesticide programs, said that only commercial (not private) applicators can do aerial pesticide applications. They can oversee applications from a bucket truck, but no BPC rules require that they have to be able to see where spray is going to prevent drift. In addition to a UAV permit from the FAA, operators need other permits to apply pesticides, fly over heavily populated areas and carry hazardous chemicals. If they get those permits, nothing in Maine's rules prevents them from applying pesticides with drones.

Daniel Jockett, an FAA aviation safety inspector for Maine, New Hampshire and Vermont, discussed obtaining certification to apply pesticides with drones. He said that drones are aircraft, by public law. The FAA created new regulations for drones and revised the Code of Federal Regulations (CFR), which already covered balloons, amateur rockets, radio-controlled model aircraft and other non-standard aircraft. CFR part 107 applies to commercially operating small drones under 55 pounds. Certified operators must be at least 16 years old, pass an aeronautical exam, obtain a remote pilot certificate, pass a background check, conduct a pre-flight inspection, have no medical issues affecting safety, maintain visual line of sight during operation, stay below 400 feet or within 400 feet of a structure, stay under the maximum ground speed of 100 mph, ensure the drone weighs less than 55 pounds (including payload), fly during daylight or civil twilight only, not operate over people, have no more than one drone per operator and carry an external load only if it is secure and does not affect flight control.

For agricultural use the pilot also must obtain certification (free) under Part 137 of FAA flight standards. Some rules can be waived. See www.faa.gov/uas/request-waiver/. The FAA is creating regulations for drones heavier than 55 pounds, but currently the only way to operate one is to obtain a waiver. Examples of waivers include operating from a moving vehicle or aircraft, operating with no visual line of sight, and operating multiple small drones.

Before applying for certification under Part 137, the operator must petition FAA for any exemptions needed. For example, all aircraft pilots must have a shoulder restraint harness; a drone operator should apply for an exemption. Applicants must possess an aircraft, attend a precertification meeting, submit documents for review, complete a demo and inspection, receive a certificate and accept intermittent surveillance once certified. An FAA exemption is required to apply pesticides on one's own field. Operators should look at the Before You Fly app on faa.gov to see if they are within 5 miles of an airport.

Lebelle Hicks, BPC toxicologist, noted that most pesticide labels specify that aerial applications be made 10 feet over crops. Jockett was not aware of any pesticide labels that will be applicable for use with drones.

Regarding hacking, Jockett said an individual can direct a beam at a flying drone to make it drop, but efforts are ongoing to counteract this.

Jockett said no one has become certified to apply pesticides with drones in Maine, but an individual is interested in using the technology to make applications for browntail moth control.

Pesticide Use Data

The board received requests from MOFGA and the Natural Resources Council of Maine that it compile and release data on pesticide sales and use in Maine. MOFGA provided a list of active ingredients for which it would like data, in order to get some forward movement on this longstanding issue, since the BPC staff has repeatedly said that collecting the data was too onerous. Katy Green of MOFGA asked how the board is fulfilling its mandate of reducing pesticide use if no one knows what is being used. Randlett said the statute directs the board to “minimize reliance” on pesticides, not to “reduce use.”

Granger suggested using BPC funds to educate and promote IPM rather than to count pounds of active ingredient used. Morrill said data collection should parallel homeowner education. Green asked, if collecting information about pounds used was not the way to go, then what was? Morrill said the board does not have that answer yet and needs to determine what it can do with its existing budget.

Maine Migrant Health Program

The board approved \$6,630 in funding for the Maine Migrant Health (MMH) Program and Eastern Maine Development Corporation to help support worker safety training for summer 2017. During 2016, 704 individuals received Worker Protection Standard training and take-home exposure training, and 698 received heat stress training – 228 percent more than in 2015. Elizabeth Charles McGough, director of outreach for the Maine Migrant Health Program, noted that the late Carol Eckert, M.D., who had been a BPC member, had also been an MMH volunteer clinician. McGough suggested that \$1,000 of the funding be used to purchase items such as bandanas and water bottles with Eckert’s name on them to give to farm workers who complete the safety training, and \$1,500 be used to align the hourly rate of the summer staff person with that of other staff. The board agreed.

No Statute of Limitations on Complaints

Darin Hammond, senior manager of farm operations for Jasper Wyman & Son of Milbridge, Maine, wrote to the board about its investigation of complaints related to pesticide applications made by Wyman 20 months before the complaint was filed. He suggested a time limit for complaints and a way for a person to address the board before a complaint becomes a consent agreement. Randlett said that the latter option already exists. Regarding a statute of limitations, Randlett said that with state agencies and civil actions in Maine, generally no time limits exist on civil violations; that if the board enacted one, it would be ineffectual and unenforceable because the attorney general’s office would not be bound by it; and that he would investigate a complaint past a statute if it were in the interest of the public to do so. He advised against a policy that would restrict board or staff investigations or would restrict pursuing action against an alleged violation. He added that sometimes it would be appropriate and necessary to pursue complaints that are more than 20 months old.

Controlling Browntail Moth Near Marine Waters

Section 5 of Chapter 29 of Maine statutes regulates the use of insecticides to control browntail moth within 250 feet of marine waters. The board approved some newer, lower-risk products for use in the 50- to 250-foot area from the mean high tide mark to control browntail moth, including spinosad, *Bacillus thuringiensis kurstaki* and azadirachtin.

In addition, the board accepted a definition (only for Chapter 29 and only for applications for browntail moth control within 0 to 50 feet of the water) that a biological pesticide “includes any microbial pesticide that contains the microorganism and biological derivatives as approved by the Board.”

BPC Budget

The annual BPC budget of a little over \$2 million includes about \$138,000 from licensing application fees, \$1.9 million from product registration fees and \$300,000 from an EPA grant. The budget funds 10 permanent full-time positions, four full-time seasonal positions and five full-time positions in the Plant Health division (an apiarist, state horticulturist, two assistant horticulturists and an IPM coordinator).

About \$200,000 per year goes for administration fees, technology and other expenses that benefit programs in the Department of Agriculture, Conservation and Forestry.

Expenditures exceeded revenue by \$700,000 in 2016 because of Pega, a new portal for the department that provides access to all pesticide applicator and product registration information, including license expiration dates, exam scores, credits earned, applications for exams and licenses.

By law, the board must annually grant no less than \$135,000 to UMaine Cooperative Extension for IPM and other programs (but not for pesticide safety training). The budget also funds a grant to Cooperative Extension to develop and revise pesticide applicator training manuals. Donald Barry, who worked on manuals, recently retired. James Dill from Extension proposed revising the job to be a combined UM Pesticide Safety Education Program and Pesticide Applicator Training position and to fund the position at \$65,000 (including benefits). Dill added that writing a manual from scratch takes about 10 months to a year, and the 20 manuals for different commodities constantly need revision. The board approved the \$65,000 funding request.

Pesticide Registration and Variance Requests

The board or staff approved Special Local Need (SLN) [24(c)] pesticide registration and variance requests to the following:

Jeffrey M. Taylor of Vegetation Control Service, Inc., in Athol, Mass., to control invasive plants on Maine Audubon East Point Sanctuary property in Biddeford Pool within 25 feet of surface water

Dow AgroSciences, on behalf of UMaine Cooperative Extension and broccoli growers, to extend a registration for GoalTender™ herbicide (oxyfluorfen) for postemergent weed control on broccoli

Gowan Company Inc. to increase the number of allowable applications of Malathion 8 Flowable on cane berries from three to four per year to control spotted wing drosophila. The material would be rotated with other products, and the SLN would expire on December 31, 2018. Jemison said he wants to ensure that insect numbers warrant spraying, adding that finding an alternative such as a natural predator would be ideal. Randlett said that pest population cannot be considered for SLN registration of a pesticide. He cited Title 7 § 607(8-A)(D): “The board may not make any lack of essentiality a criterion for denying registration of any pesticide.”

J.R. Simplot Company for three new seed potato products that contain the VNT1 protein. Sharon Fitzpatrick of Simplot said the potatoes are genetically engineered (GE) with a wild potato gene that adds resistance to late blight and reduces the number of fungicide applications required in a late blight affected field. Fitzpatrick added that Simplot is beginning to use these seed potatoes for breeding, but every time they are bred, they change a little, so Simplot has had to seek regulatory approval three times. She also said that many potato chip packages say “produced with genetic engineering” and that some manufacturers are accepting GE products for the fresh market. Fitzpatrick shared a fungicide application chart for the GE potatoes indicating that the farmer could anticipate an early-season application, two applications mid-season and another late-season application. In the presence of late blight, they would need an every-14-day application schedule. Board member and potato grower Bruce Flewelling reported that his operation was normally on an every-five-to-seven-day application schedule.

Syngenta Crop Protection, Inc., for Callisto Herbicide on lowbush blueberries in bearing and nonbearing years for broadleaf weed control. The expiring 24(c) for Callisto is for use in lowbush blueberries during the crop-bearing year.

Loveland Products, Inc., for Malathion 8 Aquamul insecticide to increase the maximum application rate to control spotted wing drosophila on high and lowbush blueberries

Arkion Life Sciences LLC for use of Avipel Hopper Box (dry) corn seed treatment (anthraquinone) to discourage consumption of corn seed by grackles, blackbirds and crows

Dubois Contracting to broadcast herbicides along portions of the Ft. Kent levee along the St. John and Fish Rivers

Maine Department of Transportation to control of woody brush on roadsides in various towns

Stantec, Inc., to control Japanese knotweed on the Howard property in Phippsburg

Don Weimann of Asplundh Tree Expert Co. of Ironton, Ohio, and Brian Chateauvert of RWC, Inc., in Westfield, Mass., to control vegetation on railroad rights of-way

Ryan Minzner of The Woodlands Club in Falmouth, Maine, for its pest management program

Regarding variance requests for Chapter 29 Section 6 (broadcast spraying within 25 feet of surface water), the board began a two-year trial in 2015 in which staff could issue new variances for such pesticide applications in railroad and DOT rights-of-way under certain criteria. The staff asked for updated guidance for drafting a formal policy for initial variances and renewals, including whether flood-control levees and utility lines should be included in the policy. The board agreed that unless significant changes exist, the staff can grant repeat variances.

Also regarding Chapter 29 Section 6(c), Ron Lemin of Crop Production Services asked that the board clarify whether the definition of wetlands – “dominated by emergent or aquatic plants” – included dry areas such as ditches and skidder ruts growing plants such as phragmites, cattails and purple loosestrife. The board approved a policy that buffers are not required for small areas that do not contain standing water, including manmade depressions such as skidder ruts and road ditches, even if they contain plant communities normally associated with wetlands; and buffers are not required for manmade depressions even if they contain standing water.

Variances approved by the staff under Chapter 29 Section 6 included one to Elizabeth Farrell of New Portland for control of knotweed on her property along the Carrabassett River; to Joseph Anderson of High Pine Environmental, LLC, in Portland for control of phragmites in Kittery; William Burman of Burman Land and Tree, LLC, in Orrington to control invasive plants in Vassalboro; and to Stephen Dunham to control invasive plants in Baxter State Park.

Regarding registration requests for several new genetically engineered Bt corn products from Monsanto and Dow to control western corn rootworm by silencing a gene in the worm that produces a protein, Jemison asked if Maine has ever had a problem with this insect. Dill said they have been found but were never abundant enough to affect yield or quality. He added that a one-year crop rotation breaks the corn rootworm cycle. In October 2017 the board voted 3-1 (with Granger opposed) not to register the product based on lack of need. Not to be outdone, Monsanto and Dow sent representatives to the January BPC meeting to argue their case anew, in person. They explained that their products regularly met with pest resistance on a fairly predictable schedule, so they offered a concurrent schedule of proposed registrations for new GE corn products. Although they presented no evidence that the western corn rootworm was adversely impacting yield or quality of Maine corn crops, they maintained that farmers should have the best technology available to them at all times. Crop consultants and one dairy farmer in the room reported that they had, in fact, seen western corn rootworm in Maine, although they didn't provide quantifiable evidence of harm. Heather Spalding asked John Jemison how the state would quantify a need for a particular product. Jemison said that it was difficult to tell what was happening all over the state, and that he would prefer to gather more information on that point before approving registration on the Monsanto and Dow products. After a successful vote to reconsider the proposed registrations, the board voted to reverse its position from the October meeting and allow the registrations. Jemison opposed the motion.

Consent Agreements

The board approved the following consent agreements and fines:

Alfred Fugazzi, Stone Wall Farms, Lincoln – applying the restricted-use pesticide Lannate to bread placed near cropland to control crows. The pesticide killed two dogs and at least seven crows. \$1,500

Brian Cloutier, Greenscapes of Maine, Kennebunk – commercial use of Dimension, a fertilizer and herbicide product, by an unlicensed applicator at a housing complex in Wells to control crabgrass. \$400

Benjamin Goodall, Goodall Enterprises DBA NaturaLawn of America of Bangor – unauthorized application by a company employee of the insecticide DeltaGard G to a lawn in Rockport. \$500

Matt Ten Eyck of Salmon Falls Resort & Golf Club LLC of Hollis Center – two fungicide applications by an unlicensed applicator. \$400

Jason Douin of JD Landscapes Inc. of Augusta – attempted application of Roundup herbicide by an unlicensed employee. \$500

Weyerhaeuser Company of Fairfield – spraying herbicide in areas of Greenville that should not have been sprayed, including buffers and streams, by contracted JBI Helicopters and Skyline. Weyerhaeuser mapped areas to be sprayed and failed to note sensitive areas on the maps. \$8,000

Town of Ogunquit – rodenticide applications by unlicensed applicators and use of a pesticide product without a bait station, which was required for the outdoor, above-ground application made. \$3,500

Green Thumb Lawn Service of Brewer – applying an herbicide to the wrong property. \$1,000

Frederick's Property Preservation and Inspections of Dixmont – Unlicensed applicators exceeded the maximum rate of application of a weed and feed product while cleaning a foreclosed property in Whitefield and leaving weed and feed product in a wetland. \$900

Dependable Pest Solutions of Rochester, N.H. – An unlicensed applicator made 43 pesticide applications in Maine in 2016. \$1,500

Communications

The board received several communications. MOFGA (via Ted Quaday) and NRCM (via Ryan Parker) asked the board to track and annually disseminate sales data for proflam, dicamba, 2,4-D, imidacloprid, bifenthrin, dithiopyr, glyphosate, mecoprop and permethrin, believed to be among the most widely used active ingredients in urban areas of Maine. Maine resident Jody Spear also wrote about this issue, urging collecting data on even more pesticides (including fungicides) and noting that if the board does not collect pesticide sales data, “it may be that others will find a way to do it for individual municipalities, just as ordinance processes are being undertaken by activists city by city throughout the state.”

Spear also forwarded an article about pesticide regulation, diversified farming systems and long-term monitoring policies that protect pollinators; and another noting that signs posted on two properties sprayed in her neighborhood had no product information, EPA registration number, reason for application, etc., and that Modern Pest Control refused to disclose that information when she called the company. Lay said the information is not required if the individual's residence is more than 500 feet away.

In addition, Spear forwarded her Portland Press Herald editorial about the Portland pesticide ordinance.

MOFGA (via Heather Spalding) forwarded articles about the effects of pesticide industry funding on studies and publications by university faculty, about the toxicity of Roundup and glyphosate herbicides, about effects of pesticides on bees, about detections of neonicotinoid insecticides in U.S. waterways and drinking water, and about retail outlets that will no longer sell neonicotinoid insecticides. She also forwarded the Pesticide Primer written and updated annually by Sharon Tisher and posted on www.mofga.org.

Paul Schlein, a Maine resident and member of MOFGA's Public Policy Committee, supported a \$50,000 grant request from the Maine Forest Service for UMaine to research alternatives to control browntail moth. He also alerted the board to a United Nations report on the global use of pesticides and their effects and to a New York Times article about Monsanto and Roundup.

Wendell Caler of Caler Farms and Logging in Centerville wrote that he favored a statute of limitations on BPC enforcement actions.

Lynn Hower Allen of Rockland, Maine, and the Parkinson's Support Group of Camden, Maine, requested that Maine follow the lead of the UK and the EU and ban the use of pesticides containing Paraquat, which has been associated with the incidence of Parkinson's disease.

Gerry Blasé wrote about how Florida is dealing with using drones to apply pesticides.

Nancy Oden of Jonesboro wrote about concerns with using drones to apply pesticides and with authorizing the staff to approve repeat variance requests.

Timothy Mulherin wrote about the continuing lack of a BPC member with medical expertise.

Nancy Jezior opposed the BPC's approval of three genetically engineered potatoes.

Scott Longfellow supported of LD 1505 (see below).

Spencer Aitel, a Maine organic farmer, wrote about Maine DOT subcontractors treating roadside rights of way adjacent to his Two Loons Farm. At the January 2018 BPC meeting, Aitel presented his case to the board and highlighted the challenges he faces when the DOT neglects its contractual obligations not to spray farms. This was the beginning of an important discussion to explore methods for the DOT to minimize its reliance on pesticides – possibly by taking a mowing approach instead of herbicide spraying. Stay tuned.

Nancy Caudle-Johnson wrote of her concerns about pesticide applications at a retirement community in Camden.

Claire Adams and others forwarded an article from the Lincoln County News about the value of the UMaine Cooperative Extension Master Gardener Volunteer Program.

Provision of Worker Protection Standard Handler and Worker Training by Licensed Agricultural Basic Pesticide Applicators

In June 2016, BPC staff submitted an equivalency request to EPA regarding certification requirements for trainers of handlers and workers as defined by the Worker Protection Standard. The request argued that agricultural basic applicators be allowed to give their workers/handlers WPS training, since Maine's licensing and certification requirements for them exceed federal standards for certifying private applicators using restricted-use pesticides.

State-level Labeling Requirements for Minimum Risk (Section 25(b) of FIFRA) Pesticides

In 1996, EPA exempted minimum risk pesticides from federal regulation under section 25(b) of FIFRA. The Pesticide Control Act of 1975 has not been revised to reflect the new reality of minimum risk pesticides. Staff requested that the board provide definitive guidance on requiring the minimum protective language of "caution" and the Child Hazard Statement for all pesticide products registered in Maine, since EPA has no standards. The issue was tabled until the staff has more information.

Outreach to Homeowners

Efforts to reach homeowners in 2016 included holding meetings about browntail moth, updating websites, overhauling the YardScaping website content, an IPM presentation for the Rockport Conservation Committee and general public, a presentation at a land trust conference about herbicide use on land trusts (during which Patterson learned that most land trusts do not have a licensed applicator working with them), master gardener talks, and obsolete pesticide collection (at which staff talks about ways to properly use and reduce pesticide use).

Legislation

LD 1505 sought to limit municipalities' ability to regulate pesticides. The bill language mirrored a template designed by the American Legislative Exchange Council (ALEC), a national, industry-backed group organized to abolish regulations at the state level. The Joint Standing Committee on Agriculture, Conservation and Forestry (ACF) considered the bill, but many committee members expressed concerns about how it would impact municipalities' longstanding policies that were geared to local population, ecology, industry, topography, etc. The ACF asked for input from the BPC. The board discussed such issues as potentially having 500 different ordinances, personal rights versus community rights, restricting homeowners' rights on their own property, home rule, education about the BPC and pesticides, board support for municipalities, using Chapter 60 Designation of Critical Pesticide Control Areas, values, and education about

IPM. The board drafted a proposed amendment to LD 1505, and the staff drafted a memo to the Committee on State and Local Government summarizing the board's discussion and explaining that it had approved the proposed language by a vote of 4-2. The ACF Committee unanimously rejected the ALEC proposal.

LD 174 An Act To Limit the Use of Pesticides on School Grounds. This bill would require annual submittal to the BPC of all pest management activity in schools and posting of the information on the BPC website. Lay said staff would of course comply with Legislative instructions, but without additional resources, it could, at most, scan and post the information as received. The bill was carried over to the next legislative session.

LD 418 An Act To Educate the Public on the Proper Use of Pesticides and To Promote Integrated Pest Management Using Existing Resources – died in committee

LD 699 An Act To Enact the Toxic Chemicals in the Workplace Act – died between houses

LD 993 An Act To Protect Pollinators from Neonicotinoid Pesticides – voted “ought not to pass”

Public Law 2017 Chapter 59 An Act To Modify the Definition of “General Use Pesticide” (LD 594). This law changed the definition of “general use pesticide” to match the definition in BPC rule and thus to include 25b (minimum risk) products. This clarifies that individuals who use only 25b products need an Agricultural Basic or Private pesticide applicator license. The bill passed.

[End of BPC news]

The Good News

After almost two years of debate, task-force meetings and public testimony, **Portland's City Council** voted unanimously (9-0) on January 3, 2018, to pass one of the strongest **Organic Lawn Care Ordinances**.

The ordinance bans synthetic pesticides on public and private property. The start date for the ordinance is July 1, 2018, while it will apply to five high-use athletic fields in 2021. Hadlock Field (where the Portland Sea Dogs play home games) and Riverside Golf Course are exempt.

The ordinance establishes a Pest Management Advisory Committee (PMAC) comprised of city staff, land care and pest control experts, and Portland residents, according to Beyond Pesticides. Within PMAC, a waiver committee will review requests to use more-toxic pesticides.

The ordinance includes a strong outreach and education campaign to ensure the community is aware of the changes, and of best practices for their lawns and landscapes. Violations of the ordinance will be subject to potential civil penalties of \$100 to \$500 as enforced by the city manager.

Portland Protectors, founded in 2014 by journalist Avery Yale-Kamila and organic beekeeper Maggie J. Knowles, is largely responsible for the victory. The organization highlighted the public health risks to children, bees and waterways of chemical pesticide use. Its social media and Bee Safe yard sign campaign prompted concerned citizens to convince the City Council to pass the ordinance.

Many other individuals and groups supported the ordinance, as well. Friends of Casco Bay was a vocal proponent. Cathy Ramsdell, its executive director, wrote to the Portland City Council: “Our monitoring efforts reveal that the lawn chemicals we are putting on yards can end up in the Bay ... Between 2001 and 2009, we collected rain water flowing into the Bay and analyzed the samples for a suite of pesticides. Lab results identified 9 different pesticides in 14 locations all around the Bay.”

Advocates are concerned, said Beyond Pesticides, about a clause exempting high-use athletic fields for a period of time. Yale-Kamila noted that “the city used 2,200 pounds of high risk weed-and-feed on five student athletic fields last year. This use will be allowed until 2021, and we want to see it stop much sooner.”

Portland Protectors hopes the council will later restrict synthetic fertilizer use and the sale of synthetic pesticides and fertilizers. Beyond Pesticides noted the growing recognition that the success of policies that restrict pesticides entails a change in management practices away from fertilizers that damage soil and undermine healthy turf.

Twenty-eight Maine jurisdictions have restricted pesticides in various ways, including on public property, but the comprehensive Portland-style ordinance stops virtually all hazardous pesticide use in the community. The legislation is similar to an ordinance passed by the City of South Portland in 2016 and adopted by ballot initiative by the Town of Ogunquit in 2014.

Maine is one of seven states in which state legislative action has not taken away (or preempted) local authority to restrict pesticides more stringently than the state. Last year the chemical industry tried unsuccessfully to push such legislation in Maine. (“Portland Becomes an Organic City with Unanimous Passing of Ordinance,” Portland Protectors press release, by Maggie J. Knowles and Avery Yale-Kamila, Jan. 4, 2018; “Portland, ME Becomes an Organic City, Banning Toxic Pesticides on Public and Private Property,” Beyond Pesticides, Jan. 5, 2018; <https://beyondpesticides.org/dailynewsblog/2018/01/portland-becomes-organic-city-banning-toxic-pesticides-public-private-property/>)

Since 1981, Rodale Institute has been comparing conventional and organic cropping systems in field trials in Kutztown, Pennsylvania. The most recent results from this study, published in *Organic Agriculture*, found that overall, **organic system yields equaled conventional while at the same time improving soil quality**. Organic systems also led to greater profitability while requiring less energy and emitting fewer greenhouse gases to produce the same amount of crops as conventional. (“Studies on long-term performance of organic and conventional cropping systems in Pennsylvania,” by Rita Seidel et al., *Organic Agriculture*, March 2017; <https://link.springer.com/article/10.1007/s13165-015-0145-z>)

Researchers from several European agricultural organizations using a food systems model say that a 100 percent **conversion to organic agriculture** would require more land than conventional agriculture but would reduce oversupplied nitrogen and pesticide use. Combined with reducing livestock numbers and consumption of animal products, and with reducing food waste, organic agriculture can contribute sustainably to feeding more than 9 billion people in 2050. The authors calculate, for example, that combining 60 percent organic production with 50 percent less livestock feed production and 50 percent reduced food waste would need little additional land and have an acceptable N supply. Organic agriculture becomes more viable with lower yield gaps between organic and conventional and with greater climate change impacts on agriculture. The authors detail other scenarios as well. (“Strategies for feeding the world more sustainably with organic agriculture,” by Adrian Muller et al., Nature Communications, Nov. 14, 2017; <https://www.nature.com/articles/s41467-017-01410-w>)

A global meta study by FiBL (the Research Institute of Organic Agriculture) of 57 systematically selected international publications (149 pairwise comparisons) found that **soils in organic farming contain on average 59 percent more biomass from microorganisms**, which are up to 84 percent more active compared with those under conventional farming. That increased activity leads to faster conversion of organic matter such as compost into plant-available nutrients. The study also found that the positive effect of organic farming on the activity of microbes is significantly increased in warm and dry climates; that organic fertilizer, a diverse crop rotation and the inclusion of legumes in the crop rotation have positive effects on microbial abundance and activity; and that organic farming has a positive effect on soil pH and soil carbon, which in turn benefit the microbes. The paradox, says FiBL, is the lower yield in organic farming. “This is due to the lack of adapted varieties in organic farming and the avoidance of chemical plant protection agents and synthetic fertilisers as well as herbicides. However, there is mounting evidence that organic farming systems using adapted varieties produce more stable yields in drought conditions. The higher biomass in the soil is also significant for the climate: Organically farmed soils contain more humus, which helps in the sequestration of the greenhouse gas CO₂.” (“Organic farming enhances soil microbial abundance and activity—A meta-analysis and meta-regression,” by Martina Lori et al., PLOS ONE, July 12, 2017; <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0180442>; “More microbes in organic soil,” FiBL, Sept. 25, 2017; <http://www.fibl.org/en/media/media-archive/media-archive17/media-release15/article/mehr-mikroben-im-bioboden.html>)

Researchers compiled data from studies from around the world to assess the effects of organic farming and high plant diversity in fields on the diversity of pollinators, beneficial insects that eat pest insects, insects that eat plants, and insects that help decompose dead plant matter. Overall, **organic farms** and fields with high levels of plant diversity **increased the abundance and number of species of beneficial insects** such as pollinators and pest predators. The greatest increases in biodiversity occurred in fields as opposed to the surrounding landscape. The fact that increases in diversity were largest for beneficial insects suggests that farming organically or cultivating high plant diversity in fields can increase insects that provide beneficial services on the farm without increasing pest populations. (“A global synthesis of the effects of diversified farming systems on arthropod diversity within fields and across agricultural landscapes,” by

Elinor M. Lichtenberg et al., *Global Change Biology*, Nov. 2017;
<http://onlinelibrary.wiley.com/doi/10.1111/gcb.13714/full>

Penn State researchers found that **mushrooms** have high amounts of the ergothioneine and glutathione, important **antioxidants** that some scientists suggest could help fight many of the diseases of aging, such as cancer, coronary heart disease and Alzheimer's, and bolster health. "[M]ushrooms are the highest dietary source of these two antioxidants taken together, and ... some types are really packed with both of them," said Robert Beelman, professor emeritus of food science and director of the Penn State Center for Plant and Mushroom Products for Health.

The researchers said the amounts of ergothioneine and glutathione in mushrooms vary greatly by species, with porcini species containing the highest amount, by far, of the two compounds among the 13 species tested. More common mushroom types, such as the white button, had less of the antioxidants, but higher amounts than most other foods.

The researchers also found that mushrooms that are high in glutathione are also high in ergothioneine. Cooking mushrooms does not seem to significantly affect the compounds.

Preliminary research shows that countries with more ergothioneine in their diets, such as France and Italy, have lower incidences of neurodegenerative diseases, while people in countries such as the United States, with low amounts of ergothioneine in the diet, have a higher probability of such diseases as Parkinson's and Alzheimer's. ("Mushrooms are full of antioxidants that may have anti-aging potential," by Matt Swayne, *Penn State News*, Nov. 9, 2017;
<http://news.psu.edu/story/491477/2017/11/09/research/mushrooms-are-full-antioxidants-may-have-antiaging-potential>)

Organic

The proposed USDA Organic Livestock and Poultry Practices Rule (OLPP) that would have guaranteed certain amounts of space, light and access to the outdoors in order to minimize stress, facilitate natural behaviors and promote well-being of **certified organic livestock** was finalized in January 2017, but the USDA delayed implementing it repeatedly after Donald Trump's inauguration and subsequent regulatory freeze.

The proposed rule, many years in the making, would have required that hens in organic egg farms have least 1 square foot of space inside and access to the outdoors. The USDA said the proposed rule for poultry "may hamper market-driven innovation and evolution and impose unnecessary regulatory burdens."

MOFGA and several other accredited certification bodies, the Organic Trade Association, the National Organic Coalition and several other entities had submitted comments urging that the rule become effective.

In September 2017, the Organic Trade Association sued USDA, alleging that it unlawfully delayed the OLPP and failed to protect the integrity of the organic label.

When it announced the third delay, on November 9, 2017, the USDA Agricultural Marketing Service said, “during the course of reviewing the rulemaking record for the OLPP final rule, AMS discovered a significant, material error in the mathematical calculation of the benefits estimates. With the material error, the regulatory impact analysis presented costs and benefits in a table that could be reasonably interpreted to conclude that benefits were likely to exceed the costs.”

In response to the November 9 delay, Reps. Chellie Pingree (D-ME), Peter DeFazio (D-OR) and Ron Kind (D-WI) released a statement saying, “We are outraged that USDA has delayed the Organic Livestock and Poultry Practices Rule (OLPP) for a third time. This is not regulation for regulation’s sake. This rule has already undergone over 10 years of public process and debate.

“During USDA’s most recent public comment period on this rule, USDA asked commenters to choose one of four options: implement, suspend, delay, or withdraw the rule. By USDA’s own admission, over 40,000 of the 47,000 total commenters supported implementing the rule immediately. Only one commenter suggested the rule should be delayed – yet, that is the option that USDA is moving forward with.

“It is overwhelmingly clear that consumers expect high welfare standards for animals raised under organic practices. It is also clear that organic farmers need clarity and a level playing field. We should be doing everything we can to preserve integrity in the organic label, not jeopardizing consumer confidence by refusing to let OLPP take effect. We urge USDA to listen to the public and implement the rule immediately.”

Despite that overwhelming clarity, the **Trump administration announced in December 2017 that it intended to withdraw** the rule completely, saying that the 1990 law creating the USDA Organic label does not allow “broadly prescriptive, stand-alone animal welfare regulations.” This opened yet another comment period, which ended on January 17, 2018.

(“Years in the Making, Organic Animal Welfare Rules Killed by Trump’s USDA,” by Lynne Curry, Civil Eats, Dec. 18, 2017; <https://civileats.com/2017/12/18/years-in-the-making-trumps-usda-kills-organic-animal-welfare-rules/>; “Should ‘USDA Organic’ animals be treated more humanely? The Trump administration just said no,” The Washington Post, by Peter Whoriskey, Dec. 15, 2017; https://www.washingtonpost.com/news/wonk/wp/2017/12/15/should-usda-organic-animals-be-treated-more-humanely-the-trump-administration-just-said-no/?hpid=hp_hp-more-top-stories_organic-1020pm%3Ahomepage%2Fstory&utm_term=.db74dc37db13; Statement from Reps. Chellie Pingree, Peter DeFazio, and Ron Kind on Third Delay of USDA Organic Livestock and Poultry Practices Rule, Nov. 9, 2017; ACTION: Final rule; delay of effective date, USDA Agricultural Marketing Service, Nov. 8, 2017; <https://s3.amazonaws.com/public-inspection.federalregister.gov/2017-24675.pdf> <https://www.federalregister.gov/agencies/agricultural-marketing-service>)

Climate

Does field crop irrigation make sense in the Northeast? The USDA Natural Resources Conservation Service, UVM Extension Center for Sustainable Agriculture and the Intervale Community Farm (ICF) in Burlington, Vermont, studied the economic costs and benefits of

irrigation at ICF from 2006 to 2016. In all but one year, the benefits of avoided crop loss exceeded the costs of irrigation. ICF reduced investment costs by purchasing used equipment and using existing wells. (“Irrigation Pays in Protecting Crop Revenues in the Northeast – An Economic Case Study at Intervale Community Farm,” USDA Climate Hubs; <https://www.climatehubs.ocs.usda.gov/irrigation-pays-protecting-crop-revenues-northeast>; Full report at http://www.uvm.edu/sustainableagriculture/resources/irrigation_case_study_intervale_july_2017.pdf)

Food Safety

An Act to Recognize **Local Control Regarding Food Systems**, LD724, took effect in Maine on November 1, 2017. It applies to sales conducted at farms and homes where the food was produced, only in towns that have formally declared food sovereignty, and when sales occur directly between producer and consumer. The law was amended in October to exclude meat and poultry processing (so that Maine would not lose jurisdiction over its meat processing facilities to the federal government), and to exclude sales at farmers' markets or other public venues. The Maine Federation of Farmers' Markets has details at <http://www.maine farmersmarkets.org/food-sovereignty/>.

Young Farmers

According to the 2017 National Young Farmer Survey of 3,517 current, former and aspiring U.S. farmers under age 40, **America’s young farmers expect to overcome major barriers to their success in agriculture**, including access to land, affordable health care and mounting student loan debt; but success will require deliberate policy change at all levels of government. The survey was conducted by the National Young Farmers Coalition (NYFC) in partnership with Dr. Kathleen Merrigan, executive director of sustainability at George Washington University and former U.S. Deputy Secretary of Agriculture. Of the farmers responding, 63 percent described their farming as organic, although many are not certified.

The top challenge cited by young farmers is land access, particularly finding and affording land on a farm income. It is the main reason farmers quit farming and aspiring farmers haven’t yet started.

The NYFC calls on lawmakers to enact policy reforms in the “Young Farmer Agenda,” including addressing land access and affordability; helping young farmers manage student debt; increasing the skilled agricultural workforce; enabling farmers to invest in on-farm conservation; improving credit, savings and risk management opportunities for young farmers; and addressing racial inequity among farmers. Individuals, says NYFC, can support their local food economy; rent or sell farmland to young and beginning farmers; enable their businesses to be part of the solution; and join NYFC to add their voices to the young farmer movement. (“Building a Future with Farmers II,” National Young Farmers Coalition, 2017; <http://www.youngfarmers.org/survey2017/>)

Pesticides

A study followed 325 women who used in vitro fertilization to try to get pregnant. Based on dietary patterns the women described in a questionnaire and data from USDA identifying foods that tend to have the greatest **pesticide residues**, women who ate more than two servings daily of such produce were 26 percent **less likely to have a baby** than those who ate less than one serving. (“Pesticide Residues Linked to Unsuccessful IVF,” by Kerry Grens, The Scientist, Oct. 30, 2017;

<http://www.the-scientist.com/?articles.view/articleNo/50780/title/Pesticide-Residues-Linked-to-Unsuccessful-IVF/>)

Researchers exposed plants and human cells to glyphosate alone and 14 of its formulations. They found that **glyphosate was not the major toxic compound in the herbicide formulations: Petroleum-based compounds in the formulations were much more toxic**. The researchers also identified arsenic, chromium, cobalt, lead and nickel in pesticide formulations, with all but one diluted formulation containing a cocktail of metals. “This phenomenon thus appears to be widely distributed in the world, as our samples came from the European Union and North America,” say the researchers. They note that in vivo experiments used to regulate acceptable daily intake of pesticides use the “active ingredient” only and not the entire formulation, and conclude “that the difference between ‘active ingredient’ and ‘inert compound’ is a regulatory assertion with no demonstrated toxicological basis.” (“Toxicity of formulants and heavy metals in glyphosate-based herbicides and other pesticides,” by N. Defarge et al., Toxicology Reports, Vol. 5, 2018; <https://www.sciencedirect.com/science/article/pii/S221475001730149X>)

A study of **residues of glyphosate** and its metabolite AMPA (aminomethylphosphonic acid) in the urine of 100 adults over age 50 detected residues of glyphosate in 12 urine samples from 1993 to 1996, 30 from 1999 to 2000 and 70 from 2014 to 2016. The mean concentration of glyphosate in detects more than doubled between 1993-1996 and 2014-2016. The prevalence of samples with detects of AMPA also increased, from 5 to 71 over the course of the study. In addition to using glyphosate-containing herbicides to control weeds, U.S. farmers have used the toxicant increasingly since 2002 to desiccate wheat, oats, barley, beans and other crops soon before harvest, in order to be able to harvest earlier. (“Analysis: Glyphosate exposure trends demand a public health driven response,” by Dr. Richard Jackson and Charles Benbrook, Environmental Health News, Oct. 30, 2017;

<http://www.ehn.org/analysis-glyphosate-exposure-trends-demand-a-public-health-driven-response-2502467074.html>; “A Weed Killer Is Increasingly Showing Up in People's Bodies,” by Dan Charles, Time, Oct. 26, 2017; <http://time.com/4993877/weed-killer-roundup-levels-humans/>; “Excretion of the Herbicide Glyphosate in Older Adults Between 1993 and 2016,” by Paul J. Mills, Ph.D., et al., Journal of the American Medical Assoc., Oct. 24/31, 2017; <https://jamanetwork.com/journals/jama/article-abstract/2658306>)

The long-term Agricultural Health Study of cancer incidence in 54,251 farmers and agricultural workers in Iowa and North Carolina found that **glyphosate was not statistically significantly associated with cancer** at any site, based on subjects’ reporting of their use of the herbicide. Marginally higher (but not statistically significant) rates of acute myeloid leukemia did exist among applicators in the highest exposure quartile than in those who never used the chemical. This difference requires confirmation, said the researchers. The World Health Organization

International Agency for Research on Cancer has classified glyphosate as **probably carcinogenic** to humans, in light of its mechanism of action and associations with non-Hodgkin lymphoma in some epidemiologic studies. And Nathan Donley of the Center for Biological Diversity was quoted in The Los Angeles Times: “The only way the EPA could conclude that glyphosate poses no significant risks to human health was to only analyze industry studies and ignore its own guidelines when estimating cancer risk.” (“Study finds no firm glyphosate-cancer link,” by Robert Arnason, The Western Producer, Nov. 9, 2017; <http://www.producer.com/2017/11/study-finds-no-firm-glyphosate-cancer-link/>; “Glyphosate Use and Cancer Incidence in the Agricultural Health Study,” by Gabriella Andreotti et al., J. National Cancer Institute, Nov. 9, 2017; <https://academic.oup.com/jnci/article-abstract/doi/10.1093/jnci/djx233/4590280?redirectedFrom=fulltext>; “EPA says herbicide in Roundup weed killer doesn't cause cancer, contradicting California regulators,” by Geoffrey Mohan, The Los Angeles Times, Dec. 18, 2017; <http://www.latimes.com/business/la-fi-pesticide-cancer-20171218-story.html>)

Cornell researchers have found that **glyphosate can harm the metabolism of some species of beneficial Pseudomonas bacteria in soils**. Beneficial Pseudomonas can stimulate plant growth and fight harmful fungi, such as Pythium and Fusarium. Glyphosate did not harm Pseudomonas protegens, a biocontrol for cereal crops, or Pseudomonas fluorescens, a fungus biocontrol for fruit trees, but growth of Pseudomonas putida, used to control some harmful soil fungi, was stunted. (“War on weeds takes toll on beneficial bacteria in the soil,” Phys.org, Oct. 24, 2017; <https://phys.org/news/2017-10-war-weeds-toll-beneficial-bacteria.html>; “Glyphosate-Induced Specific and Widespread Perturbations in the Metabolome of Soil Pseudomonas Species,” by Ludmilla Aristilde et al., Frontiers in Environmental Science, June 2017; <https://www.frontiersin.org/articles/10.3389/fenvs.2017.00034/full>)

The pesticide **chlorpyrifos** is in a class of chemicals that Nazi Germany developed as a nerve gas. Residues of the brain-damaging insecticide, made by Dow, occur in food, air and drinking water, reports Nicholas Kristof in The New York Times. Chlorpyrifos has also been linked to lung cancer and Parkinson’s disease in adults, he writes. More recently, federal fisheries experts have said that chlorpyrifos, diazinon and malathion – all widely used insecticides – are washing into streams and rivers and jeopardizing survival of many species of salmon and on orcas that feed on those salmon. In late 2017, the Trump administration overturned a long-planned ban of the pesticide for agricultural and outdoor uses, including on golf courses and road medians. Public health experts say that Dow donated \$1 million to Trump’s inauguration. “The American Academy of Pediatrics protested the administration’s decision on the nerve gas pesticide, but officials sided with industry over doctors. The swamp won,” Kristof concludes. (“Trump’s Legacy: Damaged Brains,” by Nicholas Kristof, The New York Times, Oct. 28, 2017; <https://www.nytimes.com/interactive/2017/10/28/opinion/sunday/chlorpyrifos-dow-environmental-protection-agency.html>; “Government Scientists Say A Controversial Pesticide Is Killing Endangered Salmon,” by Dan Charles, NPR, Jan. 11, 2018; <https://www.npr.org/sections/thesalt/2018/01/11/577178180/government-scientists-say-a-controversial-pesticide-is-killing-endangered-salmon>)

In November 2017, **the UK decided to back a total ban on neonicotinoid insecticide** uses in fields (but not in greenhouses) across Europe, given contamination of whole landscapes, damage

to bees colonies and the disappearance of 75 percent of flying insects in Germany. (“UK will back total ban on bee-harming pesticides, Michael Gove reveals,” by Damian Carrington, The Guardian, Nov. 9, 2017; <https://www.theguardian.com/environment/2017/nov/09/uk-will-back-total-ban-on-bee-harming-pesticides-michael-gove-reveals>)

Researchers at the University of Stirling found that field-realistic doses of a **neonicotinoid insecticide affect bumblebee behavior**, interfere with the type of vibrations bees produce while collecting pollen and hence reduce the number of pollen grains collected. Bees that were not exposed to the pesticide collected more pollen as they became more experienced in the behavior – unlike treated bees, who collected 47 to 56 percent less pollen. This suggests that the insecticide may affect memory and cognition in bumblebees. (“Neonicotinoid pesticide limits improvement in buzz pollination by bumblebees,” by P. R. Whitehorn et al., Scientific Reports, Nov. 14, 2017; <https://www.nature.com/articles/s41598-017-14660-x>; “Pesticides May Cause Bumblebees to Lose Their Buzz, Study Finds,” University of Stirling, Lab Manager, Nov. 16, 2017; <http://www.labmanager.com/news/2017/11/pesticides-may-cause-bumblebees-to-lose-their-buzz-study-finds#.Why8SyplsM>)

Imidacloprid (a neonicotinoid) and chlorpyrifos (an organophosphate) – two of the most widely used insecticides worldwide – **can directly affect songbird migration**, and treated seeds are often present in agricultural fields where birds rest during migration. Eating the equivalent of just three to four imidacloprid-treated canola seeds or eight chlorpyrifos granules a day for three days caused up to 25 percent weight loss and altered migratory orientation in sparrows, with birds failing to orient or changing their northward orientation. Such effects could delay or change migratory flight routes and reduce birds’ chances of survival or cause them to miss breeding opportunities, say the researchers. (“U of S research reveals controversial insecticides are toxic to songbirds,” University of Saskatchewan, Nov. 9, 2017; <https://news.usask.ca/articles/research/2017/u-of-s-research-reveals-controversial-insecticides-are-toxic-to-songbirds.php>)

University of Illinois scientists have shown that **honeybees preferred to collect sugar syrup laced with the fungicide chlorothalonil** over sugar syrup alone. They avoided another fungicide tested and were neutral about a third but favored the herbicide glyphosate. Consuming chlorothalonil could exacerbate the toxicity of other pesticides to bees, kill beneficial fungi in hives and harm bees’ ability to metabolize pesticides used to kill parasitic mites in hives, reports Emma Batha. (“Honey bees' attraction to fungicide ‘unsettling’ for food output – study,” by Emma Batha, Reuters, Jan. 9, 2018; <https://www.reuters.com/article/agriculture-bees-fungicide/honey-bees-attraction-to-fungicide-unsettling-for-food-output-study-idUSL8N1P4442>)

The FDA’s most recent annual pesticide report, covering fiscal year 2015, shows **increased occurrence of pesticide residues in thousands of samples of commonly consumed foods**. Of 207 pesticides detected, the insecticide chlorpyrifos was the fourth-most prevalent. Carey Gillam reports that about 50 percent of domestic food and 43 percent of imported foods sampled had residues – up from about 37 and 28 percent, respectively, in 2010. The latest USDA residue report, says Gillam, also for the 2015 period, found about 85 percent of samples contained pesticide residues. Of U.S.-grown produce, about 82 percent of fruits and 62 percent of

vegetables had residues, versus 51 and 47 percent for imported fruits and vegetables, respectively. More than 9 percent of imported produce violated legal pesticide residue limits, versus 2.2 percent of U.S.-grown fruits and 3.8 percent of U.S.-grown vegetables. (“Hold the plum pudding: US food sampling shows troubling pesticide residues,” by Carey Gillam, Environmental Health News, Dec. 21, 2017; <http://www.ehn.org/what-foods-have-the-most-pesticides-on-them-2518891617.html>)

Forcing the withdrawal of individual “bad actor” synthetic chemicals from the market is successful occasionally, says Jonathan Latham, citing DDT and lindane as examples. But that method **will take approximately until 1 million AD** to address the 70-100,000 man-made chemicals on the market – if no new products are added during that time and if it takes only 10 years to remove a product.

Also, says Latham, “chemical testing is a pointless procedure because the potential serious harms from toxic chemicals are essentially endless, whereas chemical testing assesses these harms: carcinogenicity, neurotoxicity, liver toxicity, reproductive toxicity, multigenerational effects, one at a time. A whole city’s worth of rats would have to be tested to even begin to work out if just one chemical was harmful, and that is just harmful to rats. Whether that chemical was harmful to people would still be open to considerable question.”

Latham suggests, instead, using anti-GMO campaign tactics that “have more-or-less successfully kept GMOs out of Europe, China and Asia, and Africa, and made GMOs a pariah even where they are grown.” Rather than distinguishing among different GE crops, campaigns target them overall, due to opposition to patents on life, corporate control, chemical pollution, or hazards specific to GMOs.

“The environment movement needs to end single chemical campaigns and hit the chemical industry where it hurts. Ban ALL synthetic chemicals from agriculture. Ban ALL synthetic chemicals from schools and school grounds. Ban them from public areas, or your entire municipality (it can be done), including from food contact.”

Latham has other suggestions: Make regulators liable for their decisions; propose ending subsidies to industries that use synthetic chemicals in or on foods; and automatically compensate individuals whose bodies contain toxic chemicals and who become sick, from a fund provided by the industry that made that chemical. (“EU Reapproval of Glyphosate Leaves Environmentalists' Strategy in Tatters; What Now?” by Jonathan Latham, Ph.D., Independent Science News, Nov. 27, 2017;

<https://www.independentsciencenews.org/health/eu-reapproval-of-glyphosate-leaves-environmentalists-strategy-in-tatters/>)

Genetic Engineering

Note: Organic production does not allow the use of genetically engineered (GE or GMO – genetically modified organism) inputs.

For nearly 20 years, **GE Golden Rice** has been promoted as a potent tool to alleviate vitamin A deficiency. The crop has never been commercialized, however, allegedly because of “over-

regulation” and “anti-GMO” opposition. However, Indian scientists who introduced Golden Rice transgenes into their high yielding and agronomically superior Indian rice variety Swarna found pale and stunted plants with delayed flowering, abnormal root growth, extra side shoots, reduced height and fertility, and yields one-third those of non-GE Swarna. “[T]he Golden Rice transgenes given to them by Syngenta caused a metabolic meltdown,” says Jonathan Latham, executive director of the Bioscience Resource Project. “The classic criticisms of genetic engineering as a plant breeding tool have always been, first, that introduced DNA will disrupt native gene sequences and, second, that unpredictable disruption of normal metabolism may result from introducing new functions. Golden Rice exemplifies these flaws to perfection.” (“Goodbye to Golden Rice? GM Trait Leads to Drastic Yield Loss and “Metabolic Meltdown,” by Allison Wilson, Ph.D., Independent Science News, Oct. 25, 2017; <https://www.independentsciencenews.org/health/goodbye-golden-rice-gm-trait-leads-to-drastic-yield-loss/>)

Summer 2018

The Good News

A modeling study shows that **organic agriculture hotspots** (clusters of counties with positively correlated high numbers of organic operations) lead to a lower county-level poverty rate by as much as 1.6 percentage points and a higher (over \$1,600) median household income than general agriculture hotspots. “These results provide strong motivation for considering hotspots of organic handling operations and ... of organic production to be local economic development tools, and may be of interest to policymakers whose objective is to promote rural development,” say the authors. They also note that prominence of outreach by certifiers or government-based certification is positively associated with organic hotspot formation. (“Economic impact of organic agriculture hotspots in the United States,” by Julia Marasteanu and Edward Jaenicke, Renewable Agriculture and Food Systems, Feb. 2018; https://www.researchgate.net/publication/323151836_Economic_impact_of_organic_agriculture_hotspots_in_the_United_States)

A study in the Northern Plains of the United States compared 40 corn fields on 10 farms using regenerative methods (abandoning tillage or actively rebuilding soil communities following tillage, eliminating bare soil, using no insecticides, fostering plant diversity and integrating livestock and cropping operations) with 36 fields on eight conventional farms (tilling at least annually, using insecticides – neonicotinoids and GE Bt crops – and leaving soil bare after harvest). **Regenerative farming systems provided greater ecosystem services and profitability for farmers than conventional corn production.** Pests were 10-fold more abundant in insecticide-treated corn fields than on insecticide-free regenerative farms, indicating that farmers who design pest-resilient food systems outperform those who react to pests chemically, say the researchers. Grain production was 29 percent lower in regenerative fields, but profits were 78 greater than in conventional systems. The researchers suggest that regenerative systems could produce more human food by increasing their diversity of livestock or increasing how long current livestock graze. (“Regenerative agriculture: merging farming and natural resource conservation profitably,” by Claire E. LaCanne and Jonathan G. Lundgren, PeerJ, Feb. 26, 2018; <https://peerj.com/articles/4428/>)

A study of 16 paired organic and conventional farms in northwest Spain – an important wintering and breeding ground for birds – found **greater species richness of birds on organic than conventional farms during winter**. Throughout the year bird abundance was higher in squares with a high proportion of organic farming compared with those with a low proportion of organic farming when those farms were surrounded by land with a low proportion of agriculture. Bird abundance in organic squares increased with the proportion of land in native forest. Seed eaters particularly benefited from organic farming, with high abundances on organic farms in landscapes with a low proportion of agricultural land. The researchers suggest that organic farming can benefit farmland birds in heterogeneous landscapes, particularly in winter, probably due to increased food availability. (“Effects of organic farming on bird diversity in North-West Spain,” by Sandra Goded et al., *Agriculture, Ecosystems & Environment*, April 1, 2018; <https://www.sciencedirect.com/science/article/pii/S0167880918300422>)

Organic fresh produce sales reached almost \$5 billion in 2017, an **8 percent increase** from 2016, according to the Organic Produce Network and Nielsen. Volume sales of organic produce reached nearly 2 billion pounds, a 10 percent increase from 2016. Organic packaged salad led among organic fresh produce items, accounting for 20 percent of organic dollars. Volume of organic berry sales increased by 22 percent. (“Organic Produce Sales Reach Almost \$5B in 2017,” *Specialty Food News*, Feb. 12, 2018; <https://www.specialtyfood.com/news/article/organic-produce-sales-reach-almost-5b-2017/>)

A U. S.-wide study of 1,163 milk samples collected over three years compared the **fatty acid profile in milk from cows fed a nearly 100 percent forage-based diet (grassmilk)** with profiles from a similar nationwide study of milk from cows managed organically or conventionally. The omega-6/omega-3 ratios were, respectively, 0.95, 2.28 and 5.77 in grassmilk, organic and conventional milk; total omega-3 levels were 0.049, 0.032 and 0.020 g/100 g milk; total conjugated linoleic acid levels were 0.043, 0.023 and 0.019 g/100 g milk; and eicosapentaenoic acid levels were 0.0036, 0.0033 and 0.0025 g/100 g milk. Consuming 4 1/2 servings per day of grassmilk can help restore a historical balance of fatty acids and may reduce the risk of cardiovascular and other metabolic diseases, say the authors. They note that oily fish are higher in long-chain omega-3 fatty acids, but most fish have low levels of α -linolenic acid (the major omega-3), and an omega-6/omega-3 ratio near 7. Also, fish is not consumed regularly or at all by about 70 percent of the U. S. population. (“Enhancing the fatty acid profile of milk through forage-based rations, with nutrition modeling of diet outcomes,” by Charles M. Benbrook et al., *Food Science & Nutrition*, Feb. 28, 2018; <http://onlinelibrary.wiley.com/doi/10.1002/fsn3.610/full>)

Organic

In March the **USDA** announced its decision to **withdraw**, effective May 13, 2018, the **Organic Livestock and Poultry Practices (OLPP) final rule** published on January 19, 2017. The OLPP was intended to create stronger, more specific language ensuring consistent animal welfare standards for certified organic animals. The rule would have helped guarantee that meat, poultry and eggs labeled as organic come from animals raised with sufficient space, appropriate diets, adequate access to the outdoors and ability to express their natural behaviors. It required dust

bathing materials for birds, for example, and prohibited such physical alterations as tail docking of cattle or de-beaking of chickens and turkeys. It resulted from more than a decade of work by the National Organic Standards Board (NOSB) and the organic community.

The USDA said the rule exceeded its statutory authority and that the changes to the existing organic regulations could negatively affect voluntary participation in the National Organic Program.

MOFGA was dismayed by USDA's decision. First, USDA delayed implementing the rule, and then it ignored more than 63,000 comments from farmers and consumers supporting swift implementation of the standards. Instead, the administration sided with 50 commenters opposing the rule.

"Consumers who choose certified organic dairy, eggs, poultry and meat expect farmers to raise their animals in the healthiest conditions possible with real outdoor access," said MOFGA Certification Services Director Chris Grigsby. "And farmers and ranchers who choose to follow organic standards expect a level playing field."

MOFGA views USDA's dismissal of animal welfare standards as part of a larger threat to organic farmers – lack of enforcement of existing standards at the federal level. The majority of organic livestock farmers already comply with practices specified in the OLPP. Yet their adherence to the high standards puts them at a disadvantage with industrial-scale agriculture operations that take advantage of loopholes and deny meaningful outdoor access to animals. MOFGA believes that organic farmers warrant greater respect and support from the federal agency charged with promoting agriculture.

A Consumer Reports survey released in April 2017 found that 86 percent of consumers who often or always buy organic food say it's highly important that animals used to produce these foods are raised on farms with high standards for animal welfare, and 83 percent think it's highly important that organic eggs come from hens that can go outdoors, and have enough space to move around freely. Organic standards now state only that farmers have to provide animals with "access to the outdoors." Some large-scale producers do this by providing a small, enclosed, concrete or dirt-covered porch, says Consumer Reports.

Representatives Peter DeFazio (D-OR), Rosa DeLauro (D-CT), Ron Kind (D-WI) and Chellie Pingree (D-ME) issued a joint statement saying, "The USDA has based its decision on a number of false contentions. This final rule would have strengthened – not hurt – participation in the National Organic Program by ensuring a level playing field in the industry." Regarding the 63,000 comments opposing withdrawal of the rule versus 50 in support, the representatives said, "It is indefensible for the agency to show such a blatant disregard for the public's stance."

Among those supporting withdrawal of the rule were the National Pork Producers Council, National Cattlemen's Beef Association, National Milk Producers Federation, American Farm Bureau and Coalition For Sustainable Organics (a hydroponics industry group). The National Farmers Union opposed the withdrawal, as did the American Society for the Prevention of Cruelty to Animals.

The Organic Trade Association (OTA) filed suit against USDA, claiming that its failure to implement the OLPP violates the Organic Foods Production Act, and the ASPCA and the Animal Welfare Institute are co-plaintiffs in that suit. The Center for Food Safety and three other groups have also filed a lawsuit regarding the withdrawal. (“USDA Decides Not to Impose Additional Regulatory Requirements for Organic Producers and Handlers,” USDA Office of Communications, March 12, 2018; <https://content.govdelivery.com/accounts/USDAO/bulletins/1e170d4>; MOFGA press release, March 13, 2018; Press release, Rep. Chellie Pingree, March 12, 2018; “Consumers Union Criticizes USDA For Withdrawing Animal Welfare Standards for Food Labeled Organic,” Consumers Union press release, March 12, 2018; “USDA withdraws organic livestock rule,” by Carol Ryan Dumas, Capital Press, March 12, 2018; <http://www.capitalpress.com/Organic/20180312/usda-withdraws-organic-livestock-rule>; “ASPCA Opposes USDA's Withdrawal of Critical Organic Animal Welfare Rule,” by ASPCA, PRNewswire, March 12, 2018; <https://www.prnewswire.com/news-releases/aspca-opposes-usdas-withdrawal-of-critical-organic-animal-welfare-rule-300612612.html>; “Trump administration sued for withdrawing welfare rules for animals certified 'organic',” by Lydia Wheeler, The Hill, March 22, 2018; <http://thehill.com/regulation/administration/379735-trump-administration-sued-for-withdrawing-welfare-rules-for-animals>; “Organic industry ups challenge on USDA rule withdrawal,” Feedstuffs, April 13, 2018; <http://www.feedstuffs.com/news/organic-industry-ups-challenge-usda-rule-withdrawal>)

A new add-on label to organic from the Real Organic Project (ROP) is being tested on some certified organic farms this summer in reaction to the continued permitting by the USDA National Organic Program of industrialized organic agriculture, such as mega-dairies with limited grazing area; to the November 2017 vote by the National Organic Standards Board rejecting a proposal to prohibit hydroponic and aquaponic farms from organic certification; and concern about imports of fraudulently labeled “organic” grains. ROP plans to educate consumers about the importance of allowing animals to graze and growing crops in soil. Another new label, Regenerative Organic Certification (ROC), was launched by the Regenerative Organic Alliance in March and is led by the Rodale Institute, Patagonia and Dr. Bronner’s. It will require that growers focus on soil health, carbon sequestration, environmental health, animal welfare and social fairness. Both add-on labels will require that producers first be certified organic. (“Organic farmers launch effort for add-on label after disappointing NOSB actions,” by Margarita Raycheva, IEG Policy, Feb. 26, 2018; <https://iegpolicy.agribusinessintelligence.informa.com/PL215442/Organic-farmers-launch-effort-for-addon-label-after-disappointing-NOSB-actions>; “What Does the New Regenerative Organic Certification Mean for the Future of Good Food?,” by Ariana Reguzzoni, Civil Eats, March 12, 2018; <https://civileats.com/2018/03/12/what-does-the-new-regenerative-organic-certification-mean-for-the-future-of-good-food/>)

Despite a 2016 vote by the National Organic Standards Board (NOSB) to remove carrageenan from the list of ingredients allowed for organic products, in March the **USDA reauthorized the use of carrageenan**, a food additive of questionable safety, according to Consumers Union. Studies have indicated that it can cause gastrointestinal inflammation, and laboratory research in

animals has shown ulcerative colitis-like disease and intestinal lesions and ulcerations in some animals. The NOSB had found that carrageenan was no longer considered essential.

Food processors use carrageenan to stabilize and change the texture, structure and physical appearance of foods. The Organic Foods Production Act of 1990 (OFPA) requires that prohibited materials may be added to the National List for a five-year period only if use of such substances would not harm human health or the environment, and only if they are considered essential because no alternatives exist.

Consumers can check labels of organic products to determine whether carrageenan is included. (Consumers Union press release, by Michael McCauley, April 4, 2018)

The Farm Bill

The current U.S. farm bill, which governs spending of nearly \$1 trillion dollars on the American food and agriculture system, expires at the end of September. In preparation for its renewal, the House Agriculture Committee passed a draft farm bill in April with the support of 26 Republicans and the opposition of 20 Democrats, including U.S. Rep. Chellie Pingree of Maine – without substantial debate over its policies, without markup in subcommittees and in the shortest amount of time ever for a farm bill. The bill, the Agriculture and Nutrition Act of 2018 (H.R.2), was headed to the House floor for consideration and debate in May, while the Senate Agriculture Committee was working on its version of the next farm bill.

In response to the draft House bill, MOFGA joined more than 100 U.S. grassroots organizations in voicing their opposition. Of particular concern to MOFGA's farming community is elimination of the Organic Certification Cost Share Program, which helps certified organic farmers defray administrative fees and provides incentives for farmers to transition to organic production. MOFGA also objected to eliminating mandatory funding for other important, low-cost local and regional food programs, such as the Farmers' Market and Local Food Promotion Program, Value-Added Producer Grants, and the Rural Energy for America Program.

Dave Colson, MOFGA's agricultural services director, said the draft bill "eliminates critical conservation, local food, business development, and organic agriculture programs that play key roles in keeping the American farm economy strong. These changes will severely limit opportunities for farmers in Maine and beyond who want to implement conservation systems or diversify their operations in order to tap into new markets."

Of grave concern to MOFGA are proposed rollbacks to pesticide regulations, including a renewed effort to preempt municipal ordinances. The draft also would allow the Environmental Protection Agency to rush pesticides to market by circumventing impact assessments of the Endangered Species Act and eliminating the requirement to finalize safety rules for farmers and farm workers.

MOFGA applauded the proposed increase in funding for the Agricultural Conservation Easement Program (ACEP), the Organic Agriculture Research and Extension Initiative (OREI) and the Food Insecurity Nutrition Incentives (FINI) program but expressed concern that increases to

nutrition incentive programs seem to be paid for through harmful cuts to the Supplemental Nutrition Assistance Program.

The draft bill would reinvest some funding in the Beginning Farmer and Rancher Development Program (BFRDP) and the Outreach and Assistance for Socially Disadvantaged and Veteran Farmers and Ranchers Program. The former has provided exceptional support for more than 200 new farmers who have benefited from MOFGA's Journeyman Program and established organic farms in Maine. Farm Bill funding levels proposed for similar programs across the country fall far below what is needed.

While awaiting further work on the farm bill, MOFGA said it is grateful to Senators Susan Collins and Angus King for expressing support and showing leadership to secure support for important organic farming programs. (“House Ag Committee Passes Farm Bill, Members of Congress Speak Out,” National Sustainable Agriculture Coalition, April 20, 2018; http://sustainableagriculture.net/blog/house-committee-passes-farm-bill/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29; “US Farm Bill Draft Fails Maine Farmers and Consumers Pesticides,” MOFGA press release, April 19, 2018)

Pesticides

Ordinances regulating pesticide applications in Maine municipalities remain safe, for now. In March, the Maine Legislature’s State and Local Government (SLG) Committee voted 9-2 that LD 1853 ought not to pass, and in April the Maine Senate and House killed the bill. Euphemistically and oxymoronically titled “An Act To Ensure the Safe and Consistent Regulation of Pesticides throughout the State by Providing Exemptions to Municipal Ordinances That Regulate Pesticides,” the bill differed slightly from one that the SLG committee unanimously rejected in 2017. However, the goal was identical – to stop communities from regulating pesticides.

Proposed by Gov. Paul LePage and sponsored by Sen. Tom Saviello (R-Wilton), the bill language mirrored a template designed by the American Legislative Exchange Council (ALEC), a national, industry-backed group organized to abolish regulations at the state level. It provided that municipal ordinances that regulate the use of pesticides would not apply to commercial applicators and spray contracting firms and to private applicators when the private applicators were producing agricultural or horticultural commodities. If enacted into law, it would have overturned close to 30 established municipal ordinances regulating the use and sale of pesticides, and would have preempted adoption of new pesticide ordinances in Maine.

The committee received 345 comments about the bill, and about two dozen individuals testified in person.

Rep. Lester Ordway (R-Standish) supported the bill, as did Sen. Lisa Keim (R-Dixfield), who noted her concern about commercial applicators having to follow different rules in different communities. She also wanted her minority report to state that ordinances would have to go to

the Maine Board of Pesticides Control before being heard by local communities so that the BPC could advise communities about possible impacts of ordinances. The BPC would not have to approve ordinances, however. Current Maine statute states, “The clerk of the municipality shall provide the board with notice and a copy of any ordinance to be listed under subsection 1 at least 7 days prior to the meeting of the legislative body or the public hearing at which adoption of the ordinance will be considered. The clerk shall notify the board within 30 days after adoption of the ordinance.”

Also supporting the bill were representatives from TruGreen, Maine Farm Bureau, Maine Vegetable and Small Fruit Growers Association, National Association of Landscape Professionals and Samoset Resort Golf Club, as well as a few commercial growers. Supporters generally ignored the fact that most existing ordinances exempt commercial agriculture, as does the state’s “right to farm law” (the Maine Agriculture Protection Act).

Opposing the bill were MOFGA, Natural Resources Council of Maine, Maine Conservation Voters, Maine Audubon, Friends of Casco Bay, Maine Municipal Association, individuals from Harborside, Presque Isle and Porter, Maine, and others. Rep. Richard Pickett (R-Dixfield) opposed the bill, saying he was troubled because it was almost a duplicate of one previously heard. The SLG Committee overall favored home rule.

Some of those testifying, including Paul Schlein of MOFGA’s Public Policy Committee, said that the BPC was not doing its job and was not responding to communities that had asked for help in drafting ordinances, so the SLG committee sent a letter to the Joint Committee on Agriculture, Conservation and Forestry expressing concern about the BPC. The agriculture committee discussed the letter but took no action on it.

Responding to a public records request, Vermont’s Agency of Agriculture, Food and Markets released data for 2014-2016 showing a **dramatic increase in pesticide use on Vermont’s dairy farms**. In GE corn fields, glyphosate use more than doubled in that time, and pesticide use in corn rose 27 percent. GE corn is grown on more acres in Vermont than any other crop – mostly for large, confined dairy operations. The state attributes the increase in glyphosate use to killing cover crops before corn is planted. (“Michael Colby: GMO corn to blame for soaring pesticide use,” by Michael Colby, Vt Digger, Feb. 4, 2018;

<https://vtdigger.org/2018/02/04/michael-colby-gmo-corn-blame-soaring-pesticide-use/>)

Field rotation, planting naturally resistant varieties and crop insurance more effectively and economically address pest insects than do neonicotinoids and fipronil, according to a review paper. The systemic insecticides (insecticides that are taken up by and distributed throughout plants) have little effect on crop yield, say the reviewers, due to the low threat that target insects present and because those insects quickly develop resistance to the insecticides. The insecticides do, however, threaten beneficial insects, including pollinators, and they contaminate soils and waters. The researchers say, “A diverse range of pest management tactics is already available, all of which can achieve efficient pest control below the economic injury level while maintaining the productivity of the crops. A novel insurance method against crop failure is shown here as an example of alternative methods that can protect farmer’s [sic] crops

and their livelihoods without having to use insecticides.” They recommend a new framework for a truly sustainable agriculture that relies mainly on natural ecosystem services instead of chemicals. (“Study disputes popular pesticides’ effectiveness,” by Eric Atkins, The Globe and Mail, Feb. 25, 2018;

<https://www.theglobeandmail.com/news/national/study-disputes-popular-pesticides-effectiveness/article38109314/>; “An update of the Worldwide Integrated Assessment (WIA) on systemic insecticides. Part 3: alternatives to systemic insecticides,” by Lorenzo Furlan et al., Environmental Science and Pollution Research, Feb. 2018;
https://www.researchgate.net/publication/323388129_An_update_of_the_Worldwide_Integrated_Assessment_WIA_on_systemic_insecticides_Part_3_alternatives_to_systemic_insecticides)

By 2019, **the herbicide dicamba**, used with genetically engineered cotton and soy, **may be applied to more than 60 million acres of monarch butterfly migratory habitat**, says the Center for Biological Diversity. The center has asked the EPA not to renew registration of dicamba when it expires at the end of 2018. It says the herbicide, notorious for its drift potential, could affect another 9 million acres as well. Manufactured by Monsanto, BASF SE and DowDuPont, dicamba-based herbicides have generated lawsuits and bans in some Southern and Midwestern states because they have drifted onto and killed nearby crops. (“Controversial weedkiller could spell big trouble for monarch butterflies: Report,” by Brian Bienkowski, Environmental Health News, March 2, 2018;

http://www.ehn.org/weedkiller-dicamba-monarch-butterfly-monsanto-2541418769.html?utm_source=EHN&utm_campaign=8c74bc4919-Science_saturday&utm_medium=email&utm_term=0_8573f35474-8c74bc4919-99057445)

Strawberries and spinach topped the Environmental Working Group’s “Dirty Dozen” list based on federal data on pesticides in more than 38,000 samples of produce. Almost 70 percent of the produce sampled by USDA over the past few years had pesticide residues. More than 98 percent of samples of strawberries, spinach, peaches, nectarines, cherries and apples tested positive for residue of at least one pesticide. About one-third of the strawberries sampled contained 10 or more pesticides. For spinach, pesticides tainted 97 percent of samples. Other produce items on the "Dirty Dozen" list are grapes, pears, tomatoes, celery, potatoes and sweet bell peppers. The EWG recommends buying organic versions of these items.

The EWG says that certain pesticides appearing on produce, such as the organophosphate pesticide chlorpyrifos, are widely considered toxic. After several studies linked the chemical to impaired brain development and behavior in children, the U.S. EPA during the Obama Administration proposed banning the chemical, but new EPA administrator Scott Pruitt canceled the ban.

The EWG report noted research linking pesticide exposure to infertility. A recent study of 325 women undergoing infertility treatment found that women who ate two or more servings per day of produce with pesticide residues were 26 percent less likely to have a successful pregnancy than women with less pesticide exposure. A 2015 study linked men's intake of pesticide-tainted produce with lower semen quality.

Produce items least likely to have pesticides – the “Clean Fifteen” – were avocados, sweet corn, pineapple, cabbage, onions, sweet frozen peas, papayas, asparagus, mangoes, eggplant, honeydew melon, kiwi, cantaloupe, cauliflower and broccoli. (“Report calls out worst produce

for pesticides—strawberries, spinach top list,” by Brian Bienkowski, Environmental Health News, April 10, 2018; <http://www.ehn.org/worst-foods-for-pesticides-2558353116.html>

Genetic Engineering

Note: Organic production does not allow the use of genetically engineered (GE or GMO – genetically modified organism) inputs.

Monsanto’s GE corn MON89034 caused kidney disease and bladder stones in rats in industry tests performed in 2007. Despite concern among several EU member states, the European Food Safety Authority (EFSA) issued a favorable opinion on MON89034, and the EU Commission approved it for human consumption in 2011. MON89034 has since been crossed with other GE corn varieties in “stacked” GE crops containing multiple GE traits, including synthetic Bt toxins. It is marketed as YieldGard™ VT Pro™. EU member states continue to draw attention to the original adverse health impacts in rats fed MON89034 – especially kidney and bladder effects.

In Monsanto’s own studies, two of 20 female rats receiving the high dose of GE corn (33 percent of the total diet) developed kidney damage and bladder stones. One of the two rats died after just two weeks on the GE diet. The EFSA concluded that the kidney damage and bladder stones in the GE corn-fed rats had nothing to do with the GE diet and that Monsanto’s unpublished historical control data showed urinary bladder calculi in female control rats in previous studies. German, Austrian and Belgian experts were unconvinced and recommended additional study. French experts noted that the percentage of high-dose GE corn-fed rats developing bladder stones was 10 percent, whereas it was 0.49 percent in the historical control data. Austria also challenged the need for the YieldGard crop, noting that simple crop rotations can control the rootworm pest targeted by the Bt toxins in the GE corn.

With stacked-trait GE crops, the multiple GE components may interact with each other, with other elements in the plant, or with applied agrochemicals to create new or enhanced toxins or allergens. However, EFSA does not assess the combined effects of GE traits in a stacked variety, nor does it require a 90-day animal toxicity feeding study, as is required for single-trait GE varieties. Instead EFSA bases its safety assessment on previous animal feeding studies with the single-trait GE varieties that were crossed to make the stacked-trait variety. (“EU’s GMO Regulator Ignored Human Health Warnings Over a Monsanto Insecticidal Corn,” by Claire Robinson, Independent Science News, March 5, 2018; <https://www.independentsciencenews.org/health/eus-gmo-regulator-ignored-human-health-warnings-over-a-monsanto-insecticidal-corn/>)

In March U.S. Secretary of Agriculture Sonny Perdue issued a statement about USDA oversight of plants produced through new breeding techniques, including **genome editing**. Under its biotechnology regulations, said Perdue, USDA does not regulate or plan to regulate plants that could otherwise have been developed through traditional breeding techniques as long as they are not plant pests or developed using plant pests.

USDA is one of three federal agencies that regulate products of food and agricultural technology. Together, USDA, EPA and FDA have a Coordinated Framework for the Regulation of

Biotechnology. USDA regulations focus on protecting plant health; FDA oversees food and feed safety; and EPA regulates the sale, distribution and testing of pesticides.

Under its biotechnology regulations, USDA does not currently regulate or plan to regulate plants that could otherwise have been developed through traditional breeding techniques as long as they are developed without the use of a plant pest as the donor or vector and they themselves are not plant pests. This can include plant varieties with the following changes: solely a genetic deletion of any size; a single base pair substitution; the change to the plant solely introduces nucleic acid sequences from a compatible relative that could otherwise cross with the recipient organism and produce viable progeny through traditional breeding; Complete Null Segregants – offspring of a GE plant that does not retain the change of its parent. (“Secretary Perdue Issues USDA Statement on Plant Breeding Innovation,” USDA Animal and Plant Health Inspection Service, March 28, 2018; <https://content.govdelivery.com/accounts/USDAAPHIS/bulletins/1e599ff>)

The Trump administration's USDA, under Secretary of Agriculture Sonny Perdue, has sidelined science, undermined key public health and safety protections, and prioritized the interests of large agribusiness companies over the public interest, says the Union of Concerned Scientists (UCS) in its report “Betrayal at the USDA.” In doing so, the administration has betrayed farmers, consumers and rural communities.

Perdue, says UCS, has backed unqualified candidates for senior positions, undermined science-based health and safety protections, and prioritized the needs of agribusiness over the needs of farmers and consumers. For example, Kailee Tkacz, a former lobbyist for the Corn Refiners Association and Snack Food Association, got a waiver from the White House on ethics rules and was appointed to advise the USDA on federal dietary guidelines. She has no training in science, public health or nutrition.

Perdue has initiated policy decisions that appear to override evidence and disregard the public interest in favor of agribusiness, UCS says. Under him, USDA has attacked guidelines addressing overuse of antibiotics in agriculture, loosened standards on whole grains, sodium and sugar-sweetened milk in school meals, played a key role in EPA’s reversal of the March 2017 decision to ban the nerve-damaging pesticide chlorpyrifos, announced plans to establish a new Undersecretary for Trade and Foreign Agricultural Affairs (TFAA) while eliminating USDA's rural development mission area and its undersecretary, eliminated the Grain Inspection, Packers, and Stockyards Administration (GIPSA) and rolled back two of its rules, making it harder for small poultry and livestock farmers to stand up against exploitation by the large meat processing companies with which they have contracts.

The UCS recommends that Congress, particularly its agriculture committees, investigate ethics issues, scrutinize USDA's reorganization decisions, and ensure that USDA is fulfilling its mandate to support farmers and consumers; that the Senate not confirm a USDA undersecretary for research, economics and education who does not have the scientific or economic training or experience required by law; that USDA use sound and independent scientific advice for dietary guidelines; that Congressional appropriators disregard proposals from the White House and Perdue that call for deep cuts in research and education programs that are important to

consumers, farmers and rural communities; and that SNAP policies be based on evidence, not ideology. (“Betrayal at the USDA, 2018, Union of Concerned Scientists, April 2018; <https://www.ucsusa.org/our-work/food-agriculture/unhealthy-food-policy/betrayal-usda-2018#.WsYWjSiUvEZ>)

Climate

White Pine Needle Damage, a complex of foliar diseases, is being accelerated by the region’s warmer, wetter springs and is slowing the growth and hampering the health of the region’s eastern white pines, according to the New Hampshire Agricultural Experiment Station at the University of New Hampshire. Starting around 2010, eastern white pine began being impacted in the region by a collection of foliar pathogens termed White Pine Needle Damage. Infected trees experience a yellowing of mature needles in early spring, followed by significant defoliation beginning in mid-June. The disease consists of native fungi that, before 2010, were not considered a significant forest health issue. However, the recent trend of warmer and wetter springs has facilitated the spread and severity of the disease complex. The UNH researchers found that 47 percent of the total annual litterfall now occurs in June and July, much earlier than natural needle senescence in October, when white pine typically casts most of its mature second and third-year foliage. Researchers recommend that landowners prioritize thinning within infected stands or stands that are at high risk of infection, following established stocking guidelines for eastern white pine. (“White Pine Needle Damage Slowing Growth, Hampering Health of Region’s Trees,” N.H. Agricultural Experiment Station, April 2, 2018; <https://colsa.unh.edu/nhaes/article/2018/04/wpnd>)

Fall 2018

MOFGA Welcomes Sarah Alexander as Executive Director

MOFGA has a new leader: Sarah Alexander assumed the role of executive director in August. MOFGA began a search and hiring process late last year when current executive director, Ted Quaday, announced plans to retire.

Alexander has over 15 years of experience advocating for sustainable, local and fair food systems. A native of Ohio, she attended Northwestern University, then moved to the White Earth Indian Reservation in northern Minnesota, where she spent three years helping to restore traditional food systems and stopping the genetic engineering of wild rice. Next she headed to Columbus, Ohio, to work as a farm apprentice at Shepherd's Corner Farm and helped grow the urban agriculture program at the American Community Garden Association. From there she went to Washington, D.C., and spent nearly 10 years at Food & Water Watch, where she worked to protect organic standards, strengthen consumer labeling and fight for genetically engineered food labeling. She moved to Maine in 2015 and worked as a senior strategist coaching progressive nonprofits.

"MOFGA's board of directors is enthusiastic and unanimously supports Sarah as the next executive director," said board president David Shipman. "She brings long experience as a grassroots organizer, defending people's access to healthy food and clean water, and working

with Native American and underserved communities. Sarah's mix of strengths in organizational leadership, administration, development and communications will be a great match for our vibrant community."

"I'm very excited to bring my experience in the food movement to work with the strong food and farming community in Maine," said Alexander. "The roots of the national organic food movement are here, and together we will build the future of the organic food movement in Maine and beyond.

"One of the things I love about MOFGA," said Alexander, "is that we're doing the important work of connecting people to our food, to where we live and to each other. By choosing food that's grown in ways that replenish the soil and our own health, we also build a strong local economy."

"MOFGA is a dedicated and diverse community engaged in the great work of building a more healthful and economically viable farm and food system, and Sarah Alexander is the ideal person to carry that effort forward. I expect her to achieve resounding success," said Quaday.

MOFGA has experienced significant growth during Quaday's five years as executive director. The number of certified organic farms has increased 60 percent, and the organization's endowment has grown from \$625,000 to \$5 million. Program capacity has also increased with added staff. Quaday led a comprehensive strategic planning process that identified a commitment to expanding program activities and administrative capacity, and prepared for a multi-year capital campaign to sustain long-term program growth.

"I'm looking forward to working alongside MOFGA's staff, board and many volunteers to provide organic farmers, transitioning farmers, and anyone interested in organic and sustainable living with the support they need to be successful," said Alexander.

Alexander will have no shortage of opportunity to work alongside and lead the MOFGA community, especially during the busy weeks before the Common Ground Country Fair. Community members will have ample opportunity to meet her at the Fair. MOFGA also intends to have gatherings around the state so that members can get to know the new executive director and discuss plans for the future.

The Good News

A study in the Netherlands compared one organic and two conventional farming systems started under identical soil conditions. **Yields in the organic system were lower initially but approached those of both conventional systems after 10 to 13 years, while requiring lower nitrogen inputs.** This coincided with higher nutrient use efficiency, improved soil structure, higher organic matter concentrations and more soil aggregation in the organic system – along with greatly reduced groundwater nitrate concentrations and fewer plant-parasitic nematodes. ("Crop yield gap and stability in organic and conventional farming systems," by M. Schrama et al., Agriculture, Ecosystems & Environment, July 2018; <https://www.sciencedirect.com/science/article/pii/S0167880917305595>)

Evolutionary plant breeding leads to crop populations that are diverse, locally adapted and controlled by the farmer. It represents a promising way to combine food security, food safety, climate adaptability and farmer income. However, evolutionary breeding faces legal and institutional barriers.

Few plant breeding programs specifically address organic farming. Lacking suitable varieties, organic farmers often use varieties selected for conventional agriculture – in a completely different situation from the one for which they were selected. Thus they produce less.

Evolutionary plant breeding can remedy this situation quickly and inexpensively. The method consists of creating plant populations by mixing seeds previously obtained by crossing different varieties and letting them evolve, using them as a crop or to select the best plants. This offers the possibility of adapting the crop to long- and short-term climate change, and to control weeds, diseases and insects without resorting to pesticides. Thanks to the natural crossings that always occur within them, these populations evolve continuously, enabling farmers to adapt the crops to their soil, their climate and their organic farming practices.

An evolutionary population of over 2,000 types of bread wheat from all over the world, constituted in Syria and grown in Italy, produced a bread with extraordinary smell and taste that is tolerated by people suffering from gluten intolerance. In Iran, shepherds who using a barley population as food for sheep note improved milk quality. (“Stuffed or Starved? Evolutionary Plant Breeding Might Have the Answer,” by Salvatore Ceccarelli, Ph.D., Independent Science News, June 11, 2018;

<https://www.independentsciencenews.org/health/stuffed-or-starved-evolutionary-plant-breeding-might-have-the-answer/>)

According to the Organic Trade Association, **organic sales in the United States totaled \$49.4 billion in 2017**, up 6.4 percent from 2016 and reflecting new sales of nearly \$3.5 billion. The organic food market hit \$45.2 billion in sales, also an increase of 6.4 percent. Sales of organic non-food products rose by 7.4 percent to \$4.2 billion.

Sales in the overall food market increased by 1.1 percent. Organic now accounts for 5.5 percent of food sold in retail channels in the United States, and over 24,000 certified organic operations exist nationwide

Produce continued to be the largest organic food category, with \$16.5 billion in sales in 2017 on 5.3 percent growth. Fresh produce accounted for 90 percent of organic fruit and vegetable sales. Sales of organic dried beans, along with dried fruits and vegetables, increased by 9 percent.

Organic dairy and eggs, still the second-largest-selling organic category, grew 0.9 percent to \$6.5 billion. Increased supply at a time when demand for organic dairy began to shift to more plant-based offerings created an oversupply of organic milk, but organic ice cream sales were up over 9 percent and organic cheese sales rose by almost 8 percent.

Pasture-raised eggs, which clearly delineate humane practices such as outdoor access, presented stiff competition for organic eggs in 2017. Consumers perceive organic as requiring a number of humane practices including outdoor access for livestock and poultry. However, the requirements as written within current federal organic standards are unclear and inconsistently applied. The organic industry worked to advance the Organic Livestock and Poultry Practices rule to clarify required practices, but the USDA abruptly withdrew the rule in 2017, causing millions of consumers to question the meaning and relevance of the USDA Organic seal as it relates to dairy and egg products.

Organic beverage sales rose 10.5 percent last year to \$5.9 billion, making beverages the third-largest organic category. The driver in beverages was fresh juice, for which sales jumped almost 25 percent to \$1.2 billion and continued a multiyear double-digit growth streak. Non-dairy organic beverage alternatives in the form of almond, soy, coconut, rice and other blends also gained in popularity in 2017.

The organic non-food market grew 7.4 percent in 2017. Organic fiber continues to be the largest and fastest-growing sector in the category – up 11 percent to \$1.6 billion – with most of those sales in organic cotton. Organic dietary supplements rose 9 percent as demand increased for whole food or plant-based supplements.

This year's survey was conducted from January 25, 2018, through April 22, 2018, and produced on behalf of the Organic Trade Association by Nutrition Business Journal, with 250 companies taking part. ("Maturing U.S. organic sector sees steady growth of 6.4 percent in 2017," Organic Trade Assoc., May 18, 2018

<https://globenewswire.com/news-release/2018/05/18/1508928/0/en/Maturing-U-S-organic-sector-sees-steady-growth-of-6-4-percent-in-2017.html>

Research by The University of Texas Health Science Center at Houston **found no significant link between dairy fats and cause of death or, more specifically, heart disease and stroke** – two of the country's biggest killers often associated with a diet high in saturated fat. In fact certain types of dairy fat may help guard against having a severe stroke, the researchers reported.

Nearly 3,000 adults age 65 years and older were included in the study, which measured plasma levels of three fatty acids found in dairy products at the beginning in 1992 and again at six and 13 years later. None of the fatty acid types was significantly associated with total mortality, and one (circulating heptadecanoic acid) was linked to lower cardiovascular disease deaths. People with higher fatty acid levels, suggesting higher consumption of whole-fat dairy products, had a 42 percent lower risk of dying from stroke.

The 2015-2020 Dietary Guidelines for Americans currently recommend serving fat-free or low-fat dairy, including milk, cheese, yogurt and/or fortified soy beverages. But researcher Marcia de Oliveira Otto noted that low-fat dairy foods such as low-fat yogurt and chocolate milk often include high amounts of added sugars, which may lead to poor cardiovascular and metabolic health.

“Consistent with previous findings, our results highlight the need to revisit current dietary guidance on whole fat dairy foods, which are rich sources of nutrients such as calcium and potassium. These are essential for health not only during childhood but throughout life, particularly also in later years when undernourishment and conditions like osteoporosis are more common,” Otto said. (“New research could banish guilty feeling for consuming whole dairy products,” The University of Texas, July 11, 2018; <https://www.uth.edu/media/story.htm?id=1692785a-5886-46e8-8186-230d71b834ac>; Original reference: “Serial measures of circulating biomarkers of dairy fat and total and cause-specific mortality in older adults: the Cardiovascular Health Study,” by Marcia C. de Oliveira Otto et al., The American Journal of Clinical Nutrition, July 11, 2018; <https://academic.oup.com/ajcn/advance-article/doi/10.1093/ajcn/nqy117/5052139?guestAccessKey=c18b1acf-2778-42b9-8d72-878c0e86cdbf>)

New Hampshire-based egg farmer **Jesse LaFlamme of Pete and Gerry’s Organic Eggs wants the FDA to change its definition of “healthy” to include eggs**. LaFlamme says eggs are an inexpensive protein source loaded vitamins and minerals, but the FDA doesn’t allow them to be labeled as healthy because of their fat and cholesterol levels – yet many high-sugar foods are labeled as healthy. LaFlamme says that cholesterol intake and bad cholesterol in the bloodstream are not linked. (“New England Organic Egg Farmer Takes On FDA Over What Is ‘Healthy’,” by Chris McKinnon, CBS Boston, July 27, 2018; <https://boston.cbslocal.com/2018/07/27/fda-healthy-new-england-organic-egg-farmer-guidelines/>)

Eric Gallandt, a weed ecology professor at the University of Maine, and UMaine graduate student Bryan Brown have found **synergy in stacking cultivation tools** (using multiple tools during a single pass over the field with a tractor) to control weeds in organic vegetable production systems. While two tools may give a certain level of control when used in two separate passes, control is more than the sum of those two levels when the tools are used together. Gallandt is also looking at cover crop use and other strategies combined with stacked mechanical weed control. (“Mechanical weed control topic of workshop, demonstrations,” by Mitch Lies, Capital Press, July 30, 2018; <http://www.capitalpress.com/Oregon/20180730/mechanical-weed-control-topic-of-workshop-demonstrations>)

The tractor-mounted boiler of the Steam Weeder superheats water up to 250 F, and **applying that steam to weeds can burst their cells and kill them**. Researchers at Oregon State University are testing the technology on organic highbush blueberry fields. Steam from the Steam Weeder, made by Australian company Weedtechnics, reaches 1 inch deep into soil. Different models cost \$16,000 to \$30,000. (“Saturated steam an organic weed killer,” by George Plaven, Capital Press, July 26, 2018; <http://www.capitalpress.com/Research/20180726/superheated-steam-an-organic-weed-killer>)

Organic

In May the USDA decided against an organic checkoff. The USDA received almost 15,000 public comments and terminated the proceeding due to “uncertain industry support and unresolved issues with the proposed program.” The Organic Trade Association supported a checkoff to fund organic industry promotion, but the No Organic Checkoff Coalition of 6,000 U.S. organic farmers saw the program as a tax on farmers, with burdensome reporting requirements and without benefit to the U.S. organic industry. (“USDA axes organic checkoff proposal,” by Carol Ryan Dumas, Capital Press, May 16, 2018; http://www.capitalpress.com/Organic/20180516/usda-axes-organic-checkoff-proposal?utm_source=Capital+Press&utm_campaign=1b367f798c-EMAIL_CAMPAIGN_2018_05_16&utm_medium=email&utm_term=0_3bfe2c1612-1b367f798c-234517581)

Pesticides

U.S. District Judge Vince Chhabria has ruled that **hundreds of lawsuits against Monsanto Co.** by cancer survivors or families of those who died can proceed to trial, since a reasonable jury could conclude, based on findings of four experts, that **glyphosate** can cause cancer in humans. Glyphosate is the active ingredient in Monsanto’s Roundup herbicide and in some other herbicides. The U.S. EPA has said that glyphosate is likely not carcinogenic to humans, but the World Health Organization has classified it as “probably carcinogenic to humans.” More than 400 farmers, landscapers and consumers have joined the San Francisco lawsuit claiming that Roundup caused their non-Hodgkin’s Lymphoma.

On August 10, 2018, a jury decided for the plaintiff in the first of those cases, awarding Dewayne Johnson \$250 million in punitive damages and \$39 million in compensatory damages. Johnson has been diagnosed with non-Hodgkin's lymphoma and is close to death. Monsanto said it will appeal the decision.

(“U.S. judge allows lawsuits over Monsanto's Roundup to proceed to trial,” by Tina Bellon, Reuters, July 10, 2018; <https://www.reuters.com/article/us-monsanto-glyphosate/u-s-judge-allows-lawsuits-over-monsantos-roundup-to-proceed-to-trial-idUSKBN1K02ME>; “Jury Awards Terminally Ill Man \$289 Million In Lawsuit Against Monsanto, By Vanessa Romo, NPR, Aug. 10, 2018; <https://www.npr.org/2018/08/10/637722786/jury-awards-terminally-ill-man-289-million-in-lawsuit-against-monsanto>)

Internal FDA documents, including emails, obtained by The Guardian show that the FDA has had trouble finding any food that does not carry traces of **glyphosate residues**. Residues have been found **in crackers, granola, corn meal, honey and oatmeal products** - sometimes exceeding the legal limit of 5.0 parts per million. While glyphosate has been used for more than 40 years, the FDA only recently has tested for its residues. (“Weedkiller found in granola and crackers, internal FDA emails show,” by Carey Gillam, The Guardian, April 30, 2018; <https://www.theguardian.com/us-news/2018/apr/30/fda-weedkiller-glyphosate-in-food-internal-emails>)

The U.S. National Toxicology Program (NTP) has found that **some herbicide formulations, such as Monsanto's Roundup, may be more toxic to human cells than their active ingredient alone.** Regulators previously required testing only the active ingredient (glyphosate, in the case of Roundup). The NTP reported that glyphosate formulations decreased human cell viability, disrupting cell membranes. (“Weedkiller products more toxic than their active ingredient, tests show,” by Carey Gillam, The Guardian, May 8, 2018; <https://amp.theguardian.com/us-news/2018/may/08/weedkiller-tests-monsanto-health-dangers-active-ingredient>; The NTP work is summarized at https://usrtk.org/wp-content/uploads/2018/05/NTP_GBF-paper.pdf)

Glyphosate can disrupt sexual development, genes and beneficial gut bacteria at doses considered safe, according to a pilot study in rats. The Guardian reports that glyphosate levels in the human bloodstream have increased by more than 1,000 percent in the last two decades. (“Glyphosate shown to disrupt microbiome 'at safe levels', study claims,” by Arthur Nelsen, The Guardian, May 16, 2018; <https://www.theguardian.com/environment/2018/may/16/glyphosate-shown-to-disrupt-microbiome-at-safe-levels-study-claims>; The study is posted at <https://glyphosatestudy.org/wp-content/uploads/2018/05/MICROBIOME-GLY-PILOT-IN-PRESS-8-5-1.pdf>)

European Union member states voted for an **almost complete ban by the end of 2018 on the use of some neonicotinoid insecticides**, after a report from the European Food Safety Authority found that they threaten many bee species. The EU already banned three neonics – imidacloprid, clothianidin and thiamethoxam – on some field crops. The new regulation bans almost all outdoor uses of these insecticides. Still allowed are neonics in greenhouses and neonics not included in the ban, such as thiacloprid and sulfoxaflor. (“EU member states support near-total neonicotinoids ban,” by Matt McGrath, BBC, April 27, 2018; <http://www.bbc.com/news/science-environment-43910536>)

Exposure to the pesticides **paraquat and maneb** dramatically affects the function of dopamine-producing neurons – cells primarily targeted by **Parkinson's** – in people carrying a particular mutation in the gene alpha-synuclein. Susceptible people exposed to these chemicals have about a 250 percent greater risk of developing Parkinson's disease than the rest of the population, based on studies done on human cells. The researchers say that the gene-pesticide interaction shows that safety standards for chemicals should be updated to protect susceptible populations. (“Mechanics of pesticide-Parkinson's link revealed,” by Andrew Masterson, Cosmos, May 28, 2018; <https://cosmosmagazine.com/biology/mechanics-of-pesticide-parkinson-s-link-revealed>; Original article: “Nitration of microtubules blocks axonal mitochondrial transport in a human pluripotent stem cell model of Parkinson's disease,” by Morgan G. Stykel et al., The FASEB Journal, April 24, 2018; <https://www.fasebj.org/doi/10.1096/fj.201700759RR>)

In June **Hawaii became the first U.S. state to ban use of the insecticide chlorpyrifos.** The ban begins on January 1, 2019, with some opportunities for exemption through 2022. Hawaii's new law also requires agrochemical companies to share information about when and where they apply all restricted-use pesticides, and establishes buffer zones around schools. Chlorpyrifos has been banned in the United States for household use since 2000. And on August 9, 2018, the U.S.

Court of Appeals for the Ninth Circuit, based in San Francisco, determined that the U.S. EPA had 60 days to finalize its ban of chlorpyrifos.

The judges found that EPA broke the law by allowing continued use of the pesticide despite scientific evidence linking it to harmful impacts on children's developing brains. The decision was in response to years-long litigation brought by PAN, NRDC, Earthjustice and other farmworker and environmental health organizations. ("Hawaii Shows States' Power to Regulate Pesticides," by Lisa Held, Civil Eats, June 20, 2018;

<https://civileats.com/2018/06/20/hawaii-shows-states-power-to-regulate-pesticides/>; "Court to EPA: Chlorpyrifos ban is on!" Pesticide Action Network, August 10, 2018;

http://www.panna.org/blog/court-epa-chlorpyrifos-ban?utm_source=blog&utm_medium=groundtruth&utm_campaign=gt-08-10&link_id=3&can_id=1f23f8b4efc71b2d1b557c17ef2625af&email_referrer=email_398622&email_subject=victory-court-orders-epa-to-ban-chlorpyrifos)

Genetic Engineering

Note: Organic production does not allow the use of genetically engineered (GE or GMO – genetically modified organism) inputs.

A version of **genetically engineered Golden Rice called GR2E has recently been permitted for importation by Canada, Australia/New Zealand and the United States.** Golden Rice refers to GE rice plants modified to produce beta-carotene (provitamin A) in their grain. GR2E contains very little beta-carotene, and the little that it does contain rapidly degrades during storage. Hence the FDA told its developer (the International Rice Research Institute) that no health claims may be based on it. The tradeoff experienced by the Golden Rice project between beta-carotene production and yield in its GE rice varieties seems not to have been resolved, while the biotech industry and its supporters have promoted GE Golden Rice for decades as an urgently needed solution to vitamin A deficiency. Originally developed by Syngenta, Golden Rice GR2E is now funded by the Gates Foundation. IRRI told the FDA it does not intend to market Golden Rice in the United States; but in part because rice is wind pollinated, if commercialized, Golden Rice GR2E is expected to contaminate U.S. rice imports. Golden rice contains genes from bacteria and corn. ("GMO Golden Rice Offers No Nutritional Advantage, Says FDA," by Allison Wilson, Ph.D., and Jonathan Latham, Ph.D., Independent Science News, June 4, 2018; <https://www.independentsciencenews.org/news/gmo-golden-rice-offers-no-nutritional-benefits-says-fda/>)

The USDA has proposed a GMO Labeling Rule that would use the term "bioengineered" (BE) rather than the more commonly used and better understood "GMO" (genetically modified organism) or "GE" (genetically engineered) terms. It has also designed logos that convey a sunny, happy image of foods containing GE ingredients.

MOFGA communicated to USDA that the proposed rule appears to be an attempt by the GE foods industry to convey a warm and fuzzy feeling about this technology. MOFGA urged USDA to resist industry pressure, to create a meaningful disclosure standard for GE foods that uses neutral symbols and terms that are understandable and familiar to consumers, and to create a symbol that is consistent with federal and international standards.

MOFGA also strongly opposes proposed QR codes, websites and text messaging as the principal means of disclosure to consumers. Disclosure should be provided through on-package labeling.

The proposed rule would except processed and refined products in which no GE ingredients are detectable, and newer gene-edited products. MOFGA believes that highly processed or refined products that contain ingredients derived from GE crops (including gene-edited crops) should be labeled as such, with each GE ingredient identified. Even if foods are so highly processed that the GE ingredients are undetectable in the final product, they are still GE foods.

MOFGA urged USDA to implement GE labeling quickly – certainly no later January 1, 2020 – rather than allowing companies to postpone labeling until as late as 2022.

MOFGA's comments read, "It is no secret that MOFGA opposes the use of genetically modified organisms (GMOs) in agriculture and advocates significant changes in the regulatory framework governing this revolutionary technology. Organic farmers cannot and will not use seeds, plants or animal feeds that have been gene-edited or genetically engineered to incorporate foreign genetic material from other species. We believe the health and environmental risks of these foods have not been assessed adequately, and the system of federal regulation is in shambles."

The Farm Bill

As we went to press, **the 2014 farm bill was set to expire on September 30**. In June the House and Senate had each passed its proposal for the next farm bill, and a farm bill Conference Committee had been created to negotiate the two. The National Sustainable Agriculture Coalition reports, "On many key issues related to food and agriculture, the House bill fails where the Senate bill succeeds. This is true for conservation, nutrition and food access, beginning farmers and farmers of color, local and regional food systems, value-added agriculture, rural development, and renewable energy, as well as when it comes to stemming consolidation and economic concentration in farm country." Keep up with farm bill news at <http://sustainableagriculture.net/blog/>.

Winter 2018-2019

The Good News

Maine Harvest Credit Project has reached its \$2.4 million fundraising goal – a critical milestone in becoming Maine's 56th credit union and the country's first to lend exclusively to farmers and food entrepreneurs. Once chartered, Maine Harvest will offer specialized loans and mortgages with a statewide goal of boosting Maine's growing agricultural economy.

"Our research estimates that there is about a \$186 million financing gap among Maine farmers and food producers," says Amanda Beal, president and CEO of Maine Farmland Trust. "Bridging that gap will keep farmers on their land, help others scale and grow and generally act as a catalyst for this entire industry," Beal adds. Maine has over 8,000 farms that produce \$3.8 billion in sales and create 24,000 jobs statewide. The agricultural sector is one of the largest, bringing younger people to Maine, with 40 percent of farmers currently aged 34 or younger.

Maine Harvest will become part of the Maine Credit Union League (MCUL), and its members will have access to shared branching and ATMs within its statewide network. Having long recognized the strength of this project, MCUL's board recently approved a significant donation, which put Maine Harvest over the funding finish line.

Once the charter is approved, the newly formed credit union will be run by a CEO, governed by a board of directors and owned by its members. Maine Harvest's organizer group includes farmers, philanthropists and credit union experts. It also includes Anna Eleanor Roosevelt, granddaughter of Franklin Delano Roosevelt, who in 1934 signed the Federal Credit Union Act.

By spring Maine Harvest plans to begin staffing and to hire a specialized loan officer who understands the unique needs of the agricultural sector. By June Maine Harvest plans to open its headquarters in Unity, Maine. (“The Country's First-Ever Credit Union to Lend Exclusively to Farmers and Food Producers Hits Milestone and Moves Forward,” by Maine Harvest Credit Union, PR Newswire

Oct. 15, 2018; https://www.prnewswire.com/news-releases/the-countrys-first-ever-credit-union-to-lend-exclusively-to-farmers-and-food-producers-hits-milestone-and-moves-forward-300730327.html?tc=eml_cleartime)

In a French study **relating organic food consumption to cancer risk**, 68,946 adults (78 percent female; mean age 44.2 years) reported how frequently (never, occasionally or most of the time) they consumed 16 categories of products labeled as organic (fruits; vegetables; soy-based products; dairy products; meat and fish; eggs; grains and legumes; bread and cereals; flour; vegetable oils and condiments; ready-to-eat meals; coffee, tea, and herbal tea; wine; biscuits, chocolate, sugar, and marmalade; other foods; and dietary supplements). Researchers then calculated their organic food score (0 to 32 points) and, based on reports of cancer among the participants from 2009 to 2016, estimated the risk of cancer associated with that score.

Results indicate that, compared with those who ate the least organic food, those who ate the most were 25 percent less likely to develop cancer overall, 73 percent less likely to develop non-Hodgkin lymphoma and 21 percent less likely to develop post-menopausal breast cancer.

The researchers note that their analyses were based on self-reports by volunteers – predominantly female, well educated and with healthier behaviors than the general population, factors that may have led to a lower cancer incidence than the national estimates. Also, some cancers may not have been detected. The researchers conclude, “Although the study findings need to be confirmed, promoting organic food consumption in the general population could be a promising preventive strategy against cancer.” (“Association of Frequency of Organic Food Consumption With Cancer Risk Findings From the NutriNet-Santé Prospective Cohort Study,” by Julia Baudry et al., JAMA Internal Medicine, Oct. 22, 2018; https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2707948?widget=personalize_dcontent&previousarticle=2707943)

A mushroom extract fed to honeybees greatly reduces virus levels, according to a new paper from Washington State University, the USDA and Fungi Perfecti, a business based in Olympia,

Washington. In field trials, colonies fed mycelium extract from amadou and reishi fungi showed a 79-fold reduction in deformed wing virus and a 45,000-fold reduction in Lake Sinai virus compared with control colonies. The researchers hope their work will help dwindling honey bee colonies fight viruses, known to play a role in colony collapse disorder. (“Fungus provides powerful medicine in fighting honey bee viruses,” by Scott Weybright, phys.org, Oct. 4, 2018; <https://phys.org/news/2018-10-fungus-powerful-medicine-honey-bee.html>)

The diversity of wild bee and honeybee species in Amsterdam has increased by 45 percent since 2000 as the city has installed bee-friendly native plantings and insect hotels, banned the use of pesticides on public land, educated residents and businesses about how to avoid using pesticides and installed green roofs. (“Bees are dying at an alarming rate. Amsterdam may have the answer,” by Linda Givetash, NBC News, Sept. 7, 2018; <https://www.nbcnews.com/news/world/bees-are-dying-alarming-rate-amsterdam-may-have-answer-n897856>)

Slovenia, where one in 200 people is a beekeeper, has had **no major losses of bees due to pesticides in recent years and no reported cases of colony collapse disorder**. In 2011 it became the first European country to prohibit the use of some neonicotinoid insecticides. Ljubljana, the capital city, has a rapid response unit for capturing swarms, plants only nectar-bearing trees, prohibits glyphosate use in public areas, encourages citizens to plant nectar-bearing flowers, distributes seeds, organizes tours of bee-related locations, and more. (“Life is sweet: on the hunt with Slovenia's 'rapid response' beekeeper unit,” by Luka Dakskobler, The Guardian, Sept. 28, 2018; <https://www.theguardian.com/cities/2018/sep/28/swarm-alert-slovenias-rapid-bee-response-team-in-action>)

A study from Lund University of 10 organic and nine conventional farms in Sweden shows that **the number of bumblebee species on organic farms was higher and more stable over time and space than on conventional farms**, due to a more stable provision of flowers or the absence of pesticides. The researchers also found that stable and abundant flower resources stabilize pollinator communities even on conventional farms where insecticides are used. (“Organic farming methods favors (sic) pollinators,” By Lund University, phys.org, Sept. 14, 2018; <https://phys.org/news/2018-09-farming-methods-favors-pollinators.html>; Original study: “Organic farming supports spatiotemporal stability in species richness of bumblebees and butterflies,” by Romain Carrié et al., Biological Conservation (2018). DOI: 10.1016/j.biocon.2018.08.022)

The U.S. District Court for the District of Columbia will allow a **lawsuit by the Organic Trade Association against USDA over its withdrawal of the Organic Livestock and Poultry Practices rule**. The rule would have implemented new welfare practices for organic livestock and poultry and was set to go into effect March 20, 2017, but was delayed by a regulatory freeze by President Donald Trump. USDA delayed implementation twice more and then withdrew the rule, stating that it exceeded the agency’s statutory authority and could negatively affect voluntary participation in the program. A U.S. district court in San Francisco previously ruled that a separate lawsuit by seven nonprofits against USDA for withdrawing the rule can proceed.

(“Court denies USDA motion to dismiss organic lawsuit,” by Carol Ryan Dumas, Capital Press, Oct. 5, 2018;

<http://www.capitalpress.com/Organic/20181005/court-denies-usda-motion-to-dismiss-organic-lawsuit>)

Repurposing human waste from major cities as crop fertilizer could slash fertilizer imports in some countries by more than half. Human feces and urine contain many valuable nutrients such as nitrogen, phosphorus and potassium that can be hygienically extracted and applied to crops. Researchers studying 56 cities in six continents found hotspots where such recycling could make a huge impact. For example, extracting nutrients from human effluent in Cairo could reduce Egypt’s potassium imports by up to 70 percent, and human waste produced over 10 years there could replace all phosphorus imports into the country. (“Human waste is a terrible thing to waste,” by Emma Bryce, Anthropocene, Aug. 24, 2018;

<http://www.anthropocenemagazine.org/2018/08/human-waste-is-a-terrible-thing-to-waste/>;

Original article: “Recirculation of human-derived nutrients from cities to agriculture across six continents,” Trimmer et al., Nature Sustainability, 2018; <https://www.nature.com/articles/s41893-018-0118-9>)

A Rutgers-led team has discovered **how plants harness soil microbes to get nutrients**. In a process the team calls the rhizophagy (root-eating) cycle, bacteria and fungi cycle between a free-living phase in the soil, where they obtain nutrients, and a plant-dependent phase within plant root cells, where nutrients are extracted from microbes.

“The rhizophagy cycle appears to occur in all plants and may be an important way plants acquire some nutrients,” says lead author James F. White Jr. of the plant biology department at Rutgers University–New Brunswick. He adds, “The discovery that plants actively cultivate and then extract nutrients from symbiotic microbes is new. The 50 or so species of plants examined so far show evidence that they engage in rhizophagy. Some of the microbes involved in the rhizophagy cycle increase growth of their particular host plants, but inhibit growth of other species of plants,” so the system might be used to support desirable plants and inhibit undesirable plants.

In the rhizophagy cycle, plants cultivate microbes around root tips by secreting sugars, proteins and vitamins. The microbes grow and then enter root cells at the tips, where cells are dividing and lack hardened walls. The microbes lose their cell walls, become trapped in plant cells, and are hit with reactive oxygen (superoxide). The reactive oxygen breaks down some of the microbe cells, effectively extracting nutrients from them. Surviving microbes spur the formation of root hairs, leave the hairs at the growing hair tip and reform their cell walls as they reenter soil. The microbes acquire nutrients in the soil and the process is repeated. (“How Plants Harness Microbes to Get Nutrients,” by Todd B. Bates, Rutgers Today, Oct. 10, 2018;<https://news.rutgers.edu/how-plants-harness-microbes-get-nutrients/20180917#.W8Xm4HFKiCQ>)

Genetic Engineering

Note: Organic production does not allow the use of genetically engineered (GE or GMO – genetically modified organism) inputs.

J.R. Simplot is a potato processing and marketing company based in Idaho that recently launched **GE potatoes** with supposedly enhanced disease resistance, enhanced uniformity and improved healthiness. However, Caius Rommens, Simplot's former lead potato breeder, alleges that the reality is very different. He says that as a crop, the potatoes contain genetically unstable traits, suffer a significant yield drag, are designed to conceal bruises and spread diseases, and are intended to be grown and stored in ways that maximize disease and pest pressures. Additionally, as a processed food, they have lost the sensory attributes that make normal potato-based foods attractive. Even worse, they likely contain dramatically increased toxins that may cause health safety issues. Furthermore, the development of these GE potatoes involved at least one act of biopiracy, Rommens alleges. Nevertheless, these potatoes are quietly entering the marketplace with innocuous names such as Innate, White and Hibernate. ("Hidden Health Dangers: A Former Agbiotech Insider Wants His GMO Crops Pulled," by Caius Rommens, Ph.D., Independent Science News, Oct. 8, 2018; <https://www.independentsciencenews.org/health/hidden-health-dangers-former-agbiotech-insider-gmo-crops/>)

The Trump administration has rescinded an Obama-era ban on **cultivating GE crops in dozens of national wildlife refuges** where farming is permitted. The ban had resulted from a lawsuit won by environmental groups. Use of pesticides, including neonicotinoids, in conjunction with GE crops, has been linked to declining bee populations. Instead of the ban, Fish and Wildlife Service Deputy Director Greg Sheehan says that decisions about use of pesticides and GE crops will now be made on a case-by-case basis. ("Trump administration lifts GMO crop ban for U.S. wildlife refuges," by Laura Zuckerman, Reuters, Aug. 3, 2018; <https://www.reuters.com/article/us-usa-wildlife-pesticides/trump-administration-lifts-gmo-crop-ban-for-u-s-wildlife-refuges-idUSKBN1KP01K>)

Pesticides

Farmworkers are at greatest risk for exposure to agricultural pesticides and their adverse health impacts, according to a report prepared by The Organic Center and funded by the UNFI Foundation. The report synthesizes 129 research studies from around the world about the impacts of toxic, synthetic pesticides on the health of farmworkers and farm communities. Health risks associated with pesticides include cancer, neurodegenerative disorders and poor reproductive health. The report notes how certified organic production can substantially benefit those working in agricultural systems, as it bans the use of most pesticides and reduces exposure to these toxic chemicals. ("Farmworkers at risk from chemicals but organic can help, shows new report," The Organic Center, Sept. 13, 2018; <https://globenewswire.com/news-release/2018/09/13/1570513/0/en/Farmworkers-at-risk-from-chemicals-but-organic-can-help-shows-new-report.html>)

In August 2018 jurors in San Francisco said that **Monsanto (now part of Bayer AG) must pay \$289 million in damages** to 46-year-old Dewayne Johnson, who has a fatal form of **non-Hodgkin lymphoma** that he claims was caused by exposure to its glyphosate-based herbicides, such as Roundup, that he used as a school groundskeeper. The jury found that glyphosate-based weedkillers presented a substantial danger to applicators and that Monsanto officials acted with "malice or oppression" by inadequately warning of the risks. Testimony showed that for over 30

years studies had shown harm from the products, but that Monsanto claimed they were safe and that it worked with the EPA to suppress evidence of harm. About 4,000 plaintiffs have similar claims pending. The World Health Organization classifies glyphosate as a probable human carcinogen. After Monsanto appealed the verdict and asked for a new trial, Judge Suzanne Bolanos denied the request for a new trial but decreased the amount to be paid to \$78 million. (“One man's suffering exposed Monsanto's secrets to the world,” by Carey Gillam, The Guardian, Aug. 11, 2018;

https://www.theguardian.com/business/2018/aug/11/one-mans-suffering-exposed-monsantos-secrets-to-the-world?CMP=share_btn_tw; “Judge upholds Monsanto verdict, cuts award to \$78 million,” by Paul Elias, ABC News, Oct. 22, 2018;

<https://abcnews.go.com/US/wireStory/judge-upholds-monsanto-verdict-cuts-award-78-million-58675789>)

A correction issued by Critical Reviews in Toxicology, a journal that analyzes health risks of chemicals, says that **Monsanto Co. did not fully disclose its involvement in published research** that found that glyphosate-based herbicides were safe. The journal did not challenge the study findings but only the lack of transparency when the article was submitted. The article initially disclosed that Monsanto paid a consulting firm to develop the journal supplement entitled “An Independent Review of the Carcinogenic Potential of Glyphosate” but said no Monsanto employees or attorneys reviewed submitted manuscripts. However, internal emails showed that Monsanto scientists heavily organized, reviewed and edited article drafts.

(“Monsanto's Role in Roundup Safety Study Is Corrected by Journal,” by Joel Rosenblatt et al., Bloomberg, Sept. 27, 2018;

<https://www.bloomberg.com/news/articles/2018-09-27/monsanto-s-role-in-roundup-safety-study-is-corrected-by-journal>)

Independent tests commissioned by the Environmental Working Group (EWG) found **glyphosate residues in all but two of 45 samples of products made with conventionally grown oats**, such as oat cereals, oatmeal, granola and snack bars.

Almost three-fourths of those samples had glyphosate levels higher than 160 parts per billion (ppb), which EWG scientists consider protective of children’s health with an adequate margin of safety, so a single serving of those products would exceed EWG’s health benchmark. About one-third of 16 samples made with organically grown oats contained glyphosate – at levels well below EWG’s health benchmark.

EWG adds that internal emails obtained by the nonprofit US Right to Know revealed that the FDA has been testing food for glyphosate for two years and has found “a fair amount,” but the FDA has not released its findings yet.

In addition to being applied to genetically engineered corn, soy, canola and sugar beet crops, glyphosate is increasingly sprayed just before harvest on non-GE wheat, barley, oats and beans to kill and dry the crops so that they can be harvested sooner. Studies suggest that glyphosate-sprayed crops such as wheat and oats are a major contributor to glyphosate in the daily diet.

The highest levels, greater than 1,000 ppb, were detected in two samples of Quaker Old Fashioned Oats. Three samples of Cheerios had glyphosate levels ranging from 470 ppb to 530 ppb.

In a follow-up study released in October 2018, glyphosate was found in all 28 samples of foods tested for EWG. The samples included 10 types of General Mills' Cheerios and 18 Quaker brand products from PepsiCo, including instant oatmeal, breakfast cereal and snack bars. Levels of glyphosate in this test were below EPA's threshold of 30 parts per million, but 26 tested higher than EWG's health benchmark of 160 ppb.

Glyphosate may get into organic foods by drifting from nearby fields of conventionally grown crops or by cross-contamination during processing at a facility that also handles non-organic crops. Glyphosate can adhere to water and soil particles long enough to travel through the air or in a stream to nearby organic farms.

The EWG urged the EPA to restrict pre-harvest applications of glyphosate and tell companies to identify and use sources of glyphosate-free oats. (“Breakfast With a Dose of Roundup?” by Alexis Temkin, Ph.D., Environmental Working Group, Aug. 15, 2018; https://www.ewg.org/childrenshealth/glyphosateincereal/?utm_source=newsletter&utm_campaign=201808GlyphRelease&utm_medium=email#.W3Rl4jhKiYU; “Another round of tests finds weedkiller widespread in popular cereals and snack bars,” by Brian Bienkowski, Environmental Health News, Oct. 24, 2018; <https://www.ehn.org/another-round-of-tests-finds-weedkiller-widespread-in-popular-cereals-and-snack-bars-2614597933.html>)

Two lawsuits have been filed against sandwich company **Pret a Manger** claiming that **the “natural” label on its products that contain glyphosate is deceptive**. Lab tests allegedly found traces of glyphosate in Harvest oatmeal raisin cookies, egg salad and arugula sandwiches, and other products made with the chain’s nine-grain granary bread. The Organic Consumers Association, a plaintiff in the case, previously won a lawsuit requiring removal of the “100% natural” label from Nature Valley granola bars after glyphosate residues were found in them. (“Pret a Manger sued in US for labelling products containing pesticides as 'natural',” by Arthur Nelsen, The Guardian, Sept. 25, 2018; <https://www.theguardian.com/environment/2018/sep/25/pret-a-manger-pesticide-glyphosate-sued-natural-sandwich-bread-labeling-lawsuit-us>)

Honeybees exposed to glyphosate at concentrations commonly found in the environment **had decreased amounts of microbiota in their gut**, leaving them prone to early death when exposed to a harmful pathogen, according to a University of Texas study. Monsanto had previously claimed that glyphosate does not harm wildlife, but bee gut bacteria contain that same enzyme that glyphosate targets in plants. (“Active ingredient in Monsanto’s Roundup hurts honey bee guts,” by Brian Bienkowski, Environmental Health News, Sept. 25, 2018; <https://www.ehn.org/monsanto-herbicide-roundup-hurts-bees-2607605097.html>)

A study by researchers at Worcester Polytechnic Institute reveals that **daily consumption of even small doses of neonicotinoid insecticides reduces the survival of queen and male**

bumblebees, which are critical to the survival of wild populations, while it had virtually no effect on the survival of workers at comparable doses. The study also found that exposure to the chemicals even at ultra-low doses alters the expression of genes regulating biological functions such as locomotion, reproduction, immunity, and learning and memory, suggesting that neonics may be having a greater negative impact on the viability of wild bumblebee populations than previously thought. This is the first study to examine how oral exposure to field-realistic doses of neonics differentially affects queen, male and worker bees at the individual level. Regarding regulatory decisions relating to pesticides, the study authors say their work emphasizes the importance of expanding research on the impact of pesticides on bumblebees to include the effects of field-realistic exposures on all types of bees and at all stages of the life cycle. (“Study Uncovers New Link between Neonicotinoid Pesticide Exposure and Wild Bumblebee Decline,” by Michael Dorsey, Worcester Polytechnic Institute, October 17, 2018; <https://www.wpi.edu/news/study-uncovers-new-link-between-neonicotinoid-pesticide-exposure-and-wild-bumblebee-decline>; “One size does not fit all: Caste and sex differences in the response of bumblebees (*Bombus impatiens*) to chronic oral neonicotinoid exposure”), by Robert J. Gegear and Melissa Mobley, PLOS One, Oct. 8, 2018; <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0200041>)

Sulfoxaflor, the first branded sulfoximine-based insecticide, **reduced the size of bumblebee colonies and resulted in 54 percent fewer male offspring** in an experiment exposing colonies to the pesticide. Sulfoximine-based insecticides are being developed as likely successors to neonicotinoid insecticides as the latter are increasingly banned or restricted due to their effects on bees. (“New generation of pesticides can reduce bumblebee reproduction,” By Marianne Brooker, The Ecologist, Aug. 16, 2018; <https://theecologist.org/2018/aug/16/new-generation-pesticides-can-reduce-bumblebee-reproduction-writes-marianne-brooker>)

Bacteria can develop antibiotic resistance up to 100,000 times faster when exposed to the herbicides Roundup or Kamba (a formulation of dicamba) along with antibiotics, according to a New Zealand study. This could interfere with the ability of antibiotics to treat human diseases, says Jack Heinemann, a professor at the University of Canterbury who was involved with the study. (“Roundup exposure speeds up antibiotic resistance – study,” by Jamie Morton, New Zealand Herald, Oct. 12, 2018; https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12141543; “Agrichemicals and antibiotics in combination increase antibiotic resistance evolution,” by William Godsoe et al., PeerJ, October 12, 2018; <https://peerj.com/articles/5801/>)

The Farm Bill

On October 1, 2018, the 2014 farm bill expired, resulting in the shutdown of dozens of agriculture, food, research and conservation programs to new applications and contracts. The farm bill is an omnibus spending bill that is renewed about every five years and reflects the federal government’s agriculture and food policy. Disagreements between the House and Senate regarding the 2018 farm bill included work requirements for SNAP (Supplemental Nutrition Assistance Program) recipients and the amount of acreage in the Conservation Reserve Program. Lawmakers must now produce a replacement bill or extend the expired law. As we went to press,

lawmakers were hoping to resolve their differences and have a conference report ready for a vote in November or December.

Spring 2019

Maine Board of Pesticides Control 2018 Recap

By Heather Spalding and Jean English

In 2018 the Maine Board of Pesticides Control (BPC) discussed local pesticide ordinances, use of drones to apply pesticides, and board member responsibilities, as well as the usual business of granting variances and special registrations for pesticide uses, levying fines for violators of pesticides rules, elucidating difficulties in tracking pesticide use in Maine, and more.

The BPC, Maine's lead agency for pesticide oversight, is attached to the Maine Department of Agriculture, Conservation and Forestry (DACF). Its seven-member public board (see sidebar) makes policy decisions. This report covers all 2018 BPC meetings. Complete documents relating to BPC meetings are posted at <http://www.maine.gov/dacf/php/pesticides/meetings.shtml>. MOFGA posts time-sensitive action alerts related to the BPC at www.mofga.org, in our weekly emailed Bulletin Board (sign up at <http://mofga.org/Publications/Bulletin-Board>) and on our Facebook page.

Heather Spalding, MOFGA's deputy director, attends BPC meetings to represent MOFGA's views. This summary is taken from her notes and from BPC minutes.

Staff and Board Member Updates

Cam Lay, BPC director for less than a year, resigned early in 2018, and in June the board appointed Megan Patterson as the new director. Patterson previously managed pesticide programs for the BPC. She received the William Twarog Manager of the Year Award for the DACF in December 2017. John Pietroski was promoted to manager of pesticide programs.

The board appointed Dr. Jack Waterman, retired family medicine physician from Waldoboro, to the BPC medical seat.

Pamela Bryer, Ph.D., became the BPC toxicologist. Bryer holds degrees in zoology from UMaine and a doctorate in environmental toxicology from Texas Tech University. She has worked as an environmental consultant in air quality permitting, as an assistant professor of environmental toxicology, for major petrochemical companies and as a compliance officer with the Maine Drinking Water Program. Bryer is active in increasing experiential learning for children in the STEM fields, and serves on the board of the Friends of Maine Coastal Islands National Wildlife Refuge.

Genetically Engineered Bt Corn Approved

In October 2017 the board denied requests from Monsanto Company and Dow AgroSciences LLC to register several new genetically engineered (GE) Bt (*Bacillus thuringiensis*) corn

products. In January 2018 representatives from Monsanto and Dow presented more information to the board about these products that have an additional mode of action. Dave Tierney, director of government affairs for Monsanto, said they had been approved in all other 49 states and Canada. Registration in Maine would enable the company to move seed freely throughout the United States and Canada. Monsanto agronomist James Valent said that options for managing western corn rootworm were crop rotation, soil applied insecticides, corn traits or no management. He said that rotation is rarely viable for corn growers, insecticides are not always effective, and corn rootworm populations can explode in one year, so having the Bt product available when needed is crucial. He explained that SmartStax PRO is the first product with a third mode of action – RNAi target specific to the DNA sequence of the rootworm. (In RNAi, or RNA interference, RNA molecules inhibit gene expression or translation by neutralizing targeted messenger RNA molecules.) Valent added that the product can suppress the European corn borer, corn earworm, western bean cutworm, black cutworm, western and northern rootworm, and some secondary pests from the seed treatment.

Stephanie Burton of Dow said that over 90 Bt corn products are registered in Maine and that the new products are similar to previously registered traits, but with an additional mode of action. The new products eventually will replace older products, so not registering them will limit Maine farmers' access, she said.

Clark Granger supported the registration, saying that material submitted with the registration request showed that this chemistry could control 10 insects; that pests will eventually develop resistance, so products will change; and that not everyone can rotate with alfalfa because it will not overwinter in some cold, icy soils. He said the board learned in January 2018 that western corn rootworm is presenting some pressure in Maine and that some populations are even showing some pesticide resistance.

John Jemison said that the registration request in October 2017 was for controlling western corn rootworm, and using a product that is only for western corn rootworm on a different pest would violate the law. He added that Maine has no documented need, that farmers can get better outcomes with rotation than with this product, and that the board was not aware that other options would be phased out. He worries that Maine could begin to see the Bt-resistant corn rootworm that is present in the West.

Jemison asked whether the refuge in a bag (a blend of mostly Bt corn with a small amount of non-Bt corn) is protecting organic corn growers. He noted that an organic grower who was concerned about pollen drifting from Bt varieties previously could ask the Bt corn grower to plant a refuge of non-Bt corn between their fields, but the refuge in a bag no longer provides that barrier.

Also related to Bt corn, Jemison noted that training is required every three years for any grower who wants to use the product, and seed sellers are supposed to see the grower's certificate. Patterson said that training occurs at the Maine Agricultural Trades Show and elsewhere. Staff tracks who has training certificates and notifies those who need renewal.

Registration of the new Bt products was approved, with three in favor and Jemison opposed.

Board Member Responsibilities

Reviewing board responsibilities, Assistant Attorney General Mark Randlett said that the BPC has a duty to represent interests of the public as a whole. Its decisions must be guided by views and concerns of the public, must consider all facts and information available and, according to the Freedom of Access Act, must be made in an open, public process so that citizens can participate and have a chance to understand decisions. Meetings, decisions and records are all public, and records are available for public review and inspection. Under limited circumstances the board can go into executive session, but even then, decisions must be made in public. A clear law prohibits clandestine meetings or policy conversations of board members in which decisions are made or deals are struck, with consequences for the department and the board for violating this law.

Anyone who disagrees with the legality of a decision has a right to file an appeal with a superior court. If the court finds an infraction, it can nullify the action. If a decision was made in bad faith with intent to skirt public meeting laws, the court can order payment of plaintiff's and other incurred costs and can impose a \$500 fine against the agency.

Contact and discussion with the public outside board meetings is appropriate, particularly to help inform board members, but board members must exercise judgment about the extent of personal contact. If a rulemaking process is under way, they have to be especially careful and would do better to advise public citizens to bring concerns to the board meeting or to contact board staff.

Any conflict of interest must be reported, and board members should recuse themselves in cases of conflict of interest.

Heather Spalding noted that had this presentation happened sooner, the October 2017 vote not to approve the new GE corn might not have been overturned.

Using Drones to Apply Pesticides

Cam Lay said he had received inquiries from aerial applicators who would like to use drones (including to control browntail moth), but he wanted to research regulations implemented by other states. Deven Morrill noted that the FAA requires registration of flights and drones.

Granger asked if drone pilots could legally apply pesticides under current rules if they passed the aerial exam. Randlett said nothing in rule prohibits that. Patterson noted that the EPA is requiring all states to redraft their state plans within two years and that chapters 10, 22, 51 and 58 of Maine's pesticide rules would be affected. She said that nationwide all applicators will have to be at least 18 years old, and identification will be required for taking exams. New requirements will cover categories such as structural and agricultural fumigation for private applicators, and a training requirement for all unlicensed applicators must be instituted. In agriculture, training under the Worker Protection Standard is already mandatory, but this is the first training requirement for unlicensed commercial applicators.

Anne Chamberlain, BPC policy and regulations specialist, noted that applicators would need to meet all requirements detailed in chapter 22, including creating a site plan, a site-specific application checklist, and 1,000-foot buffer zones for sensitive areas likely to be occupied. She added that chapter 51 includes requirements for notification for aerial applications.

After the above discussion, the staff realized a gap in BPC rules: Chapter 10 states that all aerial applicators shall be considered commercial applicators, but the definition of commercial applicator does not allow for applications to lands owned or leased by the applicator for the purposes of producing an agricultural commodity. So applications by drones to agricultural crops apparently could be done by hiring a commercial applicator but could not be done by the owner/lessee. The staff said the board should consider this discrepancy.

Local Pesticide Ordinances

Jesse O'Brien told the BPC that his Downeast Turf farms cannot grow turf in all of its fields without pesticides. He said that the South Portland Pest Management Advisory Committee (PMAC) does not use the BPC and UMaine as resources on its website, nor do those entities seem to be taking leadership on the issue of local pesticide ordinances – despite the fact that the BPC, not municipalities, is tasked with making policy for the state.

Likewise, Riley Titus of Responsible Industry for a Sound Environment (RISE), representing pesticide distributors and producers, said that pesticide registration fees help fund the pesticide program, and some local ordinances seem to contradict state policies. Integrated pest management (IPM), which is recognized in statute, he said, includes cultural, mechanical and chemical controls, and he sees a lack of IPM in many local ordinances. He asked if towns were contacting the BPC for education. He added that municipalities appear to be further regulating a product that is already highly regulated. Titus said he was concerned about removal of the freedom of choice regarding how homeowners and businesses can maintain properties. He wants individuals to have all tools available to them once the steps of IPM have been conducted. He asked how the board, the IPM Council and UMaine Cooperative Extension were educating people, and he proposed that the board restate its duty to IPM in a resolution.

Granger agreed that property owners should be able to maintain their landscapes as they wish.

Jemison expressed frustration that citizens are trying to address pesticide issues correctly but are not aware of existing inspections, safeguards, laws and resources. He said part of the problem is that when people distrust science and government, actions of the board will not make much difference. He added that IPM seems almost never to be used in contract lawn care; instead, applications are generally made on a calendar basis.

Curtis Bohlen was troubled that locally elected officials' decisions could be overturned by a non-legislative board such as the BPC. He disagreed with Titus and does not believe that the ordinances are undercutting IPM.

Morrill said that some actions taken by municipalities may work and should be instituted at the state level. He added that the ordinances also limit what hobby gardeners and florists can do.

Dave Adams asked if the consensus in the PMAC was that organic pesticides are safer. O'Brien said yes – which concerns him.

Randlett recommended that the board not adopt Titus' proposed resolution. He said that IPM is a goal of the state, written in statute, not a policy; the state policy is to minimize reliance on pesticides. He summarized a case in which Central Maine Power had challenged the town of Lebanon, Maine, for its ordinance restricting use of pesticides in that town. The Maine Supreme Court sided with the town. He added that a person who wants to challenge a town ordinance can do so in court or through the legislature.

Listening Session

In a listening session, Spalding said she does not believe IPM and ordinances are mutually exclusive, and she would like to keep communication open between MOFGA and the board on this subject. Noting that some communications to the board seem to receive special attention, she asked how submissions make it into the board packet, which ones are addressed, how the board determines which agricultural operations receive unannounced visits from an inspector, and what the board is considering regarding tracking the volume of pesticides purchased and used in Maine.

Chamberlain said that all correspondence received before the deadline (8 a.m. three days before a BPC meeting) is included. Correspondence received after the agenda is released is sent to the board but not placed on the agenda. When someone asks to be on the agenda, the board makes that decision.

Spalding then asked why a few letters complaining about ordinances were discussed, while other submissions were not. Bohlen responded that the BPC can run its meetings informally and address what may interest its members, but that it will try to be more mindful about those decisions in the future.

Regarding inspections, Raymond Connors, manager of compliance, said that the BPC staff details how many of each type of inspection will be done in the coming year. Inspectors have quite a bit of autonomy in where they conduct routine inspections, but they try to consider where environmental consequences may be greater.

Regarding tracking pesticide sales and use, Patterson said that staff receives annual use and sales reports but does not compile the data, as most reports are hand printed, and data correction and verification are often required and are difficult. Also, about 1,000 of the approximately 12,000 pesticides registered in Maine change annually, so any database would need to be updated annually. The board discussed the possibility of requiring that applicators submit data digitally in a usable format.

Right of Way Issues

Spencer Aitel told the board about his concerns regarding treatment of roadside rights of way adjacent to his 500-acre MOFGA-certified organic Two Loons Farm in China, Maine. The board has an open investigation concerning an application made by a Maine DOT contractor in June 2017 along a right of way adjacent to Aitel's property.

Aitel's farm has been organic since 1996. When he was baling off Route 32, a DOT spray truck came toward him. When he was about 150 feet from the truck, the DOT-contracted applicator began spraying. Aitel told the applicator that he could not spray by an organic farm. The applicator disagreed, and the truck moved about 100 feet down the road and began spraying again. Aitel reported the incident to MDOT because he did not want to lose his organic certification or his livelihood. Later he saw the crew spraying more of his property on Route 3. He reported this to the individual's boss, Bob Moosmann. Aitel said the crew also mowed the roadside after spraying. Aitel believes the crew violated the pesticide label by spraying in such a manner. He added that the Garlon label says not to apply the material where runoff will flow onto agricultural land. Aitel also said MDOT applicators did not recognize agricultural lands, cross culverts or nontarget species. He said the MDOT contract states not to spray within 100 feet of organic farms. He believes organic farms are being singled out to maintain their own roadsides, and he wants MDOT to acknowledge its responsibilities.

Granger asked if Aitel posted "No Spray" signs. Aitel said he has them by his house but not by all fields. He reiterated that signs should not make a difference because the MDOT contract requires that it stay away from agricultural and hay fields. Granger asked if the organic community would be willing to come up with signs that could be placed by roadsides. Adams said that the applicator should be responsible.

Asked about the digital maps of organic cropland that MOFGA's Katy Green had made, Patterson said they become outdated quickly.

Mosquito Monitoring

The board approved IPM specialist Kathy Murray's request for \$6,762 to help surveil and identify mosquitos, develop GIS-based mosquito habitat mapping, and continue outreach around vector-borne diseases. Murray said that a few years ago the state legislature directed the DACF to create an emergency response plan in case of a vector-borne disease emergency involving mosquitoes after two deaths occurred in Vermont from Eastern Equine Encephalitis (EEE). She has been running a small monitoring program related to West Nile Virus since 2009, but EEE is of greater concern. Maine had two human cases in 2013 – one was fatal; in the other, the person survived but with complications. In 2015 another individual died from EEE in Maine. Federal funding for monitoring may not be reliable, and last year arrived too late to be useful.

Variance Requests

The board approved variances for the following:

- Deane Van Dusen of the Maine Department of Transportation (MDOT) Environmental Office to control invasive plants in remediated and constructed wetlands

- Vegetation Management Services, Inc., to control invasive species and poison ivy at the Biddeford Pool Land Trust property and at two sites in Great Pond, Maine: along Collar Brook and on the northeast side of King Pond
- MDOT to control weeds along state-maintained roads and other transportation facilities
- Dubois Contracting to control weeds on the Fort Kent levee along the St. John and Fish Rivers
- Ron Lemin Jr. to control Japanese barberry and honeysuckle on Nautilus Island in Castine Harbor
- Acadia National Park to control invasive plants
- Andrew Powers to control invasive plants in Cape Elizabeth
- Town of Newport to control poison ivy along the Durham Bridge
- Mark Eaton to control invasive phragmites in York
- Piscataqua Landscaping and Tree Service to control invasive buckthorn, honeysuckle and bittersweet in Shepard's Cove, Kittery

Consent Agreements

The board approved the following consent agreements and fines:

- Service Master Elite of Saco – an unlicensed applicator applied Benefect Botanical Disinfectant in a Lewiston structure during mold remediation work. \$1,000
- Referral of Unresolved Consent Agreement with PLD Group of Augusta, Maine – an unlicensed applicator applied pesticides to control bed bugs inside structures in Augusta and the Augusta area. The company returned the signed consent agreement without the \$1,500 payment. The board referred the case to the Office of the Attorney General for prosecution.
- Black Kettle Farm of Lyman – applying Pyganic Crop Protection EC 5.0 II at a rate exceeding the maximum labeled rate and without wearing required chemical resistant gloves when mixing, loading and applying; failure to maintain OSHA safety data sheets at a central information display. \$150
- Penquis, Bangor – application of Roundup herbicide to a playground at the Milo Elementary School by an unlicensed person and without authorization by the school IPM coordinator. \$250
- Riverview Psychiatric Center, Augusta – application of Roundup Extended Control herbicide by an unlicensed person. \$200
- White's Weed Control of Palmyra – broadcast application without a variance of Rodeo and Aquasweep herbicides within 25 feet of water along the embankments of the causeway that crosses Sebasticook Lake on the Durham Bridge Road in Newport. \$250
- Roof Cleaning Solutions of Oakland – 11 violations, including applying ZeroTol 2.0 Fungicide, Bactericide and Algicide and Clorox to a shingled roof in Raymond without a commercial pesticide applicator's license. The material is not labeled for residential roofs. \$500
- Witherly's Green House & Garden Center of Hermon – repeatedly offering unregistered pesticides for sale. \$500
- Mainely Ticks of Windham – applying Tempo EC Ultra to the lawn and perimeter of a residential yard in Sanford after the property had been sold and without authorization from the new owner. \$500
- Wise Acres Farm of Kenduskeag – exceeding the maximum label application rate when applying Actinovate AG Biological Fungicide to strawberry fields; not wearing the required respirator when mixing, loading and applying the pesticide; not having OSHA safety data sheets

at a central information display as required by the federal Worker Protection Standard; incomplete pesticide application records. \$175

- Paul Finden and Emily Rogals of Belfast – applying Roundup herbicide to a neighbor’s property without the property owners’ authorization. \$1,500

Communications

The board received a few communications. Northport resident B. K. Keller expressed concern about broad-scale roadside spraying of herbicides. Keller made several thoughtful suggestions for alternatives to herbicides.

Melissa Hyner Gugliotti of Kennebunk opposed local pesticide ordinances, and George and Patricia Egbert of Egbert’s Lawncare LLC in Gorham supported a resolution that the BPC promote IPM.

Mark Aranson, M.D., had asked that Cumberland town manager William Shane petition the Maine CDC to declare an infestation of browntail moth (BTM) as a public health nuisance. In response to Aranson’s letter urging pesticide spraying, Jody Spear of Harborside urged the BPC “to exercise its mandate to minimize reliance on pesticides in advising state residents on managing BTM responsibly. Practical advice would include covering skin surfaces in areas where toxic hairs are present and discontinuing activities like leaf blowing, which spreads hairs around.” Spear also noted state literature recommending clipping weeds from October to mid-April, hosing down caterpillars when they emerge, and using double applications of Bt rather than neonicotinoids and pyrethroids before caterpillars emerge. Spear added at a BPC listening session that she was impressed with progress made due to the Portland pesticide ordinance.

Citing an interview with Caius Rommens, author of “Pandora’s Potatoes,” Spear urged the BPC to withdraw its approval of the GE Innate potato. In addition to threats to human health from toxins that build up in concealed bruise areas, Rommens notes hazards to endangered bee colonies: GE potato pollen fed to bee larvae could be expected to alter their genetic makeup. Rommens warns that Innate potatoes entering the market should be evaluated for hidden bruises and infections and for levels of alpha-amino adipate, tyramine and other toxins.

Karen Snyder, a beekeeper and farmer from Portland, urged the BPC not “to be persuaded by agribusiness/landscapers and lobbyist groups like RISE.”

Other Business

The BPC unanimously approved \$5,360 to fund a Migrant and Seasonal Farmworker Safety Education program for 2018.

The board authorized the staff to spend \$500 for graphic design work for a sign to be posted in pesticide self-service sales areas. Spalding commented that the BPC tag line, “Think first, spray last,” should be the takeaway from the sign, as well as “Always read the label.” The board approved a design in November.

Since 1974 the DACF has received program partnership funds from EPA to support regulating pesticide use in Maine. When this partnership began, a “Plan for Certification of Pesticide Applicators” was developed. The document needs to be updated to reflect new federal regulations that will be effective in two years. The board discussed several items in the document.

Chamberlain said that all BPC statutes, rules, policies and other pertinent information are on the BPC website.

The Division of Plant Health reports annually to the Eastern Plant Board about program-wide outreach, education, licensing, enforcement and regulatory development. The Eastern Plant Board, the liaison for state regulatory officials dealing with the federal government, includes states from Maine to New York to West Virginia. Some pesticide registration fees support these efforts. The report summarizes many programs funded by the BPC dedicated revenue account, including the nursery program, IPM program, cooperative agricultural pest survey program and the apiary program. The report is on the BPC website.

Staff from the Departments of Health and Human Services and Environmental Protection asked the BPC which chemistries they should look for when they begin testing medical marijuana for pesticide residues.

The BPC staff determined by consulting with Inland Fisheries and Wildlife that the 4-Poster automated pesticide dispensing system that treats deer for ticks is not legal in Maine because it is a baiting device.

Sidebar

Members of the Maine Board of Pesticides Control

Curtis C. Bohlen, director, Casco Bay Estuary Partnership, University of Southern Maine, Muskie School of Public Service, Portland (public member and vice-chair of the BPC)

Bruce V. Flewelling, potato grower, Easton (agricultural expertise)

Clark A. Granger, consulting forester, Woolwich (forestry expertise)

John M. Jemison Jr., water quality and soil specialist, University of Maine Cooperative Extension, Orono (water quality and soil specialist)

Deven Morrill, licensed arborist, Lucas Tree Experts, Portland (public member and chair of the BPC)

Dave Adams, commercial applicator, Dasco Inc., Presque Isle (commercial applicator expertise)

Jack Waterman, physician, Waldoboro (medical expertise)

[End of BPC news]

The Good News

In January MOFGA announced its enthusiasm for **Amanda Beal, Gov. Janet Mills' nominee for commissioner of the Maine Department of Agriculture, Conservation and Forestry (DACF)**. Beal had served as a MOFGA board member, including two years as president, and was president and CEO of Maine Farmland Trust.

"MOFGA has worked closely with policy makers in Augusta for almost 50 years and, while we have made great strides to reinvigorate Maine agriculture, we recognize that we have huge challenges ahead of us," said MOFGA Executive Director Sarah Alexander. "Amanda Beal is the ideal person to lead the Department of Agriculture, Conservation and Forestry as we move forward to create a healthy and sustainable farm and forest economy."

In addition to Beal's extensive hands-on and life experience on Maine farms, she has academic credentials in the field. She began graduate studies in the Agriculture, Food and Environment master's program at Tufts Friedman School of Nutrition Science and Policy, and pursued her Ph.D. in the Natural Resources and Earth Systems Science Program at the University of New Hampshire. She is co-author of "A New England Food Vision: Healthy Food for All, Sustainable Farming and Fishing, Thriving Communities."

Beal was a founding member of Maine's Eat Local Foods Coalition and served for many years on the Portland-based food and farming organization Cultivating Community.

"MOFGA is enthusiastic about a fresh start in Augusta with lots of new energy and ideas for creating a future of healthy ecosystems, communities, people and economies sustained by the practices of organic agriculture," said Alexander. "We also are very excited about opportunities to work with conservation and forestry professionals in the department to protect the health and productivity of our soils, our land and our vast natural resources that provide so much opportunity for a sustainable and vibrant economy. The landscape in Augusta is a harbinger of the agriculture that MOFGA envisions for our next generation."

In the fall of 2018, **Maine signed a new Cooperative Interstate Shipment (CIS) program agreement** with the USDA Food Safety and Inspection Service (USDA-FSIS) that allows selected Maine slaughterhouses and processors to wholesale their products in every state and in the District of Columbia. Previously Maine slaughterhouses and processors could slaughter and process animals only for wholesale and/or retail sales within Maine. Maine is the fifth state to receive a CIS agreement and the only New England or East Coast state to have been offered one by USDA-FSIS. The agreement enables livestock producers and slaughterhouses to sell their product to grocery stores with out-of-state locations, while previously they were limited to stores that operate only within Maine. Also, Maine livestock producers who previously had to use USDA plants because they have established accounts out of state may now have more conveniently located state plants. Livestock producers in neighboring states can take their animals to selected Maine slaughterhouses and processors if they choose, because the product can be sold back home in their own state. All meat from a CIS slaughterhouse will have both a

state and federal mark of inspection on it. States with CIS programs and their selected establishments are also eligible to expand into exports, which would allow sales of Maine processed meat and poultry to Canada and beyond. (Cooperative Interstate Shipment Program, <https://www.fsis.usda.gov/wps/portal/fsis/topics/inspection/state-inspection-programs/cis>)

Research at the University of Vermont shows that **pollination by wild bees resulted in 12 percent greater blueberry size** and quantity, 11 percent more consistency in size, and up to 2 1/2 days earlier harvests. Of the nine Vermont berry farms studied, researchers calculated that wild bees could boost production by up to 36 percent, or roughly \$136,000 per year, on one mid-sized berry farm alone. On other farms, wild bees' potential benefits to production averaged about 6 percent. The UVM team found that maintaining a high proportion of natural bee habitat around farms can help protect wild bees, as can using less pesticides. Homeowners can help by mowing less, planting native wildflowers and putting up bee boxes for wild native bees. ("The Secret to Better Berries? Wild Bees," by Brian Owens and Basil Waugh, The University of Vermont, Nov. 28, 2018; <https://www.uvm.edu/gund/news/secret-better-berries-wild-bees>)

Organic

In January the **Center for Food Safety (CFS) filed a new legal action demanding that USDA prohibit hydroponic operations from the organic label.** Hydroponic production systems – a catch-all term that applies to food production methods that do not use soil – do not meet federal organic standards and violate organic law, which requires that organic farming include soil improvement and biodiversity conservation, CFS said. The CFS filing was endorsed by over a dozen other organic farmer, consumer, retailer and certifying organizations, including MOFGA, MOFGA Certification Services, the Organic Farmers Association, Northeast Organic Dairy Producers Alliance (NODPA), PCC Community Markets and the Cornucopia Institute.

"Allowing hydroponic systems to be certified as organic undercuts the livelihood of organic farmers that take great lengths to support healthy soil as the bedrock of their farms," said Kate Mendenhall of the Organic Farmers Association. "Hydroponic producers getting the benefit of the organic label without actually doing anything to benefit the soil undermines the standard and puts all soil-based organic farmers at an untenable economic disadvantage."

The National Organic Standards Board (NOSB), the expert body assigned by Congress to advise USDA on organic matters, recommended that the agency prohibit certification of hydroponic systems, but USDA continues to allow hydroponics. Canada and Mexico prohibit hydroponics from organic, and the European Parliament voted to end the organic certification of hydroponic products in April 2018. ("Center for Food Safety Files Legal Action to Prohibit Hydroponics from Organic," Center for Food Safety, Jan. 16, 2019; <https://www.centerforfoodsafety.org/press-releases/5501/center-for-food-safety-files-legal-action-to-prohibit-hydroponics-from-organic>)

Climate

Recent publications of the Northeast Climate Adaptation Science Center predict that **the Northeastern United States is expected to experience the effects of climate change 20 years**

before the rest of the globe. According to the U.S. National Climate Assessment published in 2014, the Northeast has seen an increase of more than 1.5 degrees F in average temperature and 10 additional frost-free days since 1991 – while still experiencing temperature fluctuations, including killing frosts and cool, wet springs.

With increases in temperature of even 2 degrees, Massachusetts will eventually see winters without snow. The state is expected to see 90 percent fewer freezing days by the middle of the century compared with observations at the end of the 20th century. Winters will be about 3 degrees F warmer, while the rest of the year is likely to warm by at least 2 F.

Massachusetts has seen a 71 percent increase in heavy precipitation events (> 2 inches) since 1991, yet it has also experienced periods of extreme drought. Predictions call for more droughts and floods as a result of climate change. Winters will be wetter; summers drier. As temperatures continue to rise, snow and ice will melt earlier, and peak spring flow will occur up to two weeks earlier.

First bloom dates have increased by two to three days in Massachusetts over the past decade. In 1990 most of Massachusetts was in hardiness zone 5 (-10 F to -20 F); now it is mostly zone 6 (0 F to -10 F). More pests are overwintering, and Lyme disease is increasing. By 2039, much of the state is predicted to be in zone 7a, with coldest temperatures reaching 0 F to 10 F. More rain and higher temperatures should result in more evapotranspiration. Soils are predicted to be very wet to start but to dry quicker than usual. Dry years will be drier; wet years will not be as wet. Changes in temperature and precipitation are expected to increase the risk for invasive plants.

These are recommended adaptations: Set up and be ready to use irrigation infrastructure ahead of time; invest in micro-irrigation or drip irrigation with a maximum flow rate of 30 gallons per hour; use more mulches to reduce water loss; plant more cover crops to increase soil water-holding capacity and reduce erosion; reduce tillage to maintain soil structure; use row cover more frequently and make sure it is available for easy use early in the season when temperature fluctuations occur; plant later in the spring than you have in the past to ensure plants will survive the early cold season, knowing that you will be producing later in the year. (“Climate Predictions for Vegetable Farmers in Massachusetts,” UMass Extension Vegetable Notes, Nov. 15, 2018; <http://ag.umass.edu/vegetable/newsletters>)

The Farm Bill

MOFGA generally is pleased with passage of the **Agriculture Improvement Act of 2018 (the farm bill)** but is disheartened by significant threats to the integrity of the National Organic Standards Board.

The farm bill is a gigantic piece of legislation that covers diverse agricultural programs, from commodities to conservation, research and nutrition. As the federal government's primary agriculture and food policy legislation (representing several hundred billion dollars over five years), the bill has great potential to cultivate a more-local, more-organic, more-secure U.S. agriculture.

The 2018 bill has big wins for organic farmers and consumers, including provisions that will help safeguard organic integrity and generate jobs, economic growth and environmental benefits in communities across the United States.

The bill establishes mandatory funding and authority for the Organic Certification Cost-Share Program, which provides partial reimbursement for rising organic certification costs and is especially important for small and mid-size operations. MOFGA-certified organic producers benefit greatly from this program, with more than 90 percent of producers participating annually.

The bill combines the Beginning Farmer and Rancher Development Program and the Socially Disadvantaged and Veteran Farmers and Ranchers Program; provides permanent, baseline funding for them (\$50 million annually); and makes significant policy improvements. Since 2011 this program has secured almost \$2 million in federal funding for MOFGA's beginning farmer programs, which are shifting the demographics of Maine's farm population.

It includes a historic increase in funding the Organic Agriculture Research and Extension Initiative (OREI) to permanent, baseline status by 2023, which will help ensure continuation of this program beyond the life of the current farm bill. Cutting-edge research conducted through the OREI program helps farmers become more productive, efficient and profitable and leads to development of new agricultural practices that both conventional and organic farmers can use. Maine's university system has secured funds through this program.

It expands resources and authorities for organic import enforcement, which will bolster USDA and organic community efforts to deter fraud in the organic sector.

It provides \$5 million for organic data collection. This is vital to policymakers, researchers and industry participants to maintain stable markets, create risk management tools, track production trends and curb fraud in the organic sector.

The bill combines and strengthens the Farmers' Market and Local Food Promotion Program and the Value-Added Producer Grant Program, and provides permanent, baseline funding.

It omits language from a prior draft that would have prohibited local governments from restricting pesticide use. This defends decades of thoughtful public policy development in Maine, where at least 29 municipalities have created ordinances to promote organic land care practices and protect human health and the environment from unnecessary application of synthetic pesticides. It also omits language from a prior draft that would have rolled back pesticide regulations in the Clean Water Act and the Endangered Species Act.

The bill rejects language in a prior draft to eliminate the Conservation Stewardship Program. It preserves current funding and makes important policy improvements to encourage cover cropping, resource-conserving crop rotation and advanced grazing systems.

On the other hand, the bill contains deeply troubling provisions that impose statutory changes on the National Organic Standards Board (NOSB), the USDA advisory board responsible for keeping toxic substances out of organic production and processing. One provision allows for employees of farm companies to sit in farmer seats on the board. This could dilute the voice of independent organic farmers and favor interests of large organic production companies. MOFGA will continue to advocate for nomination of independent organic farmers to NOSB farmer seats and will actively engage in the board's transparent and public process to ensure that family farms are represented in NOSB decisions.

Another provision contains unnecessary and confusing language about NOSB voting procedures that govern decisions about which synthetic materials are allowed in organic production and processing. MOFGA opposes this language or any efforts to weaken the voting procedures of the board or make it easier to retain harmful materials in organic production and processing.

In addition to providing critical funding for organic and sustainable agriculture initiatives, the final bill ensures food access and dignity for families in need by protecting the Supplemental Nutrition Assistance Program. Leadership and a spirit of compromise by Sens. Roberts (R-KS) and Stabenow (D-MI) and Reps. Conaway (R-TX) and Peterson (D-MN) were essential to moving this bill across the finish line. MOFGA is grateful for the many champions of organic agriculture in Congress, and especially appreciates the leadership efforts by Maine Sens. Susan Collins and Angus King and Rep. Chellie Pingree, who sponsored key marker bills to support the dynamic U.S. organic agriculture sector. These three also advocated strongly against threats to existing federal environmental protections, to pesticide regulations and to preemption of local and state laws.

Praising the significant step forward for organic agriculture in multiple arenas in the farm bill, MOFGA's executive director, Sarah Alexander, said, "The bill also includes increased support to assist beginning, socially disadvantaged and veteran farmers, provisions that improve land access for future generations and expansion of local and regional markets critical to organic producers. Much more can be done, however, to advance policies that benefit family farms, communities, health, the environment and the changing climate."

Genetic Engineering

In late December 2018, the USDA announced its final standard for **labeling foods derived from genetically engineered (GE) ingredients** (aka genetically modified organisms or GMOs). Its National Bioengineered Food Disclosure Standard falls far short of ensuring the public's right to know about GE-foods. It sets a low bar for assuring consumers about the integrity of the foods they're eating, it allows manufacturers to hide behind a convoluted labeling scheme, and it sows seeds of confusion by substituting "bioengineered" for the universally recognized GE and GMO terms. MOFGA expressed great displeasure with the final standard and ongoing frustration with USDA's habit of bestowing policy gifts to industrial agribusiness at the expense of consumers everywhere.

"What we really wanted for the holidays was the right to know," said Sarah Alexander, MOFGA's executive director. "USDA's decision to keep consumers in the dark about the foods they're eating is a Grinchy, industrial power grab." Ninety-two percent of U.S. consumers want to know about GE ingredients in foods, according to a 2014 Consumer Reports poll.

The majority of foods with ingredients from GE sources will be exempt from labeling since USDA set a 5 percent threshold for unintended presence of GE ingredients. This includes most soft drinks and oils made from corn, canola and soy. By contrast, the EU threshold is 0.9 percent. For foods testing above 5 percent and requiring a label, manufacturers may apply QR (quick response) codes, website addresses or phone numbers, making it very difficult for consumers to know about the presence of GE ingredients.

Manufacturers won't have to provide disclosure until January 2022.

"MOFGA strongly opposes QR codes, websites and text messaging as the principal means of disclosure," said Alexander. "Disclosure should be provided through on-package labeling. Providing information about GE ingredients through electronic means places an unreasonable burden on consumers. QR codes would discriminate against more than 100 million Americans – especially many in rural communities as well as low-income, minority and elderly populations – known to disproportionately lack access to these technologies."

The announcement came two and a half years after Congress passed the so-called DARK Act (Deny Americans the Right to Know), which called for creating and implementing a federal labeling standard.

For almost three decades, MOFGA has advocated for clear, concise labeling of foods derived from GE ingredients. MOFGA brought its case to the Maine Legislature five times before securing unanimous legislative support in 2013 for the labeling. Tragically, Congress preempted Maine's mandatory GE labeling law three years later and reverted to a policy of allowing voluntary labeling for GE food producers across the nation.

"USDA had an opportunity to create a meaningful disclosure standard for GMO foods, using neutral symbols and terms that are understandable and familiar to consumers, and to create a symbol that is consistent with federal and international standards," said Alexander. "The term 'bioengineered' and the acronym 'BE' are misleading and confusing. Consumers are more

familiar with the terms GMO and GE, which have been used for more than 30 years by consumers, companies and regulators.”

MOFGA opposes the use of GE organisms in agriculture and advocates significant changes in the regulatory framework governing this revolutionary technology. Organic farmers cannot and will not use seeds, plants or animal feeds that have been gene-edited or genetically engineered to incorporate foreign genetic material from other species. MOFGA believes the health and environmental risks of these foods have not been assessed adequately, and the system of federal regulation is in shambles. (MOFGA press release, December 24, 2018; “USDA’s new disclosure rule for genetically engineered food will leave many consumers in the dark,” Consumer Reports, Dec. 20, 2018;

https://advocacy.consumerreports.org/press_release/usdas-new-disclosure-rule-for-genetically-engineered-food-will-leave-many-consumers-in-the-dark/; “National Bioengineered Food Disclosure Standard – A Rule by the Agricultural Marketing Service,” Federal Register, Dec. 21, 2018; <https://www.federalregister.gov/documents/2018/12/21/2018-27283/national-bioengineered-food-disclosure-standard>; The National Sustainable Agriculture Coalition has thorough coverage of the rule at <http://sustainableagriculture.net/blog/bioengineered-labeling-rule-will-cause-further-confusion/>)

Summer 2019

The Good News

Researchers at the University of Guelph found that **the global agriculture system** produces enough calories to feed the current world population but **overproduces grains, fats and sugars** while producing insufficient produce and protein to meet the nutritional needs of current and future global populations. Fixing this problem could reduce the amount of land needed to feed everyone, they say. They compare current consumption (servings per person per day) with that recommended by the Harvard University “Healthy Eating Plate” guide: grains, 12 current versus 8 recommended; produce, 5, 15; oil and fat, 3, 1; protein, 3, 5; milk, 1, 1; sugar, 4, 0. (“We need a complete change in agriculture to feed the planet,” by Karen Graham, Digital Journal, Oct. 29, 2018;

http://www.digitaljournal.com/tech-and-science/science/we-need-a-complete-change-in-agriculture-to-feed-the-planet/article/535684?utm_source=EHN&utm_campaign=fcce484c6b-Science_saturday&utm_medium=email&utm_term=0_8573f35474-fcce484c6b-99057445;

“When too much isn’t enough: Does current food production meet global nutritional needs?” by Krishna Bahadur K.C. et al., PLoS ONE, Oct. 23, 2018;

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0205683#sec001>)

The Thünen Institute and several research partners, with funding from the German Federal Ministry of Food, **reviewed 528 scientific studies on organic and conventional farming** in temperate climates to determine the potential for organic farming to solve environmental and resource challenges. In all topic areas – water protection, soil fertility, biodiversity, climate protection, climate adaptation, resource efficiency and animal welfare – organic management was more advantageous than conventional. (“Thünen Institute Publishes Study on the Value of Organic Farming,” IFOAM, Jan. 30, 2019;

<https://www.ifoam.bio/en/news/2019/01/30/thunen-institute-publishes-study-value-organic-farming>; Original study, in German: <https://www.thuenen.de/de/infothek/publikationen/thuenen-report/>)

In late 2018, the White Earth band of Ojibwe passed a law formally **recognizing the Rights of Manoomin (“wild rice”)** because “it has become necessary to provide a legal basis to protect wild rice and fresh water resources as part of our primary treaty foods for future generations.” Included are the right to clean water and freshwater habitat; to a natural environment free from industrial pollution; to a healthy, stable climate free from human-caused climate change impacts; and to be free from patenting and from contamination by genetically engineered organisms. (“The White Earth band of Ojibwe legally recognized the rights of wild rice. Here’s why,” by Winona LaDuke, Nation of Change, Feb. 6, 2019; <https://www.nationofchange.org/2019/02/04/the-white-earth-band-of-ojibwe-legally-recognized-the-rights-of-wild-rice-heres-why/>)

Europe could be farmed entirely through agroecological approaches such as organic and still feed a growing population, according to the “Ten Years for Agroecology” study from European think tank IDDRI. The study shows that pesticides can be phased out and greenhouse gas emissions radically reduced in Europe through agroecological farming. Steps involved include reorienting diets toward plant-based proteins and pasture-fed livestock and away from grain-fed white meat. (“Europe can go organic,” The Ecologist, Feb. 21, 2019; <https://theecologist.org/2019/feb/21/europe-can-go-organic>; IDDRI report: Ten Years for Agroecology in Europe, Soil Assoc., <https://www.soilassociation.org/tyfa/>)

Strawberry plants grown near hedgerows of dense, woody vegetation with abundant pollinators produce larger, better fruit with more than twice the commercial value of fruit grown in other locations, according to research conducted in Germany. Researchers grew strawberries on farms surrounded by grassland, by arable land or beside hedgerows adjacent to wild forests. Fruit on plants near grassland were 20 percent smaller and weighed 37 percent less than fruit grown near hedgerows. Ninety percent of fruits from plots near hedgerows met commercial standards, as did only 48 percent from near grassland. Almost one-third of fruits from farms near hedgerows would be classified as exceptional and could demand a higher price. (“Building Habitat for Pollinators Means Bigger, Better Fruit,” by Emma Bryce, Anthropocene, March 1, 2019; http://www.anthropocenemagazine.org/2019/03/building-habitat-for-pollinators-means-bigger-better-fruit/?utm_source=Anthropocene&utm_campaign=610407b5d3-Anthropocene+science+to+AM&utm_medium=email&utm_term=0_ececeea89a-610407b5d3-294218677)

A recent study found **more antioxidants in organic than conventional beef**, with 34 percent more coenzyme Q10, 72 percent more taurine and 53 percent more β -carotene. Organic beef also had a more balanced lipid (fat) profile, with 17 percent less cholesterol, 32 percent less fat, 16 percent fewer fatty acids, and 24 percent fewer monounsaturated fatty acids. And it had 170 percent more heart-healthy α -linolenic acid than conventional and 24 percent more α -tocopherol, a type of vitamin E. (“Organic beef is more nutritional than conventional beef,” The Organic Center, March 25, 2019;

<https://www.organic-center.org/organic-beef-is-more-nutritional-than-conventional-beef/>;
“Nutritional properties of organic and conventional beef meat at retail,” by Albert Ribas-Agusti et al., Journal of the Science of Food and Agriculture, Feb. 20, 2019;
<https://onlinelibrary.wiley.com/doi/abs/10.1002/jsfa.9652?redirect=true&>)

On March 27 **Governor Janet Mills signed emergency legislation to allow the production and sale of food additives and food products that contain hemp** or hemp products in Maine. Sponsored by Rep. Craig Hickman (D-Winthrop), LD 630, An Act To Clarify That Food, Food Additives and Food Products Containing Hemp-derived Cannabidiol Produced and Sold within the State Are Not Adulterated and To Match the State’s Definition of “Hemp” to the Definition in Federal Law, states that food, food additives and food products that contain hemp and hemp products, including hemp-derived cannabidiol, are not considered to be “adulterated” under state law and that the non-pharmaceutical or nonmedical production, marketing, sale or distribution within the state of food, food additives or food products that contain hemp-derived cannabidiol may not be prohibited.

The legislation also clarifies that eating establishments, in addition to food establishments, may not make any therapeutic claims about food products that contain hemp-derived cannabidiol without federal approval.

“Hemp” as defined by the legislation includes commodities and products derived from hemp, including food, food additives and food products, and does not include medical marijuana as governed by the Maine Medical Use of Marijuana Act or adult use marijuana as governed by the Marijuana Legalization Act. (“Governor Mills Signs Emergency Legislation Allowing Sale of Hemp-Derived Products in Maine,” Office of Gov. Janet T. Mills, March 27, 2019, <https://www.maine.gov/governor/mills/news/governor-mills-signs-emergency-legislation-allowing-sale-hemp-derived-products-maine-2019-03>)

Fewer than 40 synthetic ingredients are allowed in organic packaged foods, while **at least 2,000 preservatives, colors and other synthetic chemicals are used in conventional packaged foods**, according to the Environmental Working Group (EWG). Also, food manufacturers don’t need FDA approval for many of the chemicals added to conventional packaged foods; companies that manufacture the chemicals are allowed to declare them safe. However, substances added to organic food must be approved by government and independent experts every five years and must be proven safe for consumption, with no adverse impact on the environment. Many of the chemicals used in conventional food have been linked to serious health problems, says EWG, adding that neither conventional nor organic foods are subject to meaningful standards to prevent chemicals such as phthalates from migrating into food. (“Organic: The Original Clean Food,” by Dawn Undurraga et al., Environmental Working Group, March 5, 2019; <https://www.ewg.org/research/packagedorganic/>)

Ag Census

The **number of beginning farmers, number of organic farms and amount of local food sales continue to climb**, according to the 2017 Census of Agriculture, recently released by the National Agricultural Statistics Service, but the number of midsize farms and farm profitability

continue to decrease. The 2017 census revised how it collected demographic data on individual producers – now defined broadly as any individual making decisions about a farming operation. For the first time, the census no longer asked farm operations to identify a “principal operator” but instead collected data on up to four operators (aka “farmers”) per farm. The change resulted in NASS counting more farmers than previously. Here are some key findings of the census:

- As of 2017, the United States had 2.04 million farms and ranches – a decrease of 3.2 percent over the past five years.
- Average farm size increased slightly to 441 acres out of a total of 900 million acres farmed in the United States.
- There are more of the largest and smallest operations and fewer midsized farms.
- The 273,000 smallest (1 to 9 acres) farms make up 0.1 percent of all farmland; the 85,127 largest (2,000 or more acres) make up 58 percent of farmland.
- While the total number of operations shrank, the overall value of all agricultural production decreased only slightly – so as 100,000-plus small and medium-sized farms transitioned out of farming, their land and production were folded into larger operations.
- Larger farms are producing more of the food raised in the United States. Only 105,453 farms (5 percent) produced 75 percent of all sales in 2017 – 12 percent fewer farms than in 2012. The largest farms (sales of \$5 million or more) accounted for fewer than 1 percent of all farms but 35 percent of all sales. Small farms (less than \$50,000 in sales) accounted for 76 percent of farms but only 3 percent of sales.
- Average farm income was \$43,053 (down 2 percent), but only 43.6 percent of farmers reported a profit in 2017 – down slightly from 2012.
- In 2017, 130,056 farms sold directly to consumers, with sales of \$2.8 billion.
- The United States has 3.4 million producers, 6.9 percent more than in 2012.
- 54 percent of farms reported more than one producer (versus 56 percent in 2012).
- The number of female producers increased by 26.6 percent, and women now represent roughly one-third of all farmers. Women are most heavily involved in record-keeping and financial management of the farm.
- The number of male producers declined slightly but still represents 64 percent of the total farm population. Men had higher rates of involvement in land use and crop decisions.
- The average age of all farmers is now 57.5 years (versus 56.3 in 2012)
- 11 percent of producers have served in the military.
- 95 percent of farmers are white; the number of farmers of color counted in 2017 increased by 7.5 percent, while that of white farmers increased by 6.9 percent.
- In 2017, 27 percent of all farmers were considered beginning farmers (having less than 10 years of farming experience), an increase of 5 percent over the past five years.
- The average age of new farmers is 46.3 years, nearly a decade lower than more experienced farmers.
- Farms led by a beginning farmer were smaller in acreage and value of production; most operate on 10 to 50 acres.
- 70 percent of beginning farmers said they were the primary owner of their operation, while 11 percent were tenants.
- The census counted 17,741 certified organic U.S. farm operations, an increase of 39 percent since 2012 – but when including organic operations exempt from NOP certification, the increase was 27 percent.

- Sales of organic commodities were valued at \$7.3 billion, versus \$3.1 billion reported in 2012.
- 49 percent of organic farms made \$50,000 or more in 2017.
- 3,723 farms were transitioning acreage into certified organic production in 2017, a 15 percent increase since the last census.
- Over 6 percent of farms sell directly to consumers, totaling \$2.8 billion – 114 percent more than during the last census.
- Another \$9 billion was sold locally via retail markets, institutions and local food hubs, representing 2.3 percent of food sold in 2017.
- Combined, sales to local and direct markets represented roughly 3 percent of all ag sales in 2017.
- Maine data:
 - 7,600 farms (versus 8,173 in 2012)
 - 1,307,613 acres in farm land (versus 1,454,104 in 2012)
 - 172 acres average farm size
 - 55 acres median farm size
 - \$666,962,000 market value of agricultural products sold (versus \$763,062,000 in 2012)
 - \$87,758 mean market value of agricultural products sold per farm (versus \$93,364 in 2012)
 - \$16,958 average net cash farm income per farm (versus \$20,141 in 2012)
 - \$108,744 total organic product sales, average per farm (versus \$65,706 in 2012)
 - 50.4 average age of organic producers (versus 56.5 for all Maine ag producers)

(ATTRA, April 11, 2019;

[https://attra.ncat.org/census-of-agriculture-results-](https://attra.ncat.org/census-of-agriculture-results-announced/?utm_source=WH&utm_medium=PM&utm_campaign=news)

[announced/?utm_source=WH&utm_medium=PM&utm_campaign=news](https://attra.ncat.org/census-of-agriculture-results-announced/?utm_source=WH&utm_medium=PM&utm_campaign=news); “2017 Ag Census Reveals Some Bright Spots Despite Increased Farm Consolidation,”

April 17, 2019; http://sustainableagriculture.net/blog/2017-ag-census-reveals-some-bright-spots/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+SustainableAgricultureCoalition+%28National+Sustainable+Agriculture+Coalition+%28NSAC%29%29;

Census of Agriculture, 2017 Census Volume 1, Chapter 1: State Level Data

Maine;

https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/Maine/; USDA NAS Census of Agriculture 2017;

<https://www.nass.usda.gov/Publications/AgCensus/2017/index.php>)

Pesticides

In March a federal jury in San Francisco unanimously found that **Bayer AG’s glyphosate-based herbicide Roundup was a substantial factor in causing Edwin Hardeman’s non-Hodgkin’s lymphoma**. Hardeman claimed that Roundup’s design was defective, that the product lacked sufficient warning of potential risks and that Monsanto (now owned by Bayer) was negligent in failing to warn about risks. The jury awarded Hardeman \$80.27 million in damages. During this first phase of the trial, Hardeman’s lawyers were prohibited from presenting evidence alleging that Monsanto tried to influence scientists, regulators and the public about its product safety.

They will be able to present that evidence in the second phase. Bayer is appealing the verdict. Meanwhile, some 11,000 other cases about the health effects of Roundup are pending in state and federal courts. Last year a California jury awarded Dewayne Johnson \$289 million (later reduced to \$78 million) in a similar case. Monsanto is also appealing that verdict. (“U.S. jury finds Bayer's Roundup caused man's cancer,” by Jim Christie, Reuters, March 19, 2019; <https://www.reuters.com/article/us-bayer-glyphosate-lawsuit/us-jury-finds-bayers-roundup-caused-mans-cancer-idUSKCN1R02O3>; “\$80 million awarded to man who jury says got cancer after Roundup exposure,” by Holly Yan, Sarah Moon and Madison Park, CNN, March 27, 2019; <https://www.cnn.com/2019/03/27/health/monsanto-roundup-verdict/index.html>)

A new meta-analysis finds that people with **high exposures to glyphosate-based herbicides** are 41 percent more likely to develop **non-Hodgkin lymphoma**, suggesting a compelling link between the two. The study evaluated all published human studies, including the 2018 government-funded American Health Study, as well as research on other animals. (“Exposure to weed killing products increases risk of cancer by 41% – study,” by Carey Gillam, The Guardian, Feb. 14, 2019; <https://www.theguardian.com/business/2019/feb/14/weed-killing-products-increase-cancer-risk-of-cancer>; “Exposure to Glyphosate-Based Herbicides and Risk for Non-Hodgkin Lymphoma: A Meta-Analysis and Supporting Evidence,” By Luoping Zhang et al., Mutation Research, Feb. 10, 2019; <https://www.sciencedirect.com/science/article/pii/S1383574218300887>)

A paper by Charles Benbrook published in Environmental Sciences Europe says the EPA disregarded scientific evidence of **genotoxicity of glyphosate-based herbicides**, such as Monsanto’s Roundup. Genotoxicity is the ability of a substance to cause cell mutations that can lead to cancer. Benbrook said the EPA gave little weight to research regarding formulations sold into the marketplace and used worldwide. Independent research indicates that these formulations can be more toxic than glyphosate alone. Instead, said Benbrook, the EPA and other regulators cited primarily studies paid for by companies selling glyphosate-based herbicides that found no cancer concerns and concluded that glyphosate was not likely to be carcinogenic to humans.

The International Agency for Research on Cancer concluded, however, that glyphosate is a probable human carcinogen. Since then some EU countries have announced plans to phase out use of these herbicides. A tax on the use of glyphosate in France will help fund the phase-out and development of organic agriculture there. (“New analysis raises questions about EPA’s classification on glyphosate weed killer,” by Carey Gillam, Environmental Health News, Jan. 15, 2019; <https://www.ehn.org/glyphosate-cancer-epa-2625974133.html?rebelltitem=1#rebelltitem1>; “French Government Starts Phase-Out of Glyphosate with Online Farmer Platform and Herbicide Tax,” Sustainable Pulse, Nov. 24, 2018; https://sustainablepulse.com/2018/11/24/french-government-starts-phase-out-of-glyphosate-with-online-farmer-platform-and-herbicide-tax/#.W_6er15KiYX)

Researchers at the University of California, Los Angeles, studying almost 38,000 people, including 2,961 with autism, found that the **risk of autism spectrum disorder was associated with prenatal exposure to glyphosate, chlorpyrifos, diazinon, malathion, avermectin and permethrin**. Pregnant women who lived within about 1.2 miles of a **highly sprayed area** were 10 to 16 percent more likely to have children diagnosed with **autism** than those who lived farther away. Diagnoses of autism spectrum disorder accompanied by intellectual disabilities averaged 30 percent higher among children exposed to 11 pesticides while in utero. Exposure in the first

year of life increased the odds for the disorder with comorbid intellectual disability by up to 50 percent for some pesticide substances. (“A Mother's Exposure to Pesticides During Pregnancy May Raise Children's Autism Risk,” by Alice Park, Time, March 20, 2019; <http://time.com/5555300/pesticide-exposure-autism/>; “Prenatal and infant exposure to ambient pesticides and autism spectrum disorder in children: population based case-control study,” by Ondine S. von Ehrenstein et al., British Journal of Medicine, March 20, 2019, <https://www.bmj.com/content/364/bmj.1962>)

Government scientists in Canada found **glyphosate in 197 of 200 samples of honey** they examined. In fact the researchers had trouble finding a honey sample without traces of glyphosate with which to calibrate their equipment, reports Carey Gillam. Canada and the United States do not have legal standards for the herbicide in honey, but the Canadian scientists said the levels detected there were below the European limit of 50 µg/kg, although the highest was barely within this limit. The glyphosate metabolite aminomethylphosphonic acid (AMPA) occurred in 198 of the 200 samples up to 50.1 µg/kg. Residues of glufosinate, the active ingredient in Liberty herbicide, were in 125 of 200 samples, with a maximum concentration of 33 µg/kg. (“Weed killer residues found in 98 percent of Canadian honey samples,” by Carey Gillam, Environmental Health News, March 22, 2019; <https://www.ehn.org/weed-killer-residues-found-in-98-percent-of-canadian-honey-samples-2632384800.html>)

Exposure to the neonicotinoid insecticide **imidacloprid** at field-realistic levels **caused bumblebees to be less active and less likely to care for or feed larvae**, according to research at Harvard University. The exposure also impaired bees’ construction of a wax canopy that regulates temperature in the hive. The EU has banned all outdoor uses of neonicotinoids, although EU farmers can still use them on plants grown in greenhouses. (“Neonicotinoids Impact Bees’ Nursing and Social Behaviors, Study Finds,” Yale Environment 360, Nov. 8, 2018; <https://e360.yale.edu/digest/neonicotinoids-impact-bees-nursing-and-social-behaviors-study-finds>; “Neonicotinoid exposure disrupts bumblebee nest behavior, social networks, and thermoregulation,” by James D. Crall et al., Science, Nov. 9, 2018; <http://science.sciencemag.org/content/362/6415/683>)

A study of 16 people from four families from Oakland, Minneapolis, Baltimore and Atlanta found that **those eating all organic foods reduced their exposure to four classes of pesticides**, representing up to 40 pesticides, by an average of 60 percent over six days. The results, based on residues found in 158 urine samples, are similar to those of previous studies in California, Seattle and Australia. Organophosphates dropped by 70 percent, chlorpyrifos by 61 percent, malathion by 95 percent, pyrethroids by about 50 percent, one neonicotinoid by 84 percent and the herbicide 2,4-D by 37 percent. Glyphosate herbicide residues were not included because they are difficult to analyze.

To make organic food more widely available, Friends of the Earth has launched an Organic for All campaign to ensure that everyone can afford organic while organic farmers make a living through greater government subsidies and other measures. Currently organic gets less than 2 percent of federal agricultural research funding. (Can Eating Organic Lower Your Exposure to Pesticides?” by Meg Wilcox, Civil Eats, Feb. 11, 2019; <https://civileats.com/2019/02/11/can->

[eating-organic-lower-your-exposure-to-pesticides/](https://www.sciencedirect.com/science/article/pii/S0013935119300246); “Organic diet intervention significantly reduces urinary pesticide levels in U.S. children and adults,” by Carly Hyland et al., Environmental Research, Feb. 12, 2019;
<https://www.sciencedirect.com/science/article/pii/S0013935119300246>)

Strawberries, spinach, kale, nectarines and apples are the top five U.S. fruits and vegetables most tainted with pesticides, according to the annual Shopper's Guide to Pesticides in Produce report from the nonprofit Environmental Working Group. More than 92 percent of kale samples showed two or more pesticides, and multiple samples of kale had 18 different pesticides. About 60 percent of kale samples contained the pesticide Dacthal, which the EPA classifies as a possible human carcinogen.

Others of the “Dirty Dozen,” starting with the most polluted, are grapes, peaches, cherries, pears, tomatoes, celery and potatoes.

The report, based on USDA data of washed and peeled produce, found that nearly 70 percent of U.S. produce is contaminated with pesticides, and more than 225 pesticides or pesticide metabolites are found on U.S. produce. Many pesticides found on our food have been linked to cancer, respiratory problems, depression, endocrine disruption and impacts to people's reproductive systems, the EWG says. Studies increasingly show that these health impacts are linked to exposure at levels below the thresholds set by federal agencies such as the EPA. Also, many foods had a mixture of pesticides on them, and very little is known about how such chemical cocktails may impact our health; and even low levels of pesticide exposure may harm children.

The “Clean 15” fruits and vegetables with the least pesticide residues were avocados, sweet corn, pineapples, frozen sweet peas, onions, papayas, eggplant, asparagus, kiwis, cabbages, cauliflower, cantaloupes, broccoli, mushrooms and honeydew melons. (“Spinach, strawberries and kale top annual report on the most pesticide-tainted produce,” by Brian Bienkowski, Environmental Health News, March 20, 2019;
<https://www.ehn.org/fruits-vegetables-with-most-pesticides-2632135188.html>)

Biodiversity Loss

A review of 73 reports shows **dramatic rates of decline that may lead to the extinction of 40 percent of the world's insect species** over the next few decades. Lepidoptera, Hymenoptera and dung beetles (Coleoptera) appear to be most affected on land; among aquatic taxa, Odonata, Plecoptera, Trichoptera and Ephemeroptera have lost many species. Meanwhile the abundance of a small number of adaptable, generalist species is increasing and occupying niches left by those in decline. Habitat loss, conversion to intensive agriculture and urbanization are the main drivers of extinction, followed by pollution (primarily by synthetic pesticides and fertilizers); then biological factors, including pathogens and introduced species; and fourth, climate change, especially in tropical areas. (“Worldwide decline of the entomofauna: A review of its drivers,” by Francisco Sánchez-Bayo and Kris A.G. Wyckhuys, Biological Conservation, April 2019;
<https://www.sciencedirect.com/science/article/abs/pii/S0006320718313636>)

Sludge

Much of U.S. sewage sludge has been spread on nonorganic fields and forests for decades to dispose of the material and to provide plant nutrients. (The U.S. National Organic Program does not allow sludge application to organic farms.) However, after a Maine dairy farmer learned that sludge from sewage treatment plants applied to his hayfields for decades, with state approval, was contaminated by per- and polyfluoroalkyl substances (PFAS), the **Maine Department of Environmental Protection (DEP) announced in March that it will require testing of all sludge material licensed for land application in the state for PFAS.**

PFAS are no longer produced in the United States but can be imported in products such as carpet, leather and apparel, textiles, paper and packaging, coatings, cookware, rubber and plastics, according to the EPA. They can accumulate and persist in the human body and in the environment. They can cause reproductive and developmental, liver and kidney, and immunological effects in lab animals. They have caused tumors in animals, increased cholesterol levels in exposed people and possibly other health effects.

Governor Janet Mills has created a task force to mobilize state agencies and other stakeholders to review and address the prevalence of PFAS in Maine. (“DEP Announces Testing of All Sludge Materials Before Land Application,” press release, Maine DEP, March 22, 2019; “Basic Information on PFAS,” U.S. EPA, <https://www.epa.gov/pfas/basic-information-pfas>; “Public health experts aim to stop spreading of sludge,” by Kevin Miller, Portland Press Herald, March 19, 2019; <https://www.pressherald.com/2019/03/19/after-farm-contamination-health-advocates-urge-state-to-ban-sludge-spreading/>)

Genetic Engineering

Note: Organic production does not allow the use of genetically engineered (GE or GMO – genetically modified organism) inputs.

Researchers who work on GE crops are developing special “artificial diet systems” to standardize the testing of the Cry toxins, often used in GE crops, for their effects on nontarget species. But a paper published in the journal *Toxins* implies that the **new diets contain hidden ingredients that can mask Cry toxicity and allow them to pass undetected through toxicity tests on beneficial species such as lacewings**, enabling new GE crops to come to market quicker and more reliably.

Cry toxins are a family of highly active protein toxins originally isolated from the gut of the pathogenic bacterium *Bacillus thuringiensis* (Bt). They confer insect resistance, and up to six distinct ones are added to GE corn, cotton and other crops, usually called Bt crops. Cry toxins kill insects that eat the GE crop because the toxin damages the membranes of the insect gut when it is ingested, causing the insect to immediately stop feeding and eventually die of septicemia.

The biotech industry claims that Cry toxins have narrow specificity and are therefore safe for all but “target” organisms, but many researchers disagree. Any organism with a membrane-lined gut is, in principle, vulnerable if it consumes the GE Bt crop. Research shows that organisms

affected by Cry toxins include monarch and swallowtail butterflies, lacewings, caddisflies, bees, water fleas and mammals.

New “artificial diet systems” for raising nontarget organisms contain surprisingly large amounts of antibiotics, which act as antidotes to Cry toxins. By masking the harm caused by the toxin, antibiotics can give a false impression of Cry harmlessness. (“Rigging the Science of GMO Ecotoxicity,” By Jonathan Latham, Ph.D., Independent Science News, Jan. 29, 2019; <https://www.independentsciencenews.org/environment/new-evidence-of-gmo-bt-crop-safety-manipulation/>)

Fall 2019

Dairy News

Choosing organic dairy is an easy way to minimize contaminants of antibiotics, pesticides and synthetic growth hormones in milk. Researchers at Emory University, in collaboration with The Organic Center, analyzed 35 samples of conventional milk and 34 samples of organic milk collected in 2015 from nine U.S. regions for residues of pesticides, antibiotics and hormones (bovine growth hormone or bGH, and bGH-associated insulin-like growth factor 1 or IGF-1).

Antibiotic residues were undetectable in organic milk but were detected in 60 percent of conventional milk samples – with 37 percent of samples testing positive for sulfamethazine and 26 percent for sulfathiazole, both long banned in lactating dairy cows. One conventional sample contained amoxicillin residue exceeding the federally allowed limit.

Some pesticide residues were undetectable in organic samples, but chlorpyrifos, atrazine, permethrin and more were found in 26 to 60 percent of conventional samples, with residues of the restricted-use pesticide chlorpyrifos in 59 percent of conventional samples. Some now-banned but persistent pesticides – the organochlorines hexachlorobenzene, ppDDT, and ppDDE, a metabolite of ppDDT – were detected in nearly all samples, whether conventional or organic.

Higher bGH and IGF-1 levels in conventional milk suggest the presence of synthetic growth hormone. (“Production-related contaminants (pesticides, antibiotics and hormones) in organic and conventionally produced milk samples sold in the USA,” by Jean A. Welsh et al., Public Health Nutrition, June 26, 2019; <https://www.cambridge.org/core/journals/public-health-nutrition/article/productionrelated-contaminants-pesticides-antibiotics-and-hormones-in-organic-and-conventionally-produced-milk-samples-sold-in-the-usa/D1107FE30C778A73F5F601C5D3D6E572>; “Choose Organic for the Cleanest Milk,” The Organic Center, June 26, 2019; <https://www2.organic-center.org/what-does-research-say>; “Choosing organic milk ‘minimizes exposure’ to chemicals, says study,” Sustainable Food News, June 26, 2019; <https://sustainablefoodnews.com/legacy-pesticides-found-in-organic-conventional-milk/> - data at https://sustainablefoodnews.com/wp-content/uploads/2019/06/urn_cambridge.org_id_binary_20190625100841803-0018_S136898001900106X_S136898001900106X_tab2.gif)

Organic

In May the Federal District Court in San Francisco agreed with organic farmers, consumers and animal welfare advocates that **the USDA cannot hide communications and documents that led to the Trump administration's controversial decision to withdraw the Organic Livestock and Poultry Practices (OLPP) rule**, which would have required animal welfare standards on farms raising animals organically.

Organic producers and stakeholders sought the OLPP rule to provide detail in the standards for organic livestock care, especially outdoor access for poultry. A coalition of organic stakeholders challenged withdrawal of these standards as arbitrary and contrary to federal law, but USDA withheld "a voluminous number of documents" from the record. The court held that agencies cannot hide their internal documents leading to a decision because these are part of the universe of materials the agency considered. USDA's internal documents may reveal why the agency reversed nearly three decades of organic policy and withdrew a rule wanted by the vast majority of the organic community.

The court also required USDA to include the 47,000 public comments it received in response to its first notice that it might withdraw the OLPP.

Consumers of organic products expect that animals raised for organic meat, dairy and eggs were treated humanely and could engage in natural behaviors. Those expectations were not being met consistently before the OLPP, mostly as a few large egg producers raised hens in confinement with no real outdoor access – a major disadvantage to the majority of producers of organic products, most of whom raise animals humanely.

The plaintiffs are Center for Food Safety, Center for Environmental Health, Cultivate Oregon, International Center for Technology Assessment, the National Organic Coalition, the Humane Society of the United States and the Animal Legal Defense Fund. ("Defenders of Organic Integrity Win Victory for Transparency and Open Government," Center for Food Safety, May 6, 2019;

<https://www.centerforfoodsafety.org/press-releases/5590/defenders-of-organic-integrity-win-victory-for-transparency-and-open-government>)

Nitrate Pollution

Nitrate pollution of U.S. drinking water may cause up to 12,594 cases of **cancer** a year, according to a peer-reviewed study by the Environmental Working Group (EWG). The EWG scientists estimated the number of cancer cases in each state that could be attributed to nitrate contamination of public water systems, largely caused by farm runoff containing fertilizer and manure. They also estimated the costs of treating those cases at up to \$1.5 billion a year.

The federal drinking water standard for nitrate is 10 parts per million (ppm), although several epidemiological studies have linked nitrate in drinking water with cancer and other serious health issues at levels less than one-tenth of the legal limit. In early 2019 the EPA suspended plans to reevaluate its outdated nitrate standard.

Four-fifths of EWG's estimated cases were occurrences of colorectal cancer, with ovarian, thyroid, kidney and bladder cancer making up the rest. Nitrate in tap water has also been linked with low birth weight, very preterm birth and neural tube defects.

EWG scientists estimate the level at which no adverse health effects would occur from nitrate in drinking water to be 0.14 ppm.

("EWG: Nitrate Pollution of U.S. Tap Water Could Cause 12,500 Cancer Cases Each Year," by Sarah Graddy, Environmental Working Group, June 11, 2019; <https://www.ewg.org/release/ewg-nitrate-pollution-us-tap-water-could-cause-12500-cancer-cases-each-year>; "Exposure-based assessment and economic valuation of adverse birth outcomes and cancer risk due to nitrate in United States drinking water," by Alexis Temkin et al., Environmental Research, June 11, 2019; <https://www.sciencedirect.com/science/article/pii/S001393511930218X>)

Pesticides

Maine Board of Pesticides Control Composition Weakened

In June 2019, Maine Governor Mills signed HP 37 – LD 36 An Act To Change the Composition of the Board of Pesticides Control (BPC). Originally LD 36 sought to reinstate the requirement, eliminated during the LePage era, that the two public members of the BPC have demonstrated interest in environmental protection. Lacking that requirement since 2011, BPC members have included one person with practical experience and knowledge regarding the agricultural use of chemicals; one with practical experience and knowledge regarding the use of chemicals in forest management; one from the medical community; a scientist from the University of Maine System with practical experience and expertise in integrated pest management; one commercial applicator; and two people representing the public.

Representative Bill Pluecker (I-Warren), a MOFGA-certified organic farmer and member of the Committee on Agriculture, Conservation and Forestry, introduced the bill. He said that organic has been the agricultural sector with the most growth in Maine in recent years and will continue to see the majority of growth in the next decade. Because this type of farming occurs near customers, residential spaces and local markets, it creates increased public scrutiny of farm management, especially regarding use of agricultural chemicals. Improving BPC oversight of environmental protection would make organic growth easier while preserving the rights of farmers as homes are developed near their farms, he said. The bill as originally written also would have preserved the public's good will toward nearby farms and made people more willing to pay a premium for local food produced by good neighbors in their community, he noted.

Expertise in environmental protection is critical to properly administering the board's duties, said Pluecker. "While we would expect all of the members to have some feeling for environmental protection, it seems that requiring those last two members to have a demonstrated history in environmental protection significantly adds to the skill set necessary for the proper and full functioning of the board."

Spencer Aitel, a MOFGA board member and certified organic farmer, testified in support of the bill on MOFGA's behalf. He said that the public has lost trust in the BPC and has taken regulation into its own hands through municipal ordinances on pesticide use and sales. "There is," he said, "a public perception that the BPC prioritizes the interests of the pesticide industry rather than the public and the environment. This is a challenge for all farmers, conventional and organic. And we hope that a board with well-balanced expertise and opinion will monitor challenges and opportunities. Organic farmers need the public to have faith in the BPC just as much as do conventional farmers."

Paul Schlein of Arrowsic, who was the public information officer for the BPC from 2005 to 2013, said that after the 2011 action, "[T]he BPC could no longer be counted on to be faithful to the part of its mission to protect the public health and the environment. Witness the fact that two of Maine's largest municipalities have recently enacted the strongest pesticide ordinances in the country; this should not have been necessary." He also suggested restoring the previous requirement that the university member have expertise in agronomy or entomology, in addition to integrated pest management; and that, when considering BPC appointments and reappointments, the ACF committee do everything possible to restore and maintain the balance of the board, and look for ways to broaden representation for large and small communities, large and small farms, and both conventional and organic agriculture.

The bill was also supported by Physicians for Social Responsibility Maine, Maine Audubon, Environment Maine, Protect South Portland, Mark Follansbee, Ph.D., of Scarborough, Caitlin Meredith of Southwest Harbor, Jo Ann Myers of Beau Chemin Preservation Farm in Waldoboro, and Avery Yale Kamila of Portland Protectors, who noted, "under the previous administration the board's education programs were eliminated, gutted or drastically scaled-back. While we were writing our ordinance, the board was unable/unwilling to provide help to the city in crafting its ordinance. The lack of environmental credentials for members of the MBPC blinds the board to many issues facing the state, since the current make-up of the board is skewed toward people who have a financial tie to the sale and use of synthetic pesticides."

The Maine Potato Board, Maine Farm Bureau Association and Maine Vegetable and Small Fruit Growers Association opposed the bill, saying its language was vague and noting that anyone can testify about BPC nominees during public hearings. Six new members will be nominated over the next two years.

All testimony is posted at

http://www.mainelegislature.org/legis/bills/display_ps.asp?snum=129&paper=HP0037PID=1456#.

Unfortunately a worse, amended bill passed. In addition to striking the requirement that the two public members have a demonstrated interest in environmental protection, the final bill also struck from the law the requirement that these members represent different areas of the state. Instead, the amendment requires that one of the two public members has practical experience and knowledge of methods of sustainable management of indoor and outdoor pests.

In August **the EPA rejected a petition by environmental and public health groups to ban chlorpyrifos**, an insecticide used on more than 50 crops. The Obama administration had decided to ban the insecticide based on epidemiological studies, rather than tests on animals, suggesting that chlorpyrifos causes neurological damage in young children. Federal judges agreed with those concerns, but the EPA now questions the significance of those data. California, New York and Hawaii have moved to ban chlorpyrifos, and other states are considering similar action. The EPA long ago banned most residential uses of the insecticide. (“EPA will not ban use of controversial pesticide linked to children’s health problems,” by Brady Dennis and Juliet Eilperin, The Washington Post, July 18, 2019;

https://www.washingtonpost.com/climate-environment/2019/07/18/epa-will-not-ban-use-controversial-pesticide-linked-childrens-health-problems/?noredirect=on&utm_term=.28f77a2e437d)

In May **a jury handed a \$2.055 billion verdict** in favor of California couple Alva and Alberta Pilliod, who say that long-term exposure to **Monsanto’s Roundup herbicide caused their cancer**. A California judge reduced the amount in July to \$86.7 million. The Pilliods, who used Roundup on their property for more than 30 years, were diagnosed with non-Hodgkin lymphoma. The verdict includes more than \$55 million in compensatory damages and \$2 billion in punitive damages. This was the third Roundup-related case that plaintiffs have won in California since mid-2018. Thousands of similar cases are pending around the country. Bayer, which acquired Monsanto in 2018, continues to say that glyphosate (the active ingredient in Roundup) is safe. (“Jury returns \$2 billion verdict against Monsanto for couple with cancer,” by Michael Nedelman, CNN, May 13, 2019;

<https://www.cnn.com/2019/05/13/health/monsanto-roundup-cancer-verdict-bn/index.html>; “\$2 billion Roundup verdict cut to \$86.7 million,” By Sara Randazzo, MarketWatch July 25, 2019;

https://www.marketwatch.com/story/2-billion-roundup-verdict-cut-to-867-million-2019-07-25?mod=mw_theo_homepage)

A judge in California reduced damages from \$80 million to \$25 million to a plaintiff after a jury concluded that Roundup herbicide caused his cancer, but the **judge rejected a request by Bayer for a retrial** of the case. More than 13,000 other plaintiffs worldwide claim to have been harmed by Roundup. Meanwhile, Austria’s lower house of parliament voted to ban glyphosate, the active ingredient in Roundup. (“Glyphosate woes prompt calls to split up Bayer,” The Economist, July 18, 2018;

<https://www.economist.com/business/2019/07/18/glyphosate-woes-prompt-calls-to-split-up-bayer>)

In a study including 93 subjects, researchers at the University of California San Diego found that the concentration of **glyphosate in urine samples from people with nonalcoholic fatty liver disease** was higher than in those without the disease, regardless of underlying factors such as age, body mass index or race. The researchers note that other studies also pointed to development of liver pathology when lab animals were fed Roundup herbicide. Nonalcoholic fatty liver disease has increased significantly in the United States since the mid-1990s, when Roundup began to be used increasingly, note the researchers. (“UCSD Researchers Link Herbicide Roundup to Liver Disease in Humans,” by Chris Jennewein, Times of San Diego, May 14, 2019;

<https://timesofsandiego.com/tech/2019/05/14/ucsd-researchers-link-herbicide-roundup-to-liver-disease-in-humans/>; Glyphosate Excretion is Associated With Steatohepatitis and Advanced Liver Fibrosis in Patients With Fatty Liver Disease, By Paul J. Mills et al., Clinical Gastroenterology and Hepatology, May 13, 2019; <https://www.sciencedirect.com/science/article/pii/S1542356519303611>)

A study exposing lab rats to **glyphosate** found negligible impacts of the herbicide on the treated generation or its first generation offspring, but second and third generation offspring had increased **prostate, kidney and ovarian diseases, and more obesity and birth abnormalities** than control rats. “Observations suggest the generational toxicology of glyphosate needs to be considered in the disease etiology of future generations,” say the researchers. (“Glyphosate risks 'last for generations',” by Arthur Wyns, Ecologist, April 24, 2019; <https://theecologist.org/2019/apr/24/glyphosate-risks-last-generations>; “Assessment of Glyphosate Induced Epigenetic Transgenerational Inheritance of Pathologies and Sperm Epimutations: Generational Toxicology,” by Deepika Kubsad et al., Scientific Reports (Nature), April 23, 2019; <https://www.nature.com/articles/s41598-019-42860-0>)

Effective June 1, 2019, **the 10 campuses of the University of California will halt their use of glyphosate**, per President Janet Napolitano. The decision, which cites “concerns about possible human health and ecological hazards, as well potential legal and reputational risks associated with this category of herbicides,” follows an Herbicide-Free UC initiative. Herbicide-Free UC is also asking for a ban on all Proposition 65 pesticides and other herbicides that harm human health and the environment and for a transition to organic land care practices. (“University of California System Halts Use of Glyphosate Herbicide,” by Jonathan Latham, Ph.D., Independent Science News, May 16, 2019; <https://www.independentsciencenews.org/news/university-of-california-system-halts-use-of-glyphosate-herbicide/>)

Bayer AG plans to invest \$5.64 billion over the next decade **developing new technologies to combat weeds**, according to The Wall Street Journal. Bayer took over Monsanto Co. last year. The WSJ also reported that Costco Wholesale Corp. recently pulled Roundup herbicides from its stores, while some cities have banned glyphosate weedkillers on municipal property. Meanwhile, Bayer took out full-page ads in The New York Times in June stating, “There’s no risk to public health from the application of glyphosate.” (“Bayer to Invest Billions in Weedkillers in Wake of Roundup Controversy,” by Ruth Bender, The Wall Street Journal, June 14, 2019; <https://www.wsj.com/articles/bayer-to-invest-billions-in-weedkillers-in-wake-of-roundup-controversy-11560514273>; “Bayer defends glyphosate,” by Marion Nestle, Food Politics, June 12, 2019; <https://www.foodpolitics.com/2019/06/bayer-defends-glyphosate/>)

Worker bumblebees exposed to a field-realistic (10 ppb) dose of **imidacloprid** (a neonicotinoid insecticide) flew at a significantly higher velocity for the first 0.75 km of flight but ultimately **were able to fly only about one-third the time and distance of control workers**. (“Pesticide exposure affects flight dynamics and reduces flight endurance in bumblebees,” by Daniel Kenna et al., Ecology and Evolution, April 29, 2019; <https://onlinelibrary.wiley.com/doi/full/10.1002/ece3.5143>)

In July the **EPA approved new applications for the insecticide sulfoxaflor** to several crops, crops, including citrus, corn, soy, strawberries, pineapples and pumpkins. Environmental groups and beekeepers opposed the move because **the pesticide is so toxic to bees**. Even the EPA considers sulfoxaflor to be very highly toxic to bees, but it said the pesticide dissipates in the environment faster and often takes fewer applications than some other insecticides. The EPA provided no notice and sought no public input about the decision. (“EPA to allow use of pesticide considered ‘very highly toxic’ to bees,” by Brady Dennis, The Washington Post, July 12, 2019; https://www.washingtonpost.com/climate-environment/2019/07/12/epa-allow-use-pesticide-considered-very-highly-toxic-bees/?noredirect=on&utm_term=.e7134cca8b8e)

Canadian researchers found that **99 percent of 68 water samples collected from the St. Lawrence River and its tributaries contained at least one of 10 pesticides tested**; 84 percent contained glyphosate and 82 percent contained atrazine. Also, 31 percent contained neonicotinoids at levels greater than Canadian allowances. The research adds to evidence that neonicotinoids, glyphosate and atrazine are increasingly contaminating fresh water (including drinking water) in farming areas. In another study, the scientists found atrazine and one of its metabolites in all 450 samples of drinking water taken in Quebec from 2015 to 2018. (“Pesticides are all over the St. Lawrence River — many at levels that hurt fish and invertebrates,” by Brian Bienkowski, Environmental Health News, May 1, 2019; <https://www.ehn.org/pesticides-are-all-over-the-st-lawrence-river-many-at-levels-that-hurt-fish-and-invertebrates-2635826209.html?rebelltitem=1#rebelltitem1>; “Widespread occurrence and spatial distribution of glyphosate, atrazine, and neonicotinoids pesticides in the St. Lawrence and tributary rivers,” by J.M. Montiel-León et al., Environmental Pollution, April 2, 2019; <https://www.ncbi.nlm.nih.gov/pubmed/30981933>)

As part of a legal settlement reached in December 2018 involving the Center for Food Safety (CFS) and the EPA, the EPA published in the Federal Register final notices of **cancellation for the registration of 12 neonicotinoid pesticides**. In 2013 CFS sued on behalf of a coalition of conservationists and beekeepers, accusing the EPA of failing to protect pollinators, beekeepers and endangered species from these dangerous pesticides. Another part of the settlement requires that the EPA analyze and address the impact of the entire neonicotinoid pesticide class on endangered species under the Endangered Species Act.

The products, listed at <https://www.govinfo.gov/content/pkg/FR-2019-05-20/pdf/2019-10447.pdf>, contain the active ingredients thiamethoxam, azoxystrobin, metalaxyl-M, fludioxonil; thiabendazole, abamectin, clothianidin, penflufen, ipconazole, bifenthrin or imidacloprid. They have been used by large-scale agribusinesses and home gardeners. They are transported throughout the plant and make the entire plant, including pollen, nectar and dew droplets on leaves, toxic to insects. They have been used heavily since the mid-2000s – the same time beekeepers observed widespread colony losses.

The plaintiffs included CFS, Sierra Club, Beyond Pesticides, Center for Environmental Health, Pesticide Action Network and four commercial beekeepers.

CFS has launched a free Wild Bee ID app that enables gardeners to identify the bees in their yards that are native to North America and the plants those native bees have evolved to pollinate. (“EPA Cancels a Dozen Pesticides That Harm Bees and Endangered Species,” Center for Food Safety, May 21, 2019; <https://www.centerforfoodsafety.org/press-releases/5601/epa-cancels-a-dozen-pesticides-that-harm-bees-and-endangered-species>)

A study of 2961 people diagnosed with **autism spectrum disorder** suggests that prenatal **exposure to 11 most commonly used pesticides**, including glyphosate, chlorpyrifos, diazinon, permethrin, malathion and avermectin, increased the risk of the disorder. Children of mothers living within 2,000 meters (about 1.2 miles) of a highly sprayed area were 10 to 16 percent more likely be diagnosed as autistic than those of mothers living farther away in the same agricultural area without such exposure. The risk of diagnoses of autism spectrum disorder with comorbid intellectual disability averaged 30 percent greater among children exposed in utero to some pesticides, while exposure in the first year of life increased the risk by up to 50 percent. (“Prenatal and infant exposure to ambient pesticides and autism spectrum disorder in children: A Mother's Exposure to Pesticides During Pregnancy May Raise Children's Autism Risk,” by Alice Park, Time, March 20, 2019; <http://time.com/5555300/pesticide-exposure-autism/>; “Prenatal and infant exposure to ambient pesticides and autism spectrum disorder in children: population based case-control study,” By Ondine S. von Ehrenstein et al., British Medical Journal, March 20, 2019, <https://www.bmj.com/content/364/bmj.l962>)

Genetic Engineering

Note: Organic production does not allow the use of genetically engineered (GE or GMO – genetically modified organism) inputs.

Scientists at the State University of New York College of Environmental Science and Forestry (SUNY ESF) claim to have genetically engineered a blight-resistant **American chestnut** variety. They aim to petition the USDA, FDA and EPA for its deregulation, according to Rachel Smolker of Biofuelwatch and Anne Petermann of the Global Justice Ecology Project. If deregulated, this would be the first GE forest tree species to be planted with the deliberate intention of spreading freely, they say. Monitoring or reversing its spread, once released, would likely be impossible.

Valid risk assessment of the potential impacts of GE American chestnut on forests, wildlife, water, soils, pollinators or people is hampered by a lack of knowledge about the ecology of the American chestnut and forest ecosystems. Also, risk factors may change unpredictably over the 200-year lifespan of American chestnuts. Choices made about the GE chestnut will set a precedent for future use of other GE tree species and for use of biotechnology as “tools for conservation.”

The American Chestnut Foundation has spent hundreds of thousands of hours hybridizing American chestnut with the naturally blight-resistant Asian chestnut and then backcrossing to produce a blight-resistance tree. The SUNY scientists say GE will provide a faster solution. They used a gene sequence derived from wheat that causes the tree to produce the enzyme oxalate oxidase (OxO), which inhibits spread of the fungus once established. But engineering resistance to fungal pathogens has proven challenging because fungi evolve to evade plant defenses. Also,

when plants invest energy in defending against a pathogen, their growth is often compromised, and they can become more susceptible to other stressors.

SUNY ESF has tested only young GE chestnut trees in controlled conditions, while during their 200-plus-year lifespan, chestnuts may experience conditions that could affect expression of the OxO or other traits of the trees. The SUNY researchers say they hope to engineer many other genes into the OxO trees to confer further resistance to blight and other pathogens.

Why rush the GE chestnut into regulatory review? Because the tree is being used to win over public opinion toward GE trees generally and for the use of biotechnology as a “tool of conservation” – and for commercial purposes, such as biofuels.

Protesting the American Chestnut Foundation’s embrace of SUNY ESF’s GE American chestnut, Lois Breault-Melican and Denis M. Melican resigned from the board of the Massachusetts/Rhode Island chapter of the American Chestnut Foundation after spending over 16 years backcross breeding resistant American chestnuts. In 2015, the Maine chapter of The American Chestnut Foundation adopted this position: “The Maine Chapter is using traditional backcross breeding to develop diverse populations of American chestnuts for restoration in Maine, and has no plans for using genetically engineered chestnuts in our program.”

Rachel Smolker writes, “If we are seriously concerned about protecting forest health, then [reining] in those underlying drivers of forest destruction is the real solution – not genetically engineering trees or replacing diverse natural forests with industrial plantations.” (“The GE American Chestnut – Restoration of a Beloved Species or Trojan Horse for Tree Biotechnology?” by Rachel Smolker, Ph.D., Independent Science News, June 11, 2019; <https://www.independentsciencenews.org/environment/the-ge-american-chestnut-restoration-of-a-beloved-species-or-trojan-horse-for-tree-biotechnology/>) “Biotechnology for Forest Health? The Test Case of the Genetically Engineered American Chestnut,” by Rachel Smolker and Anne Petermann, The Campaign to STOP GE Trees, Biofuelwatch and Global Justice Ecology Project, April 2019; <https://stopgetrees.org/wp-content/uploads/2019/04/biotechnology-for-forest-health-test-case-american-chestnut-report-WEB-1.pdf>)

In June the USDA Animal and Plant Health Inspection Service (APHIS) confirmed the discovery of **GE glyphosate-resistant wheat plants** growing in an unplanted agricultural field in Washington state. Glyphosate is the active ingredient in Roundup and some other herbicides. No evidence exists that GE wheat has entered the food supply, and currently no GE wheat varieties are sold or are in commercial production in the United States. (“USDA Investigating Detection of Genetically Engineered (GE) Wheat in Washington State,” By Rick Coker and Lyndsay Cole, USDA APHIS, June 7, 2019; https://www.aphis.usda.gov/aphis/newsroom/stakeholder-info/sa_by_date/2019/sa-6/ge-wheat)

President **Trump** signed an executive order in June **directing federal agencies to simplify the "regulatory maze" for producers of GE plants and animals** to enter the food supply. Also in June, the USDA proposed changing its regulations so that crops produced with newer gene-editing technologies wouldn't automatically require special oversight unless they posed a risk as plant pests. (“Trump administration eases rules for genetically modified foods, animals,”

Associated Press, Southeast Missourian, June 13, 2019;
<https://www.semissourian.com/story/2615230.html>)

PFAS

The Maine Department of Environmental Protection found **per- and polyfluoroalkyl substances in most sludge tested by Maine wastewater treatment plants** at levels high enough to warrant additional study. Thirty-one of 35 municipal wastewater treatment facilities exceeded the concentration of PFOS that requires additional regulatory evaluation; 19 of the 35 exceeded concentrations of PFOA; and 21 of 23 composting facilities exceeded the concentration levels for PFOA.

Perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) are fluorinated organic chemicals that are part of a larger group of chemicals called perfluoroalkyl substances (PFASs). These chemicals have been used for decades in nonstick cookware, firefighting foam, water- and stain-resistant fabrics and some food packaging, and they persist in bodies and in the environment. Tests of lab animals link them to cancer, thyroid disease, and reproductive and immunological changes.

The Maine DEP now requires that sewage treatment plants test for some of these chemicals before their sludge can be applied on farms or distributed as compost. The Environmental Health Strategy Center and the Conservation Law Foundation urged DEP Commissioner Jerry Reid to halt land application of all sludge and compost that exceeds the screening concentrations.

In initial tests of Maine milk, these substances were below the state's reporting limit. Previous tests of milk from an Arundel farm where sludge was spread did find dangerous levels of PFAS. The USDA National Organic Standards do not allow sludge use on certified organic land, but the persistence of PFAS compounds means that even some organic land could be contaminated. Patrick MacRoy of the Maine nonprofit Environmental Health Strategy Center says that governments should test farms and agricultural products, and not allow the use of contaminated sludge. ("Initial test results reveal 'forever chemicals' showing up in fertilizer sludge," by Kevin Miller, Portland Press Herald, May 23, 2019; <https://www.pressherald.com/2019/05/22/initial-test-results-show-forever-chemicals-showing-up-in-sludge/>; "State says Maine milk passes tests for 'forever chemicals'," by Kevin Miller, Portland Press Herald, June 26, 2019;

<https://www.pressherald.com/2019/06/26/maine-agriculture-officials-pleased-with-initial-tests-for-pfas-in-milk/>; “How toxic PFAS chemicals could be making their way into food from Pennsylvania farms,” by Kristina Marusik, Environmental Health News, July 11, 2019; <https://www.ehn.org/how-toxic-pfas-chemicals-could-be-making-their-way-into-food-from-pennsylvania-farms-2639142267.html>)

Winter 2019-2020

The Good News

Origin of Livestock Rule Finally Moving Forward

By Sarah Alexander

MOFGA has positive news to report on our work to fight for organic integrity: The USDA is taking action to finalize the Dairy Origin of Livestock (OOL) rule. This rule is a critical step in ensuring that all organic dairy producers play by the same rules, and once the rule is implemented, it will ensure that conventional dairy herds can be transitioned to organic only one time, rather than the continuous transition that some certifiers currently allow.

We strive to certify to the highest standards and to the original intention of the USDA National Organic Program, and MOFGA Certification Services has always enforced this rule as it was originally intended. However, confusion has existed almost as long as this rule has been around. The USDA tried to fix this in 2015 through a rulemaking process, but under Secretary Perdue in 2016, the rule was shelved and was never finalized.

Since this rule was shelved, organic dairy has been struggling with oversupply, primarily from a number of large western dairies that have come online in the last few years. Some of these dairies are continuously transitioning conventional cows, spending up to \$1,200 less per calf to raise it conventionally versus organically. The organic community has been pressuring Perdue to take urgent action since 2017, but Congress had to get involved to get USDA to finally act.

Maine’s congressional delegation played an important role in getting the USDA to act. Rep. Pingree, an organic farmer herself, has been a tremendous ally of the organic community, and works closely with MOFGA on policy initiatives that impact our farmers. This year she was the lead sponsor of language that she was able to get into the appropriations bill mandating that USDA must finalize the OOL rule.

I met with Maine's full congressional delegation in D.C. in April and asked them all to include this bill language in their appropriations request. Due to the work that MOFGA and all of you have done over the years, our congressional delegation, which includes Reps. Pingree and Golden and Sens. King and Collins, all included this OOL language as part of the appropriations request.

The bill language passed through the House in early summer, but it seemed uncertain it would get through the Senate. Collins sits on the appropriations committee, and we knew if we could show her how important this was to Maine dairies, we would have a good chance of getting the language in the Senate appropriations bill.

With your help, MOFGA collected more than 475 petitions to Collins on this issue. We worked with Organic Valley and the Maine Organic Milk Producers to get Collins to visit Rainbow Valley Farm in Sidney, owned by the Bragg family. They gave her an excellent tour and education about organic dairies, and we delivered the petitions to her. She was very receptive and took our message back to D.C.

This fall, with Collins' help, the Senate has included this bill language in the appropriations bill, although it has yet to pass. But the pressure from Congress has been enough to get USDA to finally start to finish this rule. The USDA has opened a 60-day comment period on the OOL rule that closes on Dec. 2. MOFGA is collecting and will be submitting comments. We hope you'll continue to take action on this issue by signing our petition at bit.ly/OOLpetition.

While sometimes it feels like progress can be slow, we know that if we keep working together in Maine, and in coalition with our allied groups nationally, we can continue to keep the organic standards strong.

Veggies For All (VFA) has been an important Unity-area hunger relief effort since 2007. Founded by young farmers as a food bank farm, the project grew produce for food pantry and soup kitchen partners for over a decade. It has operated under the banner of Unity Barn Raisers and, most recently, Maine Farmland Trust, and has partnered extensively with the Volunteer Regional Food Pantry and Unity College. In the summer of 2019, UBR re-adopted VFA.

UBR elected to reorganize and rebrand VFA as primarily a gleaning program in order to limit the need for extensive resources required to continue farming; to maximize synergy with existing UBR programs; due to the changing local farming environment in our community; and to increase financial sustainability. The program works with area farmers and gardeners to redirect unused/surplus produce into area hunger relief programs and drop-off sites to increase access to those needing fresh, nutritious food. UBR works closely with the Volunteer

Regional Food Pantry, The Open Door Soup Kitchen in Unity, area churches, and drop-off sites including Unity Community Center, low-income and elderly housing in Unity, Inland Family Care in Unity and other local partners.

Anyone who is interested in volunteering (field harvesting, transporting produce) or in donating produce to the gleaning effort can contact UBR at 948-9005 or ubr@uninets.net. UBR can arrange a time for drop-off, can facilitate pickup, or occasionally can provide supervised volunteers to harvest from fields. Donations are tax-deductible.

Great Works Regional Land Trust (GWRLT) is using **goats to rehabilitate ecosystems damaged by invasive plants** on conservation properties, thanks to a \$5,885 grant from the Davis Conservation Foundation and an “Adopt-A-Goat” fundraiser. The Nurturing Habitat Restoration: Invasive Species Mapping and Control project contracted with Normandeau Associates, Inc., of Bedford, New Hampshire, which mapped invasive species on five GWRLT properties. Four goats from Just Browsing Land Management consumed the plants last summer, supplemented by strategic mowing and future goat grazing.

In other goat news, goats from Scapegoats in Kennebunk helped clear Japanese knotweed from Yerxa Park in South Portland this summer. The city covered the area with landscape fabric once the goats ate the top growth. This was the second year the city used goats to control invasives. (“Great Goat! Grazing goats help clear invasive plants from South Portland park,” By Shannon Moss, News Center Maine, Sept. 9, 2019; <https://www.newscentermaine.com/article/news/local/south-portland/great-goat-grazing-goats-help-clear-invasive-plants-from-south-portland-park/97-fc0b8fe1-0fa8-44fd-8a71-d7b59a2f9633>; “Land Trust thanks four-legged summer interns,” Great Works Regional Land Trust press release, Seacoast Online, Sept. 5, 2019; <https://www.seacoastonline.com/news/20190905/land-trust-thanks-four-legged-summer-interns>)

A University of Vermont study shows how the similarity of plant odors and phylogenetic relatedness can predict insect repellency. Researchers applied this concept to **swede midge**, a tiny fly that is becoming a major problem in cabbage-family crops in Canada and the Northeast. Larval midge feeding results in distorted growth, such as headless broccoli and cauliflower, puckered leaves and brown scarring. Damage is not observable until midges have dropped off the plant. Where well established, the midge can cause 100 percent crop losses. Conventional growers use neonicotinoid insecticides, implicated in honeybee decline, to combat the pest.

Chase Stratton, who recently completed his Ph.D. at UVM, identified essential oils from 18 plants of varied relatedness to brassica host crops. He and Yolanda Chen of UVM's Department of Plant and Soil Science hypothesized that oils from plants that are more distantly related to brassicas would have more diverse

odors and be more repellent. They found that female midges were less likely to lay eggs on broccoli plants that had been treated with essential oils, compared with untreated plants, and avoided flying toward certain oils more than others. Essential oils of garlic, spearmint, thyme, eucalyptus lemon and cinnamon bark most effectively repelled the midge. Chen said, “[A]s we go along the family tree, plants that are more distantly related from the host plant are generally more repellent.” Also, odors that were more chemically different were more likely to be repellent – although spearmint oil, which was most repellent, had odors more similar to the brassica crop.

“For swede midge,” said Stratton, “garlic appears to be one of the most promising repellents, particularly because certified organic products using garlic are already available for growers.” (“Garlic on Broccoli: A Smelly Approach to Repel a Major Pest,” Univ. of Vt., July 23, 2019;

<https://www.uvm.edu/cals/news/garlic-broccoli-smelly-approach-repel-major-pest>)

Maine schools can now give food scraps to pig farmers, thanks to a bill passed by the Maine Legislature that took effect in September. Individuals or institutions can now donate food scraps to a pig farm for use as feed even if they don’t know the farmer’s licensure status. Maine hog farmers do have to have a license to feed food waste to pigs, and the waste must be cooked to prevent spreading disease. (“A solution for food waste in schools: Give it to the pigs,” RFD TV, Oct. 14, 2019; <https://www.rfdtv.com/story/41177868/a-solution-for-food-waste-in-schools-give-it-to-the-pigs>)

Scientists at the University of California, Davis, found that **compost is a key to storing carbon in semi-arid cropland soils**. The 19-year study compared soil carbon changes in conventional, cover-cropped and compost-added plots of corn-tomato and wheat-fallow cropping systems at depths to about 6 feet. They found that conventional soils neither release nor store much carbon, and cover cropping conventional soils, while increasing carbon in the top 12 inches, can lose significant amounts of carbon below that depth. When both compost and cover crops were added in the organic-certified system, soil carbon content increased 12.6 percent during the study, or about 0.7 percent annually – far more than would be calculated if only the surface layer were measured.

Study coauthor Jessica Chiartas said, “The soil represents a huge mass of natural resource under our feet. If we’re only thinking about farming the surface of it, we’re missing an opportunity. Carbon is like a second crop.”

Nationwide, many studies that investigated carbon change in the top foot of soil found that cover-cropped systems store carbon. The UC Davis study also found gains in the surface but, deeper down, enough carbon was released from cover-cropped systems that it resulted in an overall net loss.

“There are other benefits to cover crops that farmers may still enjoy, but in our systems, storing carbon is not necessarily one of them,” said coauthor Nicole Tautges. “We’d make more progress by incentivizing compost.”

The researchers did not compare composted systems without cover crops, but suspect the compost helped sequester carbon despite the cover crop, a notion they intend to investigate.

Carbon has to filter through soil microbes to turn into stabilized forms in soil. Compost provides the carbon as well as vital nutrients for those microbes to function effectively.

“One reason we keep losing organic matter from soils is that our focus is on feeding the plant, and we forget the needs of others who provide important services in soil like building organic carbon,” said senior author Kate Scow. “We need to feed the soil, too.”

Having a balanced diet can make the difference between how much carbon stays in the soil versus how much is released as carbon dioxide, Scow said. When their diet is out of balance, microbes mine missing nutrients from existing soil organic matter, resulting in a loss of carbon. The authors think that deep in the soil, cover-crop roots provided carbon but not the other nutrients needed to stabilize it. (“Compost Key to Sequestering Carbon in the Soil,” By Kat Kerlin, UC Davis, August 14, 2019; <https://www.ucdavis.edu/news/compost-key-sequestering-carbon-soil>)

Four case studies from American Farmland Trust show that **healthier soil brings economic benefits to farmers and environmental benefits to society**. The studies, developed in partnership with the USDA Natural Resources Conservation Service, focused on corn-soybean production in Illinois and Ohio, almond production in California, and a rotation of sweet corn, alfalfa, and corn for silage or grain in New York. The farmers featured implemented soil health practices such as no-till or strip-till, nutrient management, cover crops, compost, and mulching.

The four farmers saw yield increases from 2 to 22 percent that they attributed in part to soil health practices. The average return on investment was 176 percent and ranged from 35 to 343 percent. The study accounted for other factors that increased yield, such as improved seed varieties and increased seeding rates, but all four showed that soil health investments led to economic gain.

The four farms had improved water quality and reduced soil and water runoff. Nitrogen runoff was reduced by 40 to 98 percent, phosphorus by 74 to 92 percent, and sediment from 76 to 96 percent. Total greenhouse gas emission reductions ranged from 16 to 560 percent. (“New American Farmland Trust-NRCS case studies show soil health practices increase farm profitability,”

American Farmland Trust, July 30, 2019; <https://farmland.org/new-american-farmland-trust-nrcs-case-studies-show-soil-health-practices-increase-farm-profitability/>; “Quantifying Economic and Environmental Benefits of Soil Health,” American Farmland Trust, <https://farmland.org/project/quantifying-economic-and-environmental-benefits-of-soil-health/>)

Data spanning six years for 180 hives in France showed that **bee colonies in areas farmed organically had 37 percent more brood, 20 percent more adult bees and 53 percent greater honey production** than those in areas farmed conventionally. The increased brood may be due to a wider diversity of pollen sources or lower mortality from local application of pesticides. The surge in honey reserves may reflect greater availability of melliferous flowers over a greater area where bees forage. (“Organic farming enhances honeybee colony performance,” press release, The French National Centre for Scientific Research, June 26, 2019; [http://www.cnrs.fr/en/organic-farming-enhances-honeybee-colony-performance](http://www.cnrs.fr/en/organic-farming-enhances-honeybee-colony-performance;); “Effects of organic farming on seasonal dynamics of honeybee colony performance,” Dimitry Wintermantel et al., Journal of Applied Ecology, June 26, 2019)

Antibiotics

Poultry purchased in Pennsylvania between 2008-2017 and labeled as antibiotic-free or organic was half as likely to contain multidrug resistant Salmonella as conventionally raised poultry. Of the 2,733 samples of conventionally raised poultry, 10.2 percent were contaminated with Salmonella compared with 5.3 percent of poultry samples labeled antibiotic-free. Of 280 Salmonella cultures from conventionally raised poultry, 55 percent were resistant to three or more antibiotics compared with 28 percent from poultry raised without antibiotics. Another study found that almost one-third of meat and poultry contaminated with Salmonella harbored antibiotic-resistant bacteria. (“Antibiotic-Free or Organic Poultry Half as Likely to Be Contaminated with Multidrug-Resistant Salmonella, New Research Finds, IDWeek, Oct. 2, 2019; <https://www.idsociety.org/news--publications-new/articles/2019/antibiotic-free-or-organic-poultry-half-as-likely-to-be-contaminated-with-multidrug-resistant-salmonella-new-research-finds/>)

A study compared the **release during storms of antibiotic resistance genes, fecal indicator bacteria and sediment from plots amended with raw manure or manure-derived composts** originating from dairy cows that were or were not treated with antibiotics (pirlimycin and cephalosporin). Fields receiving dairy manure-derived amendments, whether composted or not, were likely to release more antibiotic resistance genes and fecal indicator bacteria into runoff relative to fields treated with inorganic fertilizer. Composting manure did not reduce antibiotic resistance genes in runoff. The researchers say that appropriate runoff

and sediment management could be critical in controlling the spread of antibiotic resistance on farms, potentially on par with judicious antibiotic use, appropriate manure treatment and harvest wait times. (“Fecal Indicator Bacteria and Antibiotic Resistance Genes in Storm Runoff from Dairy Manure and Compost-Amended Vegetable Plots,” by Kyle Jacobs et al., Journal of Environmental Quality, July 11, 2019; <https://dl.sciencesocieties.org/publications/jeq/abstracts/48/4/1038>)

Climate

A U.N. report by the Intergovernmental Panel on Climate Change – more than 100 experts from 52 countries – says that a half-billion people live in places turning into desert, and soil is being lost 10 to 100 times faster than it is forming. Climate change will worsen those threats, shrinking the food supply in several areas at once and possibly increasing migration, as has been happening from El Salvador, Guatemala and Honduras to the United States. Addressing these issues could include making land more productive through better soil management, diversifying crops, wasting less food, and shifting diets away from meat. (“Climate Change Threatens the World’s Food Supply, United Nations Warns,” By Christopher Flavelle, The New York Times, August 8, 2019; <https://www.nytimes.com/2019/08/08/climate/climate-change-food-supply.html>)

Genetic Engineering

Note: Organic production does not allow the use of genetically engineered (GE or GMO – genetically modified organism) inputs.

Research published by officials of the Food and Drug Administration (FDA) has discovered that **foreign DNA can be introduced inadvertently into the genomes of gene-edited animals**. Gene-editing techniques are widely considered to be more precise than older GE techniques, but the FDA research shows that foreign DNA can become incorporated, unknown to the developer. The findings are a significant blow to the argument that gene editing should not be subject to regulation, and they vindicate the EU approach of regulating gene-edited organisms as GMOs.

In this case cattle edited to be hornless were produced in 2016 by Recombinetics, Inc., of St. Paul, Minnesota, which reported detecting no unexpected alterations, such as insertions or deletions of DNA, as a result of gene editing. It concluded that “our animals are free of off-target events” and argued that “it is hard to see why the process of genome editing to introduce defined genetic changes should be regulated.”

The FDA found that one calf had an unintended duplication of the polled gene locus, and the DNA of both calves contained two antibiotic resistance genes, along with other gene sequences of bacterial origin. The inadvertently introduced bacterial sequences were close to the editing site. Of the two antibiotic resistance

genes, one confers Neomycin/Kanamycin resistance and the other Ampicillin resistance.

The FDA finding demonstrates that the gene-edited animals contain DNA unnatural to cattle, so the FDA has the authority to regulate, reports Independent Science News. (“FDA Finds Unexpected Antibiotic Resistance Genes in 'Gene-Edited' Dehorned Cattle,” By Jonathan Latham, Ph.D., and Allison Wilson, Ph.D., Independent Science News, Aug. 2, 2019; <https://www.independentsciencenews.org/news/fda-finds-unexpected-antibiotic-resistance-genes-in-gene-edited-dehorned-cattle/>; “A Cow, a Controversy, and a Dashed Dream of More Humane Farms,” by Megan Molteni, Wired, Oct. 8, 2019; <https://www.wired.com/story/a-cow-a-controversy-and-a-dashed-dream-of-more-humane-farms/>)

In October 2019 the **FDA approved GE cotton with edible cottonseed for human consumption**. Texas A&M University scientists developed the crop and hope it will be available commercially in about five years. They used RNA interference to silence a gene in order to limit production of the toxic chemical gossypol in the seed. (“U.S. regulators allow genetically modified cotton as human food source,” by Will Dunham, Reuters, Oct. 11, 2019; <https://www.reuters.com/article/us-science-cottonseed/u-s-regulators-allow-genetically-modified-cotton-as-human-food-source-idUSKBN1WQ2J1>)

Pesticides

Beginning in early 2020, **California will ban the sale of the pesticide chlorpyrifos**, linked to brain damage and other health defects in children. Growers will not be allowed to possess or use it after December 31, 2020. Chlorpyrifos is used primarily on crops such as alfalfa, almonds, citrus, cotton, grapes and walnuts. The EPA under President Obama proposed a federal ban on the insecticide in 2015, but the Trump administration quickly overturned the proposal. (“California Bans Popular Pesticide Linked To Brain Damage In Children,” by Richard Gonzales, NPR, Oct. 9, 2019; <https://www.npr.org/2019/10/09/768795666/california-bans-popular-pesticide-linked-to-brain-damage-in-children>)

Acute Insecticide Toxicity Loading (AITL) measures the total mass of insecticides used in or near U.S. agricultural land, their acute toxicity to insects and their environmental persistence. Researchers Michael DiBartolomeis et al. found that from 1992 to 2014, synthetic insecticide use shifted from predominantly organophosphates and N-methyl carbamates to a mix dominated by neonicotinoids and pyrethroids. Neonicotinoids are generally applied at lower rates per acre but are much more toxic to insects and generally persist longer in the environment. The researchers report a **48- and 4-fold increase during the study period for oral and contact toxicity, respectively. Neonicotinoids represented 61 to almost 99 percent of the total toxicity loading in 2014**. Most of the increase occurred with corn and soy crops. Oral exposures have a relatively higher toxicity and greater likelihood to occur from residues in pollen, nectar, guttation water and other environmental sources. Neonicotinoids accounted for nearly 92 percent of total oral

AITL over the study. The increase in pesticide toxicity loading over the past 26 years may threaten the health and survival of pollinators, beneficial insects, insectivorous birds and other insect consumers, say the researchers. (“An assessment of acute insecticide toxicity loading (AITL) of chemical pesticides used on agricultural land in the United States,” by Michael DiBartolomeis et al., PLOS ONE, August 6, 2019; <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0220029>)

Researchers have found a **strong connection between the neonicotinoid insecticide imidacloprid and birth defects in white-tailed deer** in South Dakota. Significantly high levels of imidacloprid occurred in spleens of fawns that died early, and higher concentrations of imidacloprid in reproductive tissues were associated with smaller spleens, genitals and livers. Wild deer killed in North Dakota had an average of 3.5 times more imidacloprid in their spleens than did captive deer used in the South Dakota study that were given the pesticide. (“SDSU study shows world’s most common pesticide a danger to deer,” by Nick Lowrey, South Dakota News Watch, October 16, 2019; <https://www.sdnewswatch.org/stories/sdsu-study-shows-worlds-most-common-pesticide-a-danger-to-deer/>)

When researchers gave extremely small doses of **imidacloprid** to white-crowned sparrows during their spring migration through southern Ontario, **birds** given the highest dose ate less, lost 6 percent of their body mass within six hours, and stayed an average of 3.5 days longer at a stopover site on their migration route compared with birds that weren't dosed. The researchers say this may explain in part why migrant and farmland bird species are declining dramatically worldwide: Weight loss and migration delays may threaten their ability to survive and reproduce. Other studies have shown that neonicotinoid insecticides can kill red-legged partridges and reduce their offspring's immunity; reduce egg size and fertilization rate in red-legged partridge; and impact white-crowned sparrows' orientation during migration. (“Common insecticide threatens survival of wild, migrating birds,” by Brian Bienkowski, Environmental Health News, Sept. 13, 2019; <https://www.ehn.org/common-insecticide-threatens-survival-of-wild-migrating-birds-2640322064.html>)

In spring 2019, Maine Senate President Troy Jackson led a **bill to ban aerial herbicide spraying for deforestation**, which turned into legislation requiring the Maine Board of Pesticides Control (BPC) to produce a report by February 2020 about using herbicides in forestry. The Maine Forest Service reports that in 2017, more than 12,000 acres of Maine woods were treated with herbicides and 22,722 acres of forest were clear cut – about one-third of that in Aroostook County. The BPC says that an average of under 15,000 acres of woods are treated with herbicides each year. (“How Maine plans to study the debated practice of aerial herbicide spraying of forests,” by Anthony Brino, Bangor Daily News, Sept. 14, 2019; <https://bangordailynews.com/2019/09/14/news/aroostook/how-maine-plans-to-study-the-debated-practice-of-aerial-herbicide-spraying-of-forests/>)

Immunologist and environmental health expert Claudia Miller of the University of Texas School of Medicine in San Antonio developed her **Toxicant Induced Loss of Tolerance (TILT)** theory to explain the increase in such multi-symptom illnesses as autism and Gulf War Syndrome. She suggests that many common chronic conditions come from daily exposure to very low doses of synthetic chemicals, with genetically susceptible people getting sick after a toxic exposure or exposures. That sensitization “tilts” their neurological and immune systems so that they lose

tolerance to a range of chemicals common in low doses. When they avoid exposures, their health improves but may not recover completely. Miller notes that many toxicants can move directly from olfactory receptors in the nose into the limbic system of the brain. She developed a questionnaire that physicians can use to determine patients' chemical sensitivity. ("Is the World Making You Sick?" by Jill Neimark, Nautilus, Sept. 2019; <http://wise.nautil.us/feature/447/is-the-world-making-you-sick>)

More than three decades of data from the Kuakini Medical Center Honolulu Heart Program, which has tracked the health of about 8,000 Japanese American men on Oahu, suggests that **occupational pesticide exposure may increase the risk of heart disease and stroke**, even among healthy men. Previous research from the program linked occupational pesticide exposure to death. The researchers urged people who work with pesticides to wear protective equipment and regularly screen for heart disease. ("Heart Disease May Be Linked To Pesticide Exposure," by Eleni Gill, Honolulu Civil Beat, Oct. 3, 2019; <https://www.civilbeat.org/2019/10/heart-disease-may-be-linked-to-pesticide-exposure/>; "Association Between Occupational Exposure to Pesticides and Cardiovascular Disease Incidence: The Kuakini Honolulu Heart Program," by Zara K. Berg et al., Journal of the American Heart Assoc., September 25, 2019; <https://www.ahajournals.org/doi/10.1161/JAHA.119.012569>)

Germany will ban the weed killer glyphosate by the end of 2023 because it kills insect populations crucial for ecosystems and pollination of food crops. The herbicide was banned in Austria in July and is restricted in the Czech Republic, Italy and the Netherlands. France will phase it out by 2023. ("Germany to ban glyphosate to protect insects, biodiversity," AFP, Sept. 4, 2019; <https://www.afp.com/en/news/826/germany-ban-glyphosate-protect-insects-biodiversity-doc-1k02hml>)

Toxic Metals

Healthy Babies Bright Futures (HBBF) tested 168 **foods consumed by babies and toddlers** from a wide range of brands and found **toxic heavy metals in 95 percent** of them. One in four baby foods had all four metals assessed – arsenic, lead, cadmium and mercury. Even in the trace amounts found in food, these contaminants can alter the developing brain and erodes a child's IQ, says HBBF, and research confirms widespread exposures and troubling risks for babies, including cancer. Despite the risks, no enforceable limits for toxic heavy metals exist for baby food, with a few exceptions.

Four of seven infant rice cereals tested contained inorganic arsenic (the toxic form of arsenic) exceeding FDA's proposed action level of 100 parts per billion (ppb). Eighty-three percent of baby foods tested had more lead than the 1 ppb limit endorsed by public health advocates, and one of five foods tested had over 10 times that amount.

Arsenic contamination levels in rice cereal and juice are now 37 and 63 percent lower, respectively, than amounts measured a decade ago because companies have shifted growing and processing methods, switched plant varieties, changed irrigation practices and sourced from cleaner fields to comply with FDA guidance. But levels are still too high, says HBBF. Children under 2 years of age lose over 11 million IQ points from exposures to heavy metals in food,

according to an Abt Associates analysis commissioned by HBBF. Just 15 higher risk foods account for over half of that risk, including rice-based foods, juice and sweet potatoes.

Five safer alternatives to higher-risk baby foods have 80 percent less toxic metal residue, on average, according to HBBF: Substituting rice-free snacks for rice puff snacks; frozen banana or chilled cucumber for teething biscuits and rice rusks; other infant cereals such as multi-grain and oatmeal for infant rice cereal; tap water for fruit juice; and a variety of fruits and veggies that includes carrots, sweet potatoes and other choices rather than just carrots and sweet potatoes.

A new Baby Food Council comprised of leading baby food companies and supported by nonprofits including the Environmental Defense Fund and HBBF seeks to “reduce heavy metals in the companies’ products to as low as reasonably achievable using best-in-class management practices.” (“Lowering the Levels: A Healthy Baby Food Initiative,” Healthy Babies, Bright Futures, Oct. 17, 2019; <https://www.healthybabyfood.org/>; “95% of tested baby foods in the US contain toxic metals, report says,” by Sandee LaMotte, CNN, Oct. 17, 2019; <https://www.cnn.com/2019/10/17/health/baby-foods-arsenic-lead-toxic-metals-wellness/index.html>)

Spring 2020

Maine Board of Pesticides Control 2019 Recap

Compiled by Jean English and Heather Spalding

In 2019 the Maine Board of Pesticides Control (BPC) discussed water quality, tracking pesticide use, and mosquitoes and browntail moths. It also granted variances and special registrations for pesticide uses, levied a fine for a violation of pesticides rules, and more.

The BPC, Maine's lead agency for pesticide oversight, is attached to the Maine Department of Agriculture, Conservation and Forestry (DACF). Its seven-member public board (see sidebar) makes policy decisions. This report covers all 2019 BPC meetings. Complete documents relating to BPC meetings are posted at <http://www.maine.gov/dacf/php/pesticides/meetings.shtml>. MOFGA posts time-sensitive action alerts related to the BPC at www.mofga.org, in our weekly emailed Bulletin Board (sign up at <http://mofga.org/Publications/Bulletin-Board>) and on our social media pages. The public can contact the BPC at 207-287-2731 or pesticides@maine.gov.

Heather Spalding, MOFGA’s deputy director and policy director, attends BPC meetings to represent MOFGA’s views. This summary is taken from BPC minutes.

Water Quality Monitoring

The BPC unanimously approved funding to survey pesticide residues in groundwater, a statutory requirement. Mary Tomlinson, BPC pesticides registrar and water quality specialist, said that in previous years the staff sampled 124 to 197 wells that were within one-quarter mile down-gradient from a currently active agricultural field. She wanted to increase the number to 200 and

narrow the sampling area. BPC member Dave Adams recommended surveying above- and below-ground water.

According to Tomlinson, Maine's monitoring program indicated that pesticide contamination does occur in drinking water in domestic wells near active pesticide use sites. Approximately 150 wells were typically sampled until 1994; then only 50 wells were sampled. Of the approximately 150, 9% to 24% tested positive. In 2014, 68% of the 50 wells sampled tested positive – partly because new technology lowered detection limits, and because 90-plus pesticides were included compared with a maximum of seven previously. The reduced sample size may have affected the percent of detections as well.

In two instances contamination exceeded established health advisory levels: in 1994, when a homeowner misused an ant control product; and in 2014, in a well that was steeply downgradient and within 90 feet of a corn crop and where a narrow drainage ditch directed runoff to the wellhead.

The high detection rate of hexazinone (Velpar) in 1994 led to restricted use of that herbicide, identification of best management practices and educational outreach to reduce groundwater contamination.

Regarding surface water sampling, the Penobscot Bay Project focused on seven freshwater streams feeding the Penobscot River to determine the presence or absence of pesticides used in residential areas. The marine waters of Northern Bay, the northern-most reach of the Bagaduce River, were included in order to partner with The Corning School of Ocean Studies, Maine Maritime Academy (MMA), which is studying the declining clam population in the bay. BPC staff collected nine surface water samples from seven locations and nine sediment samples from eight locations in the Bangor region, Castine region and Bucksport in mid-September 2018. MMA deployed a Polar Organic Chemical Integrative Sampler (POCIS) in Northern Bay for a total of 22 days from late August into September 2018.

Pesticides were detected in samples from all sites – some at less than reporting limits – and eight pesticides were detected overall. Atrazine and two degradates were most frequently detected, and all were below the reporting limit. Atrazine and deethyl atrazine were detected in the first Stillwater River sample, but not in the duplicate sample – not surprising since detection limits are 0.0022 and 0.0017 parts per billion (ppb) respectively. Imidacloprid exceeded the chronic Aquatic Life Benchmark (ALB) for invertebrates, 0.01 ppb. This ALB is derived from a life-cycle test with the most sensitive invertebrates (usually midge, scud or daphnids). No other exceedances occurred.

The surface water POCIS samples were analyzed for 102 pesticides. Six were detected, including atrazine, deethyl atrazine, hexazinone, metolachlor ESA, prometon and simazine.

Sediment samples were analyzed for 15 pyrethroids. Bifenthrin, a synthetic pyrethroid insecticide used in urban and agricultural settings, was detected in samples from all sites, but only in eight of nine samples. Cyfluthrin, cypermethrin and deltamethrin were detected only in the Stillwater River sample.

Tomlinson planned to repeat the sampling during the spring of 2019.

Another project, “Ten Cities,” is examining surface water pollution in Maine’s 10 largest cities by population. Asked if glyphosate would be included in the test panel, Tomlinson said it was not detected in the fall sampling but it may be different in the spring. Testing for glyphosate incurs a separate cost, so it was not included in the past due to financial constraints. Megan Patterson, BPC director, said the BPC could submit a budget order to cover these additional costs. The board unanimously approved \$80,000 for water testing, specifically including glyphosate testing. A report on this project is expected in spring 2020.

Mosquito-Borne Diseases

The Maine Center for Disease Control and Prevention (CDC) coordinates state activities to prevent vector-borne diseases – including coordinating mosquito and disease monitoring in Maine. The presence of mosquito-borne diseases and the species of vector mosquitoes present in Maine have risen in recent years. Sara Robinson of the Maine CDC said that the center began monitoring mosquitoes in 2001. In 2009, 15 horses died from EEE. Maine saw its first human case of West Nile Virus (WNV) in 2012, and in 2015 saw a human case of EEE (fatal) and of WNV. In 2018 a horse was infected with WNV, and mosquito pools from Bangor tested positive – the farthest north WNV has been found. In 2015, the Maine CDC launched a much larger monitoring response due to concern about the Zika virus. Although *Aedes aegypti* mosquitoes have not been found in Maine, they have overwintered in Massachusetts. In 2019 the Maine Medical Center Research Institute began testing its established mosquito colonies (from mosquitoes collected in the wild) for pesticide resistance. Maine CDC complements federal CDC funds it receives with funds from the BPC, testing more sites when funding allows. In 2017, the federal CDC gave the center \$600,000 to monitor Zika; in 2018, zero.

Asked about Jamestown Canyon Virus, Robinson said that four to five species of mosquitoes found in Maine can carry it. Two cases have occurred in Maine; both patients developed encephalitis. The federal CDC routinely tests for it and averages about 13 cases per year nationwide.

Patterson commented that mosquito testing also determines whether an aerial application should be pursued, adding that the board would assist in the event of an arboviral threat. The board has responsibilities to provide monitoring, provide lists of registered products and to indicate exclusion areas. Patterson noted that the board has a statutory obligation to provide Maine CDC with, at minimum, \$25,000. In 2018 it provided \$50,000, and in 2017 the Maine CDC received funding from the federal CDC in response to Zika concerns, so the board was not asked to provide funding. She added that the Maine CDC tries not to rely solely on funding from the BPC but in 2019 would not receive any federal monies. The board granted \$100,000 to the Maine CDC for mosquito monitoring, which was to cover sites from Augusta southward and sites that coincide with UMS campuses such as Fort Kent and Machias.

The Integrated Pest Management (IPM) Program requested and received \$6,762 from the BPC to help with ongoing mosquito surveillance and identification, to develop a GIS-based mosquito

habitat mapping system and to continue outreach about vector-borne diseases. Kathy Murray, IPM specialist with the Maine DACF, said that surveillance provides early warnings to protect public health. She has been focusing on the central Maine area and on two species of mosquitoes known to carry EEE.

Controlling Browntail Moth Near Marine Waters

Maine pesticide statutes state that only products with active ingredients approved by the BPC may be used to control browntail moth within 50 to 250 feet of marine waters. The board listed approved active ingredients in January 2017 after considering products that commercial applicators told the Maine Forest Service (MFS) were effective. Jeffrey Gillis, president of Well Tree, Inc., wrote to the board in April 2019, asking why permethrin was not listed. Patterson said the board based that decision on a risk analysis conducted by the previous BPC toxicologist.

Pamela Bryer, BPC toxicologist, said that product assessments began in 2006, and newer models and technology exist now. Also, the risk evaluation was based on a worst-case scenario. Bryer said she could reevaluate the numbers. BPC chair Deven Morrill said that given the data they had at the time, the prudent decision was not to allow permethrin. Gillis said that bifenthrin is also a synthetic pyrethroid, and although it and permethrin have different properties, it could potentially present the same risk to water bodies if used incorrectly. He added that permethrin is labeled for fruits and vegetables, and browntail moths often attack apple and similar trees. He concluded that everyone is coming to the discussion from different areas of expertise and he would like future opportunities to collaborate. Patterson suggested reviewing the list annually, possibly including a public comment session. Bryer suggested that the board avoid determining efficacy of active ingredients, and that it work with MFS on a revised list. Gillis noted confusion among his customers about the role of the board versus that of MFS. He believes that some information is not presented to the public correctly. Allison Kanoti, state entomologist, asked the board to revisit imidacloprid, as it is ineffective against browntail moth.

Bryer worked with Tom Schmeelk, forest entomologist with MFS, to assemble a round-table discussion with stakeholders to discuss the risk assessment process and potential active ingredients that may be used near marine waters. Bryer was assessing risks for the 42 pesticides to present to the BPC in 2020.

Heather Spalding of MOFGA asked about a pathogenic fungus that attacks this pest. Patterson said the fungus is a universal pathogen for lepidopteran species and that MFS noted that it had some impact, depending on weather. She added that Dr. Ellie Groden of the University of Maine is researching the effects of weather on the efficacy of the fungus. Patterson said the fungus reportedly is difficult to grow on inoculum and that previously, infected individual caterpillars were used to spread the fungus – a laborious process.

Patterson said the staff would notify the Maine Lobstermen's Association of policy changes regarding browntail moth control.

Fumigation Regulation

Fumigation, particularly soil fumigation, is increasing in some agricultural sectors in Maine. The BPC recently adopted rules on supplemental certification for private applicators who make soil and/or nonsoil fumigation applications. Patterson said the BPC staff will provide training about the new rules, which became effective on January 1, 2020, using the commercial soil fumigation test and the national soil fumigation manual.

Maine State Apiary Program

Jen Lund, Maine state apiarist and the sole employee of the Maine Apiary Program, described her program to the BPC. Lund's duties include inspecting migratory honeybee colonies that are entering Maine to determine the presence of regulated diseases, parasites and undesirable genetic material. She must also issue permits for all incoming hives – just over 50,000 in 2019. That number has decreased in recent years because blueberry growers did not want to pay for pollination when wild blueberry prices were low. Of those incoming hives, Lund inspected 2,658 and found one problem with virus and varroa mites, but that beekeeper likely will not return to Maine. Before hives arrive in Maine, they need a clean bill of health from the state of origin.

Lund also licenses all Maine beekeepers, largely to prevent disease. Currently 1,193 resident beekeepers own 10,058 hives. As of November 2019, Lund had visited 161 of these beekeepers and inspected 1,440 of their hives. Almost 97% of Maine beekeepers are hobby beekeepers (they have fewer than 30 hives).

Lund's hive autopsies show that about 70% of losses resulted from varroa mites and viruses; 25% from queen loss, starvation and/or poor winter; and 5% from other causes. She sent 15 samples to the Beltsville Bee Diagnostic Lab, which discovered one case of American foulbrood.

She surveys all licensed beekeepers each year to learn about their hive management and losses. During 2018-19, about 45.2% of hives were lost – most during winter. This was up from 43.4% the previous year. Most losses occur in more remote parts of Maine, and fewer losses occur where a strong bee association is nearby.

Regarding varroa mites, Lund said they latch onto the abdomen and undersides, digest bees' fat bodies and slurp them out. Fat bodies are vital to insects, supplying extra energy in hard times, serving as an immune system against disease and helping with detoxification. One bee can have four to five mites on it at one time. Lund said she finds that IPM is a good approach to solving problems, as is monitoring the impact of steps taken. In fact she wrote a grant with the Massachusetts Department of Agricultural Resources to obtain funds to distribute 1,500 mite wash jars. To use the jars, beekeepers put half a cup of bees (about 300 bees) into the jar with alcohol, shake the jar and then dump the contents into a pan and count the mites. The number of beekeepers using alcohol washes has increased to about 31%. Lund also said beekeepers try to prevent establishment of varroa mites by using bottom boards and brood disruption. If that is unsuccessful, they then use oxalic acid, formic acid, or another product labeled for beehives.

Maine also participates in the National Honeybee Health Survey, a USDA-APHIS program that tests hives from different parts of the state for pests and diseases.

Pesticide levels in wax from Maine hives are pretty good compared with levels in other states, said Lund. One investigation in 2019 into a suspected hive death by pesticides turned out to be due to starvation.

Lund reaches out to many groups, including new beekeeper classes, UMaine Cooperative Extension workshops, beekeeper club meetings, pesticide applicator trainings, conservation groups, land trusts, schools, libraries, Rotary clubs and state/national/international beekeeping meetings. She spoke at this year's Region 1 Pesticide Inspector Residential Training meeting about basic bee biology, and with the Aroostook Band of Micmacs about non-managed bee pollinators. Lund also participated in two BPC and Cooperative Extension-organized pesticide applicator trainings in 2019, and she is helping set up beekeeping cooperatives in rural communities such as Greenville, Houlton and Millinocket.

In March 2020 Lund would like to attend a national certified investigator and inspector training in Raleigh so that she can testify in court. She also hopes to do more honey, pollen and wax testing for the state.

Finally, Lund noted that for the first time since 2003, Maine will host the Eastern Apicultural Society Conference in 2020 in Orono. This five-day event usually attracts 700 to 900 beekeepers.

Aminocyclopyrachlor Damages Trees in Oregon

Patterson told the board of a U.S. Forest Service presentation about a 12-mile corridor of trees in part of Oregon known for its ponderosa pines. Many of the trees were harmed by applications of the herbicide Perspective (aminocyclopyrachlor or ACP), used in 2013, 2014 and 2015 to control broadleaf weeds and brush. A total of 2,100 dead or dying trees were felled so that they wouldn't fall on roads. They were not turned into forest products due to concern about ACP residue in the sawdust, but ultimately the lumber will be milled and the sawdust carefully managed to avoid its use around plants. She added that Oregon no longer allows use of ACP in rights of way, natural areas, restoration areas, bogs, swamps, marshes, wetlands and ditches. She said the BPC staff recently received two ROW variances requesting use of ACP.

Tracking Pesticide Sales and Use

Board staff and constituents are now working successfully with the online Maine Pesticide Enforcement, Registration and Licensing System (MEPERLS). The staff suggested incorporating required reporting within the system, allowing dealers and applicators to report end-of-year sales and use in an online form linked to product registration data. This would force the data to be entered consistently and would allow accurate reporting. These forms currently are submitted on paper or through email as static digital documents. Also, the current digital but static fillable PDFs used for inspections could be replaced with interactive flows within MEPERLS, creating fully searchable enforcement data. This would enable inspections using a tablet and would make enforcement assessments easier. Preliminary estimates suggest a cost of \$60,000 to \$90,000, with \$38,000 of that for developing inspection forms. The latter will save time because inspectors now have to search for and enter information multiple times.

Morrill was concerned that the MEPERLS system was supposed to have cost \$200,000 when pitched five years ago and to date has cost well over \$1 million. Patterson said that some initial work was not viable but still had to be paid for, and that the above proposals would add functionality that was not included in the initial budget. The board approved funding the MEPERLS development project.

Training Migrant Workers

Since 1995 the BPC has supported a Migrant and Seasonal Farmworker Safety Education program. It continued that support by approving the 2019 request for \$5,360 from the Maine Mobile Health Program and the Eastern Maine Development Corporation, which trained 421 migrant agricultural workers during the 2018 season.

Registration Requests

At the request of the University of Maine Cooperative Extension, the BPC approved an extended Special Local Needs [24(c), SLN] registration of Gowan Malathion 8 Flowable for use on blueberries. This increases for five years the maximum application rate of the insecticide to control spotted wing drosophila (SWD) in blueberries, from the current 1.25 pints per acre three times per year to a maximum of 2.5 pints per acre twice per year. The board approved the request despite having no data on the efficacy, need or quantity of use of the product in Maine and despite questions about why the manufacturer doesn't change the label rather than continuing to request 24(c) registrations.

UMaine Cooperative Extension also requested and received a 24(c) registration to increase the application rate of Gowan Malathion 8 Flowable on cane berries from 2 pints per acre a maximum of three times per year to four times per year. David Handley, vegetable and small fruit specialist, said the berries need to be sprayed every five to seven days for SWD; that growers want a product with a preharvest interval of three or fewer days; that growers are also using spinosad and synthetic pyrethroids but worry about resistance to spinosad; that synthetic pyrethroids are hard on beneficial insects; and that netting with at least 1 mm mesh completely covering a planting, with double doors at the entrance, has been successful but is expensive and not easy to achieve.

The board approved Extension's request for a 24(c) registration for Loveland Products' Malathion 8 Aquamul for use on blueberries, to increase the maximum application rate to control SWD.

UMaine Cooperative Extension requested a 24(c) registration for Express Herbicide with TotalSol (FMC Corporation) for spot application and bunchberry control in lowbush blueberries. The expanded spot applications are to control labeled weeds during the prune year, in the fall after harvest and in the spring of the non-crop year. BPC member John Jemison asked if anyone has tested water for this fairly soluble product. David Yarborough, formerly the wild blueberry specialist and now retired from UMaine, said that if applied correctly, the herbicide would not have to be used annually. Bryer said a study in Sweden showed it was mostly mineralized in the top 15 centimeters of soil. BPC member Curtis Bohlen added that studies show that the active

ingredient is metabolized relatively rapidly in loamy soils but may act differently in saturated or sandy soils (or, as Jemison stated, in our acidic soils versus the alkaline soils in one study). Darren Hammond of Wymans said that in Canada, spot spray applications of Express are more effective in spring than fall. He added that Canadian growers have to wait until a little later in the spring, when soils would not be saturated. Also, said Hammond, once bunchberry is controlled, four to six cycles could pass before another treatment would be needed. Having Express as an option will likely result in lower use of hexazinone and less material that might contaminate groundwater, he noted. Tomlinson said that blueberry areas are tested every four to six years, and sampling would occur in 2020. The board approved the SLN for two years contingent on adding the active ingredient to the panel of testing for 2020.

The BPC staff approved variance permits for Asplundh Tree Experts, Railroad Division, to control vegetation along the St. Lawrence and Atlantic Railroad right of ways; for RWC, Inc., to control vegetation in right-of-way areas with the condition that Method 50SG or Method 240SL (both with active ingredient aminocyclopyrachlor) not be applied within 25 feet of water; and to the Maine Department of Transportation to control vegetation in right-of-way areas with the condition that Streamline not be applied within 25 feet of water.

In a surprise move to those who have followed the BPC for decades, the board denied a variance request to treat invasive plants. Taylor's Invasive Plant Control of Richmond, New Hampshire, sought a variance from Chapter 29, Section 6, Buffer Requirements, to treat invasive plants on Biddeford Pool Land Trust (BPLT) property with metsulfuron and triclopyr. This location includes an area designated as significant wildlife habitat by Inland Fisheries and Wildlife. The BPC staff received six emails from opponents of the application. Patterson said the BPC staff wanted board input partly because of the seeming lack of continuity and clarity of land management approaches and goals. Board members asked several questions about the property, the species present and control methods for invasives. BPC member Clark Granger was concerned with the proposed September application of the herbicides, as most plants would have gone to seed by then. He did not think the application followed IPM, and he did not like the setup for long-time herbicide use at the site. BPC member Jack Waterman said the benefits would be very short term. Morrill said that the proposed herbicide treatment did not pass the risk-benefit analysis, adding that the board wants to protect surface water. He encouraged the applicant to return later to discuss the plan.

Pesticide Certification Numbers

John Pietroski, manager of pesticide programs, said that 541 people hold Agricultural Basic Pesticide Applicator licenses, 1,046 have Private Pesticide Applicator licenses, 804 hold Commercial Master Applicator licenses and 1,050 have Commercial Operator Applicator licenses, for a total of 3,441 licenses. In 2019, 138 programs were approved for recertification credits for a total of 336 credits.

Funding Pesticide Education Position

At its October 27, 2017, meeting, the BPC approved a \$65,000 grant to UMaine Cooperative Extension for a combined Pesticide Safety Education Program and Pesticide Applicator Training

position for one year. Kerry Bernard completed writing the UMaine Cooperative Extension training manual as well as additional work. Morrill asked Bernard how the training at the Maine state prison went. Bernard said the collaboration with Extension's Mark Hutchinson, who works closely with the inmates and thought applicator licensure might be a valuable addition to their resumes, worked well. Bernard added that the inmates took the agricultural core and the vegetable exams. The board granted \$65,000 to Extension for a combined Pesticide Safety Education Program and Pesticide Applicator Training position for another year.

Educating About IPM

The BPC staff asked for the board's input regarding expanding public awareness of the BPC and its function. Patterson said that the staff is using push notifications on Facebook – i.e., paying a small amount to get information to a larger audience. Adams asked how to get the general public to attend meetings. Morrill suggested targeting media campaigns, Facebook ads, and/or media buys rather than giving talks. Gillis said the general use pesticide dealer sign that is in most stores directly addresses those whom the BPC wants to reach; also, the storm drains and rubber ducky ads previously used were very relevant. Mary Cerullo, associate director for Friends of Casco Bay, said some communities would love the board's input on local ordinances – something Patterson supports. Community member Jody Spear said that her community had its own expert and is trying to promote organic pest management rather than IPM. Morrill suggested that staff ask a few groups for ideas about how to bring the board's message to the public. Patterson described the social media, infographics and artwork used in Portland, Oregon, to inform the public about gypsy moth control. She noted that the Get Real Get Maine campaign budget has reached \$470,000 to date. The BPC unanimously voted to authorize BPC staff to spend up to \$300,000 on an education campaign. A board member will be part of the panel that reviews campaign proposals.

Pesticide Application Notification Requirements

Following a request from Representative Bill Pluecker of Warren, the BPC decided to convene a meeting of stakeholders to discuss strengths and potential weaknesses of its current pesticide notification registry and regulations. Those regulations establish procedures and standards for informing the public about pesticide applications in their vicinity, both indoors and out, agricultural and non-agricultural, aerial and ground sprays, and in schools and on school grounds. The board decided to hold a public forum on the topic at its January 2020 meeting. Current pesticide notification regulations are posted at https://www.maine.gov/dacf/php/pesticides/documents2/bd_mtgs/jan20/All%20Items-original%20posting.pdf.

Communications

In an email, Jody Spear asked that the board rescind registration for J.R. Simplot's plant incorporated (genetically engineered) protectants for late blight in potatoes. She provided a 2015 article by Jeffrey Smith, "Why Scientists are Worried about the GMO Potato and Apple" (<https://responsibletechnology.org/wp-content/uploads/2017/01/Why-Scientists-are-worried-about-the-GMOpotato-and-apple-4.8.151.pdf>), and "Interview: Dr. Caius Rommens Questions

Biotechnology Safety” by Tracy Frisch, Eco Farming Daily (<https://www.ecofarmingdaily.com/rethinking-pandoras-potatoes/>).

Alvin Winslow, a certified crop advisor with Winslow Agriculture LLC, said retaining this product registration would help the potato industry stay competitive. Tomlinson said there are two registrations for Simplot, both for late blight protection. Jake Dyer of the Maine Potato Board said that these potatoes currently are not being grown in Maine.

Linda Titus of Ag Matters would like the board to remove the requirements for recordkeeping for use of disinfectants in postharvest wash tanks, such as those used for washing leafy greens, because growers must record these applications under the Food Safety Modernization Act and are being inspected by Quality Assurance and Regulations inspectors based on those records. Patterson said that per BPC Chapter 50, Record Keeping and Reporting Requirements, commercial agricultural producers must maintain records of pesticide applications. Additionally, the board’s policy on applications requiring an Agricultural Basic license states that production begins with the growing medium and ends when the product leaves the farm – which includes the applications Titus described. This language appears to require that growers maintain records when they use dips and washes on produce before it leaves the farm. Patterson said some common active ingredients in dips and washes are bleach products and hydrogen peroxide, among others.

Titus pointed out that a restaurant making the same type of application does not have to report it. Growers are asking if this information needs to be recorded in the pesticide logbook. She added that some growers are not aware of this requirement; that farmers who do not fall under the produce safety rule do not need to record water treatments; and she wanted to know about regulations for those using single pass water. Patterson said there is no licensing requirement for this record keeping. Morrill suggested educating about the topic.

In two other emails, Jody Spear urged the board to ban use of all neonicotinoid insecticides.

Assessing Resistance to Bt Corn

Patterson said the IPM Council had suggested re-opening the Plant Incorporated Protectants Environmental Risk Advisory Committee (ERAC) to assess Bt (*Bacillus thuringiensis*) resistance in insect populations feeding on genetically engineered Bt corn. The council discussed results of summer Bt resistance research and subsequent needs at its fall 2019 meeting and will return to the board with a request. Lauchlin Titus said that Seminis is one of the few companies selling Bt sweet corn. Last year almost all Seminis growers told Titus they had some pressure from corn earworm, so Seminis collected some insects and is testing them for resistance. Titus noted that no one knows if Bt resistance is an issue with field corn, because it is not monitored as carefully as sweet corn. Growers generally assess field corn stand quality at harvest, when larvae are no longer present. Titus said Maine growers used to find small, dead corn earworms (only one per ear because they are cannibalistic), but now they are finding large corn earworms, so the insects are not dying, indicating that they are no longer susceptible to Bt. He suggested someone determine where they are overwintering now versus 20 years ago.

New England Rodent Academy

The New England Rodent Academy, held in October 2019, provided in-depth information about preventing, monitoring and managing rodent pests of concern to public health and structural damage. The BPC provided \$3,286 for the academy.

Aerial Herbicides for Forests

The last session of the Maine Legislature passed a resolve (LD 1691) directing the BPC to work with the forest products industry to monitor aerial herbicide applications. Patterson said the resolve requires that a neutral third party observe the applications. The BPC staff is working with an auditing firm familiar with forestry practices. The Maine Forest Products Council had tentatively agreed to cover the costs. Herbicides were applied from mid-July through September on a total area of approximately 15,000 acres.

Staffing Changes

Per a request by Patterson, DACF approved an additional environmental specialist III position for the BPC staff to help with increasing registrations and water quality work. Patterson said she would like to revive the fairly robust water quality program that the BPC formerly had. The BPC also had a vacant environmental specialist III position after Anne Chamberlain resigned to start a business using drones for aerial photography.

Maine Certification Plan

The BPC staff had to create a state plan showing that Maine's pesticide regulations and policies comply with federal standards. John Pietroski, BPC manager of pesticide programs, presented the state plan, which required only minor revisions for compliance. The BPC approved the plan for submission to the EPA.

Obsolete Pesticides Collection

Each October the BPC, in concert with Department of Environmental Protection (DEP), conducts a program to collect and properly dispose of banned and unusable pesticides from homeowners, farms and greenhouses. Amanda Couture, BPC certification and licensing specialist, told the BPC that 79 people participated in the 2019 collection, with a total of 7,510 pounds collected – a considerable increase over the 4,680 pounds collected in 2018. The board discussed the benefits and downsides of offering the program to commercial entities.

Consent Agreement

The board approved a consent agreement with Tick Talk of Rockport, Maine. In this case, an individual on the notification registry was not notified before an applicator treated property across the street from her home. Wipe samples from her mailbox and van tested positive for residue of Cross Check Plus Insecticide (active ingredient bifenthrin). Tick Talk was fined \$750.

Sidebar

Members of the Maine Board of Pesticides Control

Curtis C. Bohlen, director, Casco Bay Estuary Partnership, University of Southern Maine, Muskie School of Public Service, Portland (public member and vice-chair of the BPC)

Bruce V. Flewelling, potato grower, Easton (agricultural expertise)

Clark A. Granger, consulting forester, Woolwich (forestry expertise)

John M. Jemison Jr., water quality and soil specialist, University of Maine Cooperative Extension, Orono (water quality and soil specialist)

Deven Morrill, licensed arborist, Lucas Tree Experts, Portland (public member and chair of the BPC)

Dave Adams, commercial applicator, Dasco Inc., Presque Isle (commercial applicator expertise)

Jack Waterman, physician, Waldoboro (medical expertise)

[End of BPC news]

The Good News

On January 15, 2020, a petition with over 250 Blue Hill voter signatures (168 signatures were needed) was submitted to the town clerk to place the **Blue Hill Healthy Ecosystem Ordinance** before voters **on the April 3 town warrant**. If approved, this ordinance will prohibit, in the Town of Blue Hill, the “application, storage, or sale of synthetic substances other than those specifically listed as ‘allowed’ in the U.S. Department of Agriculture’s National List of Allowed and Prohibited Substances, (National Organic Program),” with exemptions cited in the ordinance.

Once enacted, the ordinance will take effect on January 1, 2021. While the Maine Agriculture Protection Act (commonly known as the Right to Farm law) exempts commercial growers from the ordinance, applications of prohibited pesticides in all other locations, including private, town and school property, will be prohibited. Use of all prohibited pesticides, either for commercial use or under emergency exemptions, will require the posting of signage that meets requirements stated in the ordinance.

At least 29 municipalities in Maine have ordinances that restrict the use of pesticides. A small group of Blue Hill residents met weekly for five months to draft the Blue Hill ordinance, which is modeled on the ordinances of Camden, Ogunquit, Portland, Rockport, South Portland, and Skagway, Alaska.

The ordinance is not intended to punish but to educate, with the ideal result of replacing toxic substances with nontoxic substances and/or methods. If someone is suspected of violating the ordinance, is reported to the Code Enforcement Officer (CEO) and is found to have violated the ordinance, a fine may be levied at the discretion of the CEO.

Efforts to raise awareness and to educate Blue Hill residents about the dangers of pesticides and about healthy alternatives include a detailed and informative website, a Facebook page, presentations at both Blue Hill high schools and monthly educational evenings at the Blue Hill Library – the first, in December 2019, by Eliot Coleman on “Why Pesticides are Superfluous,” and the second, in January 2020, by naturopath Marly Sachsman on “The Impact of Pesticides on Human Health.” The February topic was “The Impact of Pesticides on the Environment,” and March will feature a public hearing as a prelude to the April 3 town vote. For more information, please see <https://www.bluehillhealthyeecosystem.com/> and coverage on WERU at <https://archives.weru.org/radioactive/2020/01/radioactive-1-2-20-proposed-pesticide-ban-in-blue-hill-and-eliot-coleman-speaks-on-organic-agriculture/>.

--Rick Traub

Nominations Sought for National Organic Standards Board

The USDA is accepting nominations for five new members to serve on the National Organic Standards Board (NOSB) from January 2021 to January 2026. The NOSB is the federal advisory committee that provides advice and recommendations to the USDA on organic standards and National List materials. It is responsible for keeping toxic substances out of organic production and processing. The USDA appoints its members, volunteers from across the organic community, to a five-year term. The open seats include two organic producers, two consumer/public interest advocates and one USDA-accredited certifying agent. Members attend two NOSB meetings per year (travel paid by USDA), participate in bi-monthly subcommittee conference calls, review materials and/or recommend changes to the National List of Allowed and Prohibited Substances, and advise on other aspects of USDA organic regulations. The nomination deadline is expected to be in May 2020. FMI: Abby Youngblood, executive director, National Organic Coalition, 646-525-7165, abby@NationalOrganicCoalition.org. The National Organic Coalition can provide support and guidance to applicants and NOSB members.

Farm Size Versus Production

Researchers investigating the claim that small-scale farmers produce 70 to 80% of the world’s food found a lack of raw data on the subject along with reliance on model assumptions with unknown biases and with limited spatial and commodity coverage. Using new data from 55 countries and 154 crop types, the researchers estimate that **farms under 2 ha (about 5 acres) globally produce 28 to 31% of total crop production** and 30 to 34% of the food supply on 24% of gross agricultural area. Farms under 2 ha devote a greater proportion of their production to food and account for greater crop diversity. Farms over 1,000 ha (2,471 acres) have the greatest proportion of postharvest loss. (“How much of the world's food do smallholders produce?” by Vincent Ricciardi et al., *Global Food Supply*, June 2019;

https://www.researchgate.net/publication/325405959_How_much_of_the_world's_food_do_smallholders_produce

Livestock/Meat Production

Researchers at Furman University in Greenville, South Carolina, through a Southern Sustainable Agriculture Research and Education (SSARE) grant, studied the feasibility of **transforming forested land on farms in South Carolina, North Carolina and Georgia into silvopasture systems**. Silvopasture is a sustainable agriculture practice that integrates trees and livestock in a system that combines grazing with environmental benefits, as well as a secondary income stream.

“Agroforestry systems are not widely used in agriculture, in part because of the time required to grow mature stands of trees,” said associate professor John Quinn. “We wanted to look at the idea of restoring existing forest patches and developing sustainable grazing practices.”

Quinn and his colleagues, along with collaborating farmers, studied suitable understory forage mixtures specifically for grazing pigs, removed invasive weed plant species to determine how that impacted wildlife nesting and foraging habitat, and analyzed soil quality between managed and unmanaged forested land.

Results of the study (LS16-273), “Improving Silvopasture Systems in the South: Identification of suitable forage crops and enhancement of environmental quality in upland forests,” were mixed.

With the forage mixtures of chicory, rye, alfalfa and crabgrass, drought during one trial year prevented adequate germination and sufficient plant stand. Also, the forage mixtures did not maintain enough growth in later stages of production to provide sufficient forage or soil retention. Ryegrass, however, performed the best in shade conditions.

A larger greenhouse trial with greater replication showed greater biomass in more species-rich plots. According to Quinn, “There were significant differences between one and two species and three and four species trials. Thus, though further research is needed, three-species mixtures may be a suitable starting point for future field trials in shade conditions.”

Upon removing invasive plants, researchers noted that bird species richness between the managed and unmanaged forested plots did not differ. However, “We did find that four bird species of conservation concern were present in the silvopasture sites, but not in the control sites,” said Quinn. “The small data size collected limits broader inference, but it does suggest potential opportunities for farmers to collaborate with conservation specialists on forest restoration and wildlife management.”

The researchers extracted soil cores to determine soil carbon and nitrogen concentrations. They compared the results to rotationally grazed pastures on one farm site participating in the project. Variations in soil organic matter did not differ significantly between forested land and rotationally grazed pastures, nor between managed and unmanaged forests. These data will allow for comparisons over time as the grazing systems mature.

“The results suggest that forest soils, like the pastures, are still recovering from degradation caused by intensive tillage cultivation,” said Quinn. “Removal of invasive plants and increased rotational grazing combined with cover crops may improve soil quality as measured by carbon and nitrogen content.” (“Transforming Existing Forested Land into Silvopasture Systems,” by Candace Pollock-Moore, Southern SARE, Dec. 17, 2019; <https://www.southernsare.org/Regional-News/Press-Releases/Transforming-Existing-Forested-Land-into-Silvopasture-Systems>)

In a study of three experimental organic farming systems in Iowa, Minnesota and Pennsylvania in which **crops were rotated with cattle, researchers found no traces of common strains of E. coli or salmonella on meat produced**, and pathogens detected in feed, fecal and hide samples remained below thresholds commonly detected in conventional production systems. In the study, a small number of cattle (four on the Iowa farm, 11 in Minnesota and 12 in Pennsylvania) grazed on wheat and rye pastures, and then corn and soybeans were planted on the same acres the following year before the land was returned to grazing pasture. This differs from common agricultural practices in which animal and crop production are kept separate.

Kathleen Delate, a professor of horticulture and agronomy at Iowa State University and an author of the study, said the results show promise for the potential of farmers to integrate animal and crop production. Experiments have shown that such arrangements can help farmers realize a number of benefits, including better soil health, but Delate said no previous studies of such systems in the Midwest focused on food safety. (“Study shows integrated organic crop and livestock production systems can conform to food safety standards,” Iowa State University, Dec. 17, 2019; <https://www.news.iastate.edu/news/2019/12/17/organiclivestockandcrops>)

While beef production often is scorned as a large contributor to greenhouse gas production, a study of 60,000 households in Japan found that **consuming sweets, alcohol and restaurant food adds to families’ carbon footprints more than other food and drink choices**. In the study, meat consumption explained less than 10% of the difference in carbon footprints among families, while households with higher carbon footprints tended to consume more food from restaurants, more vegetables and fish, and two to three times more sweets and alcohol than families with low carbon footprints. The authors suggest that a carbon tax on sweets and alcohol might be more progressive than one on more nutritious foods. They also recommended eating less red meat to reduce households’ overall environmental impact. (“Eating out, ice cream and booze may be worse for climate change than meat,” by Rachel Koning Beals, MarketWatch, Jan. 1, 2020; https://www.marketwatch.com/story/dining-out-dessert-and-booze-may-be-worse-for-climate-change-than-meat-2019-12-26?mod=mw_latestnews)

The American Public Health Association (APHA) has called for a ban on new or expanded CAFOs – large-scale, concentrated animal feeding operations in which animals are crowded and rarely access the outdoors. More than 90 percent of livestock raised in the United States is produced in CAFOs, which incur occupational and community health risks through waste produced, air pollution and use of antibiotics, and which harm rural societies and economies,

says APHA. (“Public Health Experts Support a Ban on CAFOs. New Polling Suggests the Public Does, Too,” by Robert P. Martin, Civil Eats, Dec. 17, 2019; <https://civileats.com/2019/12/17/public-health-experts-support-a-ban-on-cafos-new-polling-suggests-the-public-does-too/>)

A study of 20 economic sectors regarding **particulate pollution** by Stanford University and Carnegie Mellon University researchers found that **U.S. farms cost the economy more in health (premature deaths) and environmental damage than they contribute to the economy**. Animal agriculture affected farm performance most, with poultry being the worst for particulate pollution (and ammonia). The researchers suggest that policymakers consider targeting transportation animal agriculture for emissions reductions. (“Animal Agriculture Costs More In Health Damage Than It Contributes To The Economy,” by Jeff McMahon, Forbes, Dec. 30, 2019; <https://www.forbes.com/sites/jeffmcmahon/2020/12/30/animal-agriculture-costs-more-in-health-damage-than-it-contributes-to-the-economy/#6da721a92e09>)

Pesticides

After **neonicotinoid insecticides were applied to rice paddies**, scientists found that insect and plankton numbers plunged in a nearby large lake into which the insecticides ran off. Within a year, smelt and eel populations collapsed due to lack of food. Neonicotinoid concentrations in the lake water were often greater than concentrations toxic to aquatic invertebrates. (“Fishery collapse ‘confirms Silent Spring pesticide prophecy’,” by Damian Carrington, The Guardian, Oct. 31, 2019; <https://www.theguardian.com/environment/2019/oct/31/fishery-collapse-confirms-silent-spring-pesticide-prophecy>); “Neonicotinoids disrupt aquatic food webs and decrease fishery yields,” by Masumi Yamamuro et al., Science, Nov. 1, 2019; <https://science.sciencemag.org/content/366/6465/620>)

Pregnant women exposed to **persistent organic pollutants (POPs)** had **slightly smaller fetuses** than women who weren’t exposed to these chemicals, according to an analysis of ultrasound scans by researchers at the National Institutes of Health and other institutions. Also, women in the study had lower levels of POPs than women in the 2003-2004 U.S. Health and Nutrition Survey, the most recent comprehensive study of these compounds in U.S. pregnant women. The latest findings suggest that POPs, no longer produced in the United States but persistent in the environment, may have lasting health effects even at low levels. Persistent organic pollutants are chemicals once used in agriculture, disease control, manufacturing and industrial processes. They include the pesticide DDT, and dioxin, a byproduct of herbicide production and of paper bleaching. (“Persistent organic pollutants in maternal blood linked to smaller fetal size, NIH study suggests,” National Institutes of Health, Dec. 30, 2019; <https://www.nih.gov/news-events/news-releases/persistent-organic-pollutants-maternal-blood-linked-smaller-fetal-size-nih-study-suggests>; “Association of maternal exposure to persistent organic pollutants in early pregnancy with fetal growth,” Ouidir, M., et al., JAMA Pediatrics. 2019; <https://jamanetwork.com/journals/jamapediatrics/article-abstract/2757555>)

Pyrethroids are synthetic pesticides commonly used in some flea medications, lice treatments, mosquito and tick control products and on some conventionally grown crops. They include permethrin, cypermethrin, deltamethrin and cyfluthrin – synthetic versions of the naturally occurring pyrethrin. A study that followed 2,116 adults for an average of 14 years found that those with **greater exposure to pyrethroids (as detected in urine samples) were somewhat more likely to die from any cause** than those with lowest exposures. Also, those with greater exposures were three times more likely to die from heart disease. The study authors note that correlation does not necessarily mean causation. Still, Consumer Reports suggests not applying permethrin directly to skin and not using pyrethroid-based lice treatments, since lice are resistant to the insecticide. It also suggests buying organic foods, since pyrethroids are not allowed in organic production. (“Common Pesticides Linked to Heart Disease Risks in New Study,” by Catherine Roberts, Consumer Reports, Dec. 31, 2019; <https://www.consumerreports.org/pesticides-herbicides/common-pesticides-linked-to-heart-disease-risks-in-new-study/>)

The **Environmental Protection Agency**, working with the Justice Department, filed court papers in December 2019 **supporting Bayer’s argument that glyphosate, the active ingredient in its Roundup herbicide, poses no cancer risk**. Bayer, which now owns Roundup manufacturer Monsanto, has appealed a \$25 million verdict awarded to Edwin Hardeman of California, who said Roundup caused his non-Hodgkin lymphoma. The EPA and the Justice Department said Bayer could not legally print cancer-risk warnings on Roundup labels because Congress granted the EPA sole authority over safety labels on chemical products, and the agency would not have approved a cancer warning for Roundup. The EPA claims that glyphosate does not present a cancer risk, but the International Agency for Research on Cancer has classified glyphosate as “probably carcinogenic to humans,” noting that the EPA and other regulators included Monsanto-funded studies in their glyphosate assessments. (“Trump Administration Backs Bayer in Weedkiller Court Fight,” by Jacob Bunge and Timothy Puko, TheWall Street Journal, Dec. 20, 2019; <https://www.wsj.com/articles/epa-backs-bayer-in-weedkiller-court-fight-11576879555> and <https://www.archyworldys.com/trump-administration-backs-bayer-in-weedkiller-court-fight/>)

Scientists with the U.S. National Toxicology Program (NTP) found that some formulations of **herbicides made with glyphosate** and sold to the public **were genotoxic** – i.e., they damaged human DNA – in preliminary, cell-based tests but that the problem probably is due to added ingredients rather than to glyphosate itself. The genotoxic effects occurred with glyphosate-based formulations that include surfactants, which help glyphosate spread onto plant surfaces, and the herbicides diquat dibromide, mesotrione and metolachlor, found in some of the products. (“Formulations of glyphosate-based weedkillers are toxic, tests show,” by Carey Gillam, The Guardian, Jan. 23, 2020; <https://www.theguardian.com/business/2020/jan/23/formulations-glyphosate-based-weedkillers-toxic-tests>)

Over 1 million children have developed some form of intellectual disability over the past two decades after being exposed to chemicals including flame retardants, pesticides, lead and mercury, a study has revealed.

Pesticides and flame retardants are now responsible for a greater loss of IQ among children than are lead and mercury, according to a study by New York University researchers. This is likely due to regulations limiting the use of lead and mercury, although these chemicals can remain in paint, dust, water and (for methylmercury) coal-fired power plants. Lead author Abigail Gaylord is quoted by Newsweek as saying, “the minimal policies in place to eliminate pesticides and flame retardants are clearly not enough.” To reduce exposure to pesticides and flame retardants, Dr. Leonardo Trasande, another author of the study, suggested opening windows often to vent persistent chemicals found in furniture, electronics and carpeting, and eating certified organic produce. (“Child IQ in the U.S. Lowered by Exposure to Flame Retardants and Pesticides, Study Warns,” By Kashmira Gander, Newsweek, Jan. 14, 2020; <https://www.newsweek.com/child-iq-u-s-flame-retardants-pesticides-study-1482009> “Trends in neurodevelopmental disability burden due to early life chemical exposure in the USA from 2001 to 2016: A population-based disease burden and cost analysis,” by Abigail Gaylord et al., Molecular and Cellular Endocrinology, Jan. 14, 2020; <https://www.sciencedirect.com/science/article/abs/pii/S0303720719303685?via%3Dihub#appsec1>)

Soil Health

In 2005, researchers started the **Cornell Organic Grain Cropping Systems Experiment** at a Cornell research farm in Aurora, New York. The experiment compared four cropping systems that varied in fertilizer inputs, tillage practices and weed control. In June 2017, the entire site – including alleyways between plots – was plowed and seeded with sorghum sudangrass. By September 2017, researchers were calculating invertebrate abundance, community structure, and weed and sorghum sudangrass biomass.

They found that past nutrient inputs, the amount of soil disturbance, weed management and the preceding crop all produced lasting effects. For example, plots managed with reduced tillage generally had better overall soil health, especially regarding microbial activity. Also, plots under an enhanced weed management system had less impressive soil health but better weed control.

“If weeds are adequately suppressed, reducing tillage in organic cropping systems can regenerate soil health and increase crop production,” said Matthew Ryan, associate professor of soil and crop sciences and principal investigator of the cropping system experiment.

Alleyways between plots, where soil health was very good due to a lack of soil disturbance, had a very high diversity of soil invertebrates.

Modeling revealed that crop production is limited by factors such as microbial activity and soil aggregate stability (the ability of soil particles to stay clumped together to retain air and water). The model also showed that soil invertebrates play important roles, possibly by grazing on microbes, thereby stimulating microbial activity in soils.

The study reinforced the understanding that soil animals, such as mites and other tiny critters, play critical roles in soil health and crop productivity. Soil animals break down crop litter while indirectly affecting microbial communities in the soil. The researchers suggest that

measurements of soil invertebrates can inform assessments of soil health. (“Organic crop practices affect long-term soil health,” by Krishna Ramanujan, Cornell Chronicle, Dec. 17, 2019; <https://news.cornell.edu/stories/2019/12/organic-crop-practices-affect-long-term-soil-health>)

Summer 2020

The Good News

A review of more than 150 studies worldwide by the University of Maryland in collaboration with The Organic Center identifies the **four organic techniques that most impact soil health** and contribute to countering climate change: planting cover crops, applying combinations of organic inputs rather than a single type of organic fertilizer, increasing crop rotation diversity and length, and conservation tillage. (“Identifying the best of the best in organic agriculture,” The Organic Center, March 17, 2020; <https://www.organic-center.org/press-release-soil-health-in-organic/>; “Organic Farming Practices for Improving Soil Health Jessica Shade, Ph.D., and Kate Tully, Ph.D., March 2020; https://www.organic-center.org/wp-content/uploads/2020/03/Soil-Health-Review_ShadeTully.pdf; “Promoting soil health in organically managed systems: a review,” by Katherine L. Tully and Cullen McAskill, Organic Agriculture, 2019; <https://link.springer.com/article/10.1007/s13165-019-00275-1>)

Researchers from the University of Illinois analyzing results of 60 studies on **cover cropping effects on soil microbial properties** found that overall, cover cropping significantly increased soil microbial abundance by 27%, activity by 22% and diversity by 2.5% compared with bare fallow soils. Cover cropping effects were less pronounced under conditions such as continental climate, chemical cover crop termination and conservation tillage. Using herbicides to kill cover crops consistently reduced the microbial community. (“Do cover crops benefit soil microbiome? A meta-analysis of current research,” by NakianKim et al., Soil Biology and Biochemistry, March 2020; <https://www.sciencedirect.com/science/article/pii/S0038071719303657>; “Illinois study shows universally positive effect of cover crops on soil microbiome,” by Lauren Quinn, Acres News, Feb. 27 2020; <https://aces.illinois.edu/news/illinois-study-shows-universally-positive-effect-cover-crops-soil-microbiome>)

Through its 12-acre, 72-plot Farming Systems Trial (FST) started in 1981, the Rodale Institute found that **after a five-year transition period, organic yields are competitive with conventional**; in drought years, organic yields are up to 40% higher than conventional; farm profits are three to six times higher for products from organically managed systems; organic management systems use 45% less energy than conventional and release 40% fewer carbon emissions into the atmosphere; organic systems leach no toxic chemicals into waterways; and organic systems build, rather than deplete, organic matter in soil, improving soil health. (“Longest Field Trials Show Organic Practices Yield Higher Returns than Chemical-Intensive Agriculture,” Beyond Pesticides, Feb. 24, 2019; <https://beyondpesticides.org/dailynewsblog/2020/02/fieldtrialrodale/>)

A study led by researchers at the University of Virginia and co-authored by The Organic Center shows that **organic farming practices can help prevent the global accumulation of reactive**

nitrogen – a form of nitrogen (N) that can harm the environment – and scale back the presence of one of the major contributors to climate change. The research confirms that the biggest difference between organic and conventional farming is that organic farming helps reduce the buildup of reactive N by using recycled N sources such as compost and other natural soil amendments. Across all food groups, organic production releases around 50% less new reactive N to the environment.

Nitrous oxide (N₂O), a potent greenhouse gas, has over 300 times the global warming potential of carbon dioxide. Agriculture, the largest human source of N₂O, contributes over two-thirds of N₂O emissions. Synthetic fertilizer application on conventional crops (especially corn and soybeans) is a leading source of N₂O emissions in agriculture and leads to nitrate leaching into groundwater. (“Organic agriculture – the recycling bin for nitrogen,” The Organic Center, April 9, 2020; <https://www.organic-center.org/organic-agriculture-the-recycling-bin-for-nitrogen/>)

An analysis by researchers from the University of Quebec at Trois-Rivieres of North American and European studies from 2004 to 2019 found that **invertebrate and plant diversity was lower in urban lawns under increased mowing intensity** while pest species (e.g. herbivorous beetle larvae and allergenic plants) were greater. (“Love Your Lawn? Let It Grow,” by Ashia Ajani, Sierra, Feb. 22, 2020; <https://www.sierraclub.org/sierra/love-your-lawn-let-it-grow>; “Ecological and economic benefits of low-intensity urban lawn management,” by Christopher J. Watson et al., Journal of Applied Ecology, Dec. 29, 2019; <https://besjournals.onlinelibrary.wiley.com/doi/abs/10.1111/1365-2664.13542>)

Organic

MOFGA is part of a coalition of groups and organic producers that joined the Center for Food Safety in filing a **lawsuit challenging the USDA's decision to allow hydroponic operations to be certified organic.**

Sarah Alexander, MOFGA's executive director, notes that MOFGA has been active for nearly 50 years in creating and implementing strong organic standards based on building healthy soil. “We were involved in the writing of the Organic Foods Production Act, and our members expect the certified organic label to remain true to its intent of creating healthy food from healthy soil.” The earliest organic certification programs (including MOFGA's) based their standards on this premise. However, in recent years some organic certification agencies other than MOFGA have allowed the organic certification of crops grown in hydroponic systems, which rely on fertilizer management as opposed to soil-building practices to produce crops.

MOFGA joined this lawsuit to ensure the organic standards continue to maintain healthy soil as the heart of organic production and because organic farms in Maine, particularly wild blueberry producers, are being negatively impacted by this misinterpretation of the standard. Organic cultivated blueberries, often produced hydroponically in the United States, continue to negatively impact the market for organic wild blueberries. Consumers are purchasing hydroponically produced blueberries labeled as organic without knowing they are not the same as the wild organic blueberries grown in Maine soil.

“The federal organic law unequivocally requires organic production to promote soil fertility,” Sylvia Wu, senior attorney at the Center for Food Safety and counsel for plaintiffs, says. “USDA’s decision to allow mega-hydroponic operations that do nothing with soil to be sold as ‘organic’ violates the law.”

Other plaintiffs include Swanton Berry Farm, Full Belly Farm, Durst Organic Growers, Terra Firma Farm, Jacobs Farm del Cabo, Long Wind Farm and the organization OneCert.

The National Organic Standards Board (NOSB), which advises USDA on issues related to organic standards, has called on USDA to prohibit organic certification of hydroponics, but USDA has taken no action on that recommendation to date. In January 2019 the Center for Food Safety filed a legal petition requesting that USDA undertake rulemaking to disallow hydroponics in organic production; MOFGA endorsed the petition. That petition was denied, and this lawsuit is the next step in the process to hold USDA accountable to the intent of the organic standards.

"While sustainable hydroponic food production may have an important place in our food system, it is misleading for consumers for these products to be labeled as organic in the marketplace, since they clearly don't meet the intent of the organic standards," says Alexander. (MOFGA press release, March 4, 2020; <https://www.mofga.org/Programs/Public-Policy/Public-Policy-Blog>; “Center for Food Safety Files Legal Action to Prohibit Hydroponics from Organic,” CFS press release, Jan. 16, 2020; <https://www.centerforfoodsafety.org/press-releases/5501/center-for-food-safety-files-legal-action-to-prohibit-hydroponics-from-organic>)

Climate

In February 2020 Rep. Chellie Pingree introduced the **Agriculture Resilience Act**, through which growers would use their soil to take up carbon dioxide to help slow global warming – by planting cover crops and reducing fertilizer use, for example. The goal is to make greenhouse gas emissions from agriculture net zero by 2040. The act would also quadruple federal funding for food and agriculture research, tweak management on all grazing land to maximize carbon capture, and reduce food waste by 75 percent. To qualify for crop insurance subsidies, farmers would have to show the USDA a soil health plan demonstrating their efforts to reduce erosion and sequester carbon in their soils. (“What Would It Take to Get More Farmers Fighting Climate Change?” by Tom Philpott, Mother Jones, Feb. 26, 2020; <https://www.motherjones.com/food/2020/02/what-would-it-take-for-more-farmers-to-fight-climate-change/>; “The Agriculture Resilience Act,” <https://pingree.house.gov/netzeroagriculture/>)

More unusually hot days are affecting **bumblebee occurrences** across North America and Europe. Local extinction rates are increasing, and colonization, site occupancy rates and species richness within a region are diminishing, independent of land-use change or condition. (“Climate change contributes to widespread declines among bumble bees across continents,” by Peter Soroye et al., Science, Feb. 7, 2020; <https://science.sciencemag.org/content/367/6478/685>)

Maine’s climate is changing and the rate of change is increasing, according to researchers from UMaine and Acadia National Park’s Schoodic Institute. Their reports show that Maine is getting warmer and wetter, and the weather is increasingly variable, with periods of drought,

intense storms and temperature swings. Coastal areas are warming faster than interior and northern Maine, and average minimum temperatures are increasing 60% faster than average maximum temperatures. The state's average annual temperature increased 3.2 degrees F in the past 124 years, and Maine's six warmest years on record have occurred since 1998. Our growing season is more than two weeks longer than it was in 1950, mostly due to later frosts in the fall. The Gulf of Maine has experienced a rate of warming that few marine ecosystems have encountered and is expected to continue warming at an above average rate. ("Maine is getting wetter, stormier and warmer, with coast warming fastest, researchers say," by Bill Trotter, Bangor Daily News, Feb. 13, 2020; <https://bangordailynews.com/2020/02/13/news/hancock/maine-is-getting-wetter-stormier-and-warmer-with-coast-warming-fastest-researchers-say/>; "Maine's Climate Future – 2020 Update," by Ivan Fernandez et al., The University of Maine; <https://climatechange.umaine.edu/wp-content/uploads/sites/439/2020/02/Maines-Climate-Future-2020-Update-web.pdf>)

Pesticides

According to a fall 2019 Critical Insights omnibus poll of 600 **Maine voters** (sampling error +/- 3.9% at the 95% confidence level), most **worry about the effects of pesticides on the health of their children and pets**. Released in January 2020 by Physicians for Social Responsibility, Maine Chapter (PSR Maine), the report highlights the serious risks to children's health from pesticide exposure and shows strong support among Maine voters for government action to prevent exposure and protect the health of children and pets.

Dr. Sydney Sewall, a Maine pediatrician and member of PSRM, said, "Normal childhood behaviors, like crawling and putting things in their mouths, put our kids at more risk for dangerous pesticide exposures. Because children breath more rapidly and metabolize more quickly than adults, they absorb more of everything – the good and the bad."

The American Academy of Pediatrics says that prenatal and childhood exposure to pesticides is associated with childhood cancers such as leukemia, learning disabilities and behavioral problems associated with medical conditions such as ADHD.

The PSR Maine report finds that 72% of Maine voters worry about their children's and pets' health from exposures to pesticides, and 71% say they support bans on pesticides that are applied only for cosmetic purposes. Only 9% believe that pesticides should be used without restrictions.

The use of pesticides continues to grow. In the United States alone, use of glyphosate (the active ingredient in Roundup and some other herbicides) increased by more than 250-fold in the past four decades.

Currently 29 Maine municipalities have ordinances restricting pesticide use, while others, such as Scarborough, have pesticide policies.

PSR Maine supported LD 1888, An Act To Protect Children from Toxic Chemicals, which would ban the use of herbicides within 75 feet of schools, daycare centers and playgrounds. The bill was carried over to any special session of the 129th Legislature. ("Voters express strong support

for state and local pesticide limits to protect children’s and pets’ health,” Physicians for Social Responsibility Maine press release, Feb. 5, 2020; <https://psrmaine.org/wp-content/uploads/sites/14/2020/02/Press-release-pesticide-report.pdf>)

After a number of states, including California, **banned sales of chlorpyrifos**, Corteva Agriscience, the largest U.S. producer of the insecticide, said it will stop making the product for financial reasons. Other manufacturers continue to make the product, and it is allowed on imported foods. Studies link the product to lower birth weight, lower IQ, attention deficit hyperactivity disorder and other developmental issues in children and respiratory problems in adults. Health and environmental advocates, farmworkers and Latino civil rights groups have called for a ban for years. Other companies continue to make the product, and, while the Obama administration supported banning its use on food, the Trump administration reversed the previous administration’s ban, saying data are not sufficient to ban it. Chlorpyrifos has been banned for indoor use for more than a decade. Hawaii’s ban on chlorpyrifos begins in 2022, New York by late 2021, and the European Union is phasing out the insecticide. (“Trump has kept this controversial pesticide on the market. Now its biggest manufacturer is stopping production,” by Brady Dennis and Juliet Eilperin, The Washington Post, Feb. 6, 2020; <https://www.washingtonpost.com/climate-environment/2020/02/06/trump-kept-this-controversial-pesticide-market-now-its-biggest-manufacturer-is-stopping-production/>; “Latino groups vow to fight for ban on pesticide linked to children’s health problems,” by Nicole Acevedo, NBC News, Feb. 11, 2020; <https://www.nbcnews.com/news/latino/latino-groups-vow-fight-ban-pesticide-linked-children-s-health>)

Researchers from Imperial College London have found that the part of the **bumblebee brain** called a mushroom body, which is involved in learning, **grew less when bee larvae were exposed to nectar containing neonicotinoid insecticides**. When treated larvae became adult bees, they still had smaller, functionally impaired brains and were less able to learn to associate a smell with a food reward. (“Pesticides impair baby bee brain development,” by Imperial College London, March 3, 2020; <https://phys.org/news/2020-03-pesticides-impair-baby-bee-brain.html>; “Insecticide exposure during brood or early-adult development reduces brain growth and impairs adult learning in bumblebees, Proceedings of the Royal Society B, <http://rspb.royalsocietypublishing.org/lookup/doi/10.1098/rspb.2019.2442>)

Monsanto (now owned by Bayer) secretly funded academic studies indicating “very severe impacts” on farming and the environment if its glyphosate herbicide were banned, an investigation has found. The National Farmers’ Union and others used the research to lobby successfully against a 2017 proposed ban on glyphosate in Europe. The journal *Outlooks on Pest Management*, which published the studies, says it will not retract or amend them. (“Revealed: Monsanto’s secret funding for weedkiller studies,” by Damian Carrington, March 12, 2020, The Guardian; <https://www.theguardian.com/environment/2020/mar/12/revealed-monsantos-secret-funding-for-weedkiller-studies-roundup>)

Nearly 70 percent of the fresh produce sold in the United States contains residues of potentially harmful chemical pesticides, according to the **Environmental Working Group (EWG) 2020**

Dirty Dozen list. Yet the worst produce commodity this year is not a fresh fruit or vegetable but a dried one – raisins.

The EWG's annual Shopper's Guide to Pesticides in Produce includes the Dirty Dozen and the Clean Fifteen, based on USDA test data of pesticide residues in 47 popular fruits and vegetables. Before testing, USDA washes, scrubs and peels produce as consumers would.

This year USDA tested raisins as well, so they are also included in the EWG report. For non-organic raisins, 99% of samples had residues of at least two pesticides; on average, each sample was contaminated with more than 13 pesticides, and one sample had 26 pesticides.

The neurotoxic insecticide chlorpyrifos was detected on 5% (34 out of 670) of samples of conventional raisins and 6% (five out of 86) of organic raisin samples, and bifenthrin on 77% of samples overall (and on 78% of organic raisins). The EWG says, "These pesticides [chlorpyrifos and bifenthrin] cannot be used in the production of organic crops, so it is unclear why organic raisins are contaminated with these pesticides."

These are the Dirty Dozen, starting with the worst and with rankings based on the percent of samples with pesticides and on the number and amount of pesticides on all samples and on individual samples:

1. strawberries
2. spinach
3. kale
4. nectarines
5. apples
6. grapes
7. peaches
8. cherries
9. pears
10. tomatoes
11. celery
12. potatoes

According to the EWG, more than 90% of samples of strawberries, apples, cherries, spinach, nectarines and kale tested positive for residues of two or more pesticides, and multiple samples of kale showed 18 different pesticides.

These are the Clean Fifteen:

1. avocados
2. sweet corn
3. pineapple
4. onions
5. papayas
6. frozen sweet peas
7. eggplant
8. asparagus

9. cauliflower
10. cantaloupe
11. broccoli
12. mushrooms
13. cabbage
14. honeydew melon
15. kiwi

The EWG notes that most pesticide residues the USDA finds fall within government-mandated restrictions, but that legal limits aren't always safe. The EPA tolerance levels help agency regulators determine whether farmers are applying pesticides properly – not, for example, to set levels to protect children who eat produce. A recent EWG investigation found that the EPA failed to add the Food Quality Protection Act-mandated children's health safety factor to allowable limits for almost 90 percent of the most common pesticides.

The EWG recommends that whenever possible, consumers purchase organic versions of produce on the Dirty Dozen list. When organic versions are unavailable or unaffordable, EWG advises eating fresh produce, even if conventionally grown. The organization also notes that a small amount of sweet corn, papaya and summer squash sold in the United States is produced from genetically engineered seeds and recommends buying organic varieties of these crops if you want to avoid genetically engineered produce.

The USDA does not test for glyphosate, the active ingredient in Roundup and some other herbicides and the most heavily used pesticide in the United States. Tests commissioned by EWG found high levels of glyphosate in many oat-based breakfast products marketed to children. ("EWG's 2020 Shopper's Guide to Pesticides in Produce," Environmental Working Group press release, March 25, 2020;

<https://www.ewg.org/release/out-now-ewg-s-2020-shopper-s-guide-pesticides-produce>)

Genetic Engineering

Note: Organic production does not allow the use of genetically engineered (GE or GMO – genetically modified organism) inputs.

To attempt to control **diamondback moths, genetically engineered (GE)** male moths were released in a field trial in New York state. Oxitec, a British biotech company, says that an engineered gene switches on only in female offspring, causing them to die soon after hatching. Males pass the gene on to offspring. Since half of the offspring (the females) die in each generation, Oxitec expects that the lethal gene will disappear within a few generations, so new GE males would have to be released again. Diamondback moth larvae eat the leaves of brassica plants. They have become resistant to many pesticides. ("Male moths genetically modified to kill females released in the wild," by Michael LePage, New Scientist, Jan. 29, 2020;

<https://www.newscientist.com/article/2231693-male-moths-genetically-modified-to-kill-females-released-in-the-wild/>)

The Washington state Supreme Court reinstated a record **\$18 million judgment and penalty against the Grocery Manufacturers Association (GMA)** for circumventing campaign finance

laws by intentionally shielding names of food companies contributing millions to defeat the 2013 Washington ballot Initiative 522, which would have required **labeling of genetically engineered foods** and seeds sold in Washington stores. Major food companies, including Pepsico, Nestle USA, Coca Cola and General Mills, funneled \$14 million into the GMA's "Defense of Brands Strategic Account." The GMA used \$11 million of that in its "No on 522" campaign, leading to a narrow defeat of the initiative. ("Wash. state Supreme Court reinstates \$18 million penalty against Grocery Manufacturers Association," By Joel Connelly, Seattle Post-Intelligencer, April 16, 2020; <https://www.seattlepi.com/local/politics/article/washington-ag-ferguson-wins-against-grocers-15205723.php?ct=t>)

Fall 2020

The Good News

Through its new Conservation Grant Program, **Maine Harvest Federal Credit Union will pay farmers' closing costs up to \$3,500** on farmland financed by the credit union. As part of qualifying for the grant, recipients agree to have a conservation assessment performed on their land by a MOFGA representative using USDA software. The assessment results in suggestions for possible conservation improvements that are not mandatory. The program is financed through the USDA Natural Resources Conservation Service and administered by MOFGA and Maine Harvest FCU. FMI: Lending@MaineHarvestFCU.coop

A survey of almost 8,000 adults living in England between 2009 and 2016 found that those who could **access a private outdoor space** – whether for active gardening or just sitting and relaxing – reported **better general health and psychological well-being and greater physical activity** than those without such access. They were also more likely to visit parks and natural areas away from their homes frequently. People who gardened had the highest level of health and well-being. The survey results were independent of age, gender, marital status, home ownership, dog ownership and socioeconomic status. ("Having your own garden — and spending time in it — improves health and well-being, study suggests," By Susan Perry, MinnPost, May 7, 2020; <https://www.minnpost.com/second-opinion/2020/05/having-your-own-garden-and-spending-time-in-it-improves-health-and-well-being-study-suggests/>; "Spending time in the garden is positively associated with health and wellbeing: Results from a national survey in England, by Siân Bell et al., Landscape and Urban Planning, August 2020; <https://www.sciencedirect.com/science/article/pii/S0169204619308163>)

Tom Cannon, who raises commodity crops in Oklahoma, had his income disrupted due to the trade wars with China and then to COVID-19. Seeing long lines at local food outlets, he decided to grow 6 acres of produce for the local market. He plants in a "**chaos garden**," according to Civil Eats writer Daphne Miller – a mix of 50 or more edible crops growing together. He planned to donate some of the resultant produce, sell some and then let cattle graze the remains. Cannon got the idea from Oklahoma farmer Jimmy Emmons, who has sown squash, beans and brassicas along with a couple of acres of his cover crop and has been impressed with the yield, which he used in his own home and donated to local groups that were willing to harvest it. Chaos gardens, writes Miller, also crowd out weeds, encourage beneficial insects and help retain soil moisture through shading. Keith Berns of Green Cover Seed in Bladen, Nebraska, says that such

interplantings date back to Indigenous farmers in Mesoamerica. He sells “The Milpa” mix, meaning “cultivated field” in the Nahuatl language of Mexico (see <https://greencoverseed.com/product/milpa-garden-warm-season/>), and he’d like to see all U.S. commodity farmers plant 1% of their land to a Milpa garden. (“Most Farmers in the Great Plains Don’t Grow Fruits and Vegetables. The Pandemic is Changing That,” by Daphne Miller, Civil Eats, May 12, 2020; <https://civileats.com/2020/05/12/most-farmers-in-the-great-plains-dont-grow-fruits-and-vegetables-the-pandemic-is-changing-that/>)

Intercropping can significantly increase yield, not only of low-input agriculture but also of intensive agriculture, and it can reduce fertilizer use say scientists at Wageningen University & Research (WUR) and their colleagues from China after their meta-analysis of 226 studies. Intercropping appears to yield 16 to 29% more per unit area than monocultures in intensive agriculture under the same circumstances while using 19 to 36% less fertilizer when counted per unit product. The increase is most significant with “relay strip intercropping,” which combines crops with different growing seasons in strips that are 1 to 1.5 meters wide, with several rows of a crop species in each strip.

Wheat, barley and broad beans, for example, grow fast in spring, while corn – which is sown later – has its peak growth later in summer. Through these different growth periods, the available sunlight, water and nutrients on a field are used more effectively throughout the year than when monoculture is applied. An added advantage of intercropping is that crops require less irrigation and pesticides.

Hurdles to adopting intercropping include the introduction of new and lighter agricultural machinery; acceptance by farmers; and figuring out the most suitable species combinations, spatial configuration and management for local growing conditions. (“Intercropping increases agricultural yield while reducing the use of fertilisers,” Wageningen University & Research, June 11, 2020; <https://www.wur.nl/en/news-wur/Show/Intercropping-increases-agricultural-yield-while-reducing-the-use-of-fertilisers.htm>; “Syndromes of production in intercropping impact yield gains,” by Chunjie Li et al., Nature, June 1, 2020; <https://www.nature.com/articles/s41477-020-0680-9>)

Planting woody species alongside crops could double the number of insect pollinators helping farmers produce food, according to a study led by the University of Reading. The university says this is the first observed evidence that **agroforestry increases wild insect pollinator numbers and pollination**. The team’s six agroforestry sites (fields containing a mix of crops and woody plants) had twice as many solitary bees and hoverflies than the six monocultured sites, and arable agroforestry sites had 2.4 times more bumblebees than sites with just one kind of crop. Solitary bee species richness also increased tenfold at some sites. These increases in wild insect pollinators resulted in more pollination, as potted flowers left in the study fields had up to 4.5 times more seeds. Species richness of solitary bees was also higher in some of the agroforestry systems. (“Agroforestry is 'win win' for bees and crops, study shows,” University of Reading, June 16, 2020; https://www.eurekalert.org/pub_releases/2020-06/uor-ai061620.php; “Temperate agroforestry systems provide greater pollination service than monoculture,” by AlexaVarah et al.,

Agriculture, Ecosystems & Environment;

<https://www.sciencedirect.com/science/article/abs/pii/S0167880920302164?via%3Dihub>)

Agroecologists from the University of Göttingen found that sowing strips of wildflowers along conventional cereal fields **encouraged bumblebees**, solitary wild bees and hoverflies, as did the increased density of flowers in organic farming. (“Wild bees depend on the landscape structure,” Science Daily, June 30, 2020;

<https://www.sciencedaily.com/releases/2020/06/200630125142.htm>; “Agri-environment schemes enhance pollinator richness and abundance but bumblebee reproduction depends on field size,” by Costanza Geppert et al., Journal of Applied Ecology, June 29, 2020; <https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/1365-2664.13682>)

The Organic Trade Association reports that **organic food sales in 2019 surpassed \$50 billion**. That includes \$18 billion for organic produce – a nearly 5% jump from 2018. Organic produce now accounts for 15% of the U.S. fruit and vegetable market. (“Organic food sales top \$50B in 2019, up 4.6%,” by Ashley Nickle, The Packer, June 10, 2020;

<https://www.thepacker.com/article/organic-food-sales-top-50b-2019-46>)

Diet

A USDA Economic Research Service (ERS) study found that if Americans were to adopt a diet in keeping with the Federal Dietary Guidelines for Americans, this **healthier diet would**, under baseline production and marketing practices, **decrease use of agricultural land, fossil fuels and forest products**. Greenhouse gas emissions would remain essentially unchanged, and more freshwater would be withdrawn from rivers, lakes and aquifers. Under the Healthy American diet, consumers would obtain more of their calories from vegetables, fruits, dairy products and legumes, nuts and seeds. They would consume fewer grain products, meats and poultry, sweets, soft drinks and fats and oils. (“A Shift to Healthier Diets Likely To Affect Use of Natural Resources,” by Patrick Canning and Rosanna Mentzer Morrison, USDA Economic Research Service, May 7, 2020; <https://www.ers.usda.gov/amber-waves/2020/may/a-shift-to-healthier-diets-likely-to-affect-use-of-natural-resources/>)

Fiddleheads

A four-year study suggests that **harvesting up to 50% of the ostrich fern** (*Matteuccia struthiopteris*) **fiddleheads** from a given crown in a single picking, with no subsequent harvest in the same year, is more sustainable than harvesting all of the fiddleheads from a given crown in a single picking; the latter could weaken or eradicate ostrich fern colonies. (“New research warns against overharvesting fiddleheads,” by Sam Schipani, Bangor Daily News, June 29, 2020; <https://bangordailynews.com/2020/06/29/homestead/new-research-warns-against-overharvesting-fiddleheads/>; “Effects of Long-Term Fiddlehead Harvest on Ostrich Fern, *Matteuccia struthiopteris*,” by David Fuller, University of Maine Cooperative Extension, Journal of the National Association of County Agricultural Agents, June 2020; <https://www.nacaa.com/journal/index.php?jid=772>)

Antibiotics

Antibiotic sales for use in food-producing animals continue to exceed sales of those same drugs for human medicine by a large margin, according to the Natural Resources Defense Council and based on data from 2017. Also, those sales rose again in 2018, suggesting that previous declines may have been temporary. The NRDC says that while roughly 65 percent of medically important antibiotics currently sold in the United States are for food animal production, cattle and swine production together consume about 44% more of these drugs than does human medicine. Most of the time, adds the NRDC, these antibiotics are fed to farm animals whether or not they are sick to compensate for risks created by the industrial conditions under which those animals raised. This practice fuels the proliferation and spread of antibiotic resistance. (“New Data: Animal vs. Human Antibiotic Use Remains Lopsided,” by David Wallinga, M.D., and Avinash Kar, Natural Resources Defense Council, June 15, 2020; <https://www.nrdc.org/experts/david-wallinga-md/most-human-antibiotics-still-going-us-meat-production>; “Better Burgers: Why It’s High Time the U.S. Beef Industry Kicked Its Antibiotics Habit,” by David Wallinga, Ph.D., Natural Resources Defense Council, June 2020; <https://www.nrdc.org/sites/default/files/better-burgers-antibiotics-ib.pdf>)

Pesticides

Researchers at New York University analyzed levels of toxic chemicals in the blood of 30 people, ages 3 to 21, who were newly diagnosed with celiac disease and compared them with those from 60 other young people of similar age, gender and race. Children and young adults with elevated blood levels of **toxic chemicals found in pesticides, nonstick cookware and fire retardants** were twice as likely to be newly diagnosed with **celiac disease** as those without high levels.

People with the immune disorder have severe gut reactions, including diarrhea and bloating, to foods containing gluten, a protein found in wheat, rye and barley. Other symptoms include fatigue and anemia. The treatment is a gluten-free diet. The study also found that females make up the majority of celiac cases, and higher-than-normal pesticide exposure meant they were at least eight times more likely to become gluten intolerant. Young females with elevated levels of nonstick chemicals, known as perfluoroalkyls, or PFAs, were five to nine times more likely to have celiac disease. Young males, however, were twice as likely to be diagnosed with the disease if they had elevated blood levels of the fire-retardant chemicals polybrominated diphenyl ethers. Also, people with genes HLA-DQ2 and HLA-DQ8 are at greater risk of being diagnosed with celiac disease. The researchers say that the toxic chemicals studied disrupt animal and human hormone levels, which are key to controlling sexual development and immune defenses against infection. (“Celiac disease linked to common chemical pollutants,” by NYU Langone Health/NYU School of Medicine, EurekaAlert, May 12, 2020; https://www.eurekaalert.org/pub_releases/2020-05/nlh-cdl050620.php)

Independent laboratory tests commissioned by the Environmental Working Group found **glyphosate**, the herbicide linked to cancer and the active ingredient in Roundup herbicide, in more than 80 percent of non-organic **hummus and chickpeas** samples and at far lower levels in several organic versions. The International Agency for Research on Cancer has classified glyphosate a probable human carcinogen, and the state of California lists it as a chemical known

to cause cancer. One-third of the 27 conventional hummus samples exceeded EWG's health-based benchmark of 160 parts per billion for daily consumption, based on a 60-gram serving of hummus (about 4 tablespoons). Of the 12 samples of organic hummus and six of organic chickpeas, all but two contained detectable concentrations of glyphosate but at much lower levels than in conventional counterparts – although one dry chickpea sample had the highest glyphosate concentration of all samples tested in the study. Detections of glyphosate on the organic samples may be due to pesticide drift from conventional crop fields or contamination at processing and packaging facilities. “Organic foods, including organic hummus and chickpeas, remain a better choice for consumers,” says EWG toxicologist Alexis M. Temkin, Ph.D. (“High Levels of Bayer’s Weedkiller Found in Hummus, Chickpeas,” Environmental Working Group, July 14, 2020; <https://www.ewg.org/release/high-levels-bayer-s-weedkiller-found-hummus-chickpeas>)

German chemical and pharmaceutical producer Bayer, which bought Monsanto in 2018, will pay more than \$10 billion to settle some 95,000 claims that **Monsanto’s Roundup herbicide** caused a cancer called **non-Hodgkin’s lymphoma**. The settlement includes \$1.25 billion for potential future claims from Roundup users who may develop the cancer. Part of that money will fund an independent expert panel to determine whether glyphosate, the active ingredient in Roundup, causes cancer and if so, at what minimum dosage or exposure level. This would shift the question of carcinogenicity of the weedkiller from a jury to a hand-picked panel of scientists. Some plaintiffs’ attorneys say this move deprives plaintiffs of their constitutional right to a jury trial, reports Carey Gillam.

Meanwhile, Bayer continues to sell the weedkiller without added warning labels about its safety and while maintaining that it is safe to use. At least 30,000 more claims are pending from plaintiffs who did not join the settlement, which includes no admission of liability or wrongdoing. Bayer is also spending up to \$400 million to settle claims that sprays of Monsanto’s dicamba herbicide can drift and damage other crops. And the company is petitioning USDA for commercial use of a new genetically engineered corn, MON 87429, that can grow when fields are sprayed with five herbicides: glyphosate, dicamba, 2,4-D, quizalofop and glufosinate. 2,4-D has been linked to non-Hodgkin’s lymphoma, thyroid disorders and other health risks. (“Roundup Maker to Pay \$10 Billion to Settle Cancer Suits,” by Patricia Cohen, The New York Times, June 24, 2020;

<https://www.nytimes.com/2020/06/24/business/roundup-settlement-lawsuits.html>; “Challenge eyed to class action plan for Bayer Roundup settlement,” by Carey Gillam, U.S. Right to Know, June 26, 2020 – By Carey Gillam, U.S. Right to Know;

<https://usrtk.org/uncategorized/challenge-eyed-to-class-action-plan-for-bayer-roundup-settlement/>; “Court frowns on Bayer’s proposed Roundup class-action settlement,” by Carey Gillam, U.S. Right to Know, July 6, 2020;

<https://usrtk.org/monsanto-roundup-trial-tacker/court-frowns-on-bayers-proposed-roundup-class-action-settlement/>; “Bayer Forges Ahead with New Crops Resistant to 5 Herbicides,” by Lisa Held, Civil Eats, July 1, 2020;

<https://civileats.com/2020/07/01/bayer-forges-ahead-with-new-crops-resistant-to-5-herbicides-glyphosate-dicamba-2-4-d-glufosinate-quizalofop/>)