Pesticides and You

News from Beyond Pesticides: Protecting Health and the Environment with Science, Policy & Action

Volume 31, Number 4
Winter 2011-2012

Preserving Biodiversity
As If Life Depends on It

Consumer Choice and the Spread of Genetically Engineered Food

Groups to EPA: Ban Bee-Killing Pesticide
Agency begins process of reviewing the neonicotinoid pesticide clothianidin

Preserving Biodiversity Is the Key to Sustainability

Our focus on biodiversity in this issue seeks to focus local, state, and national strategies on decisions that sustain life. The importance of biodiversity has been lost on the policy and decision makers who address specific environmental and health problems, ignoring the context of these problems. Can we really protect any species without preventing the conditions that lead to their demise, including our own? Because the answer is certainly "no," certified organic farmers are, by law, required to develop an organic systems plan with a focus on biodiversity.

Biodiversity as if life depends on it

Biodiversity is the web of life, including the complex array of organisms that live in the environment and their interactions and interdependencies. The functionality of biodiversity has deep significance to nurturing and protecting the many individual species in the environment as part of a greater whole.

As a society, we have understood this to some degree. The *National Environmental Policy Act* (NEPA), which became law in 1970, lays out an approach to major federal actions that instructs us to look at the full impacts of a development project, a broadscale pesticide use, or the introduction of a genetically modified organism –evaluating their impact on biodiversity and determining the essentiality of the proposed plan by considering the full range of alternative approaches, including protecting the status quo. However, in 1993, the White House's Council on Environmental Quality (CEQ) said of NEPA, "Although federal agencies have routinely evaluated the effects of their proposed actions on certain specific resources (primarily wetlands and endangered species) in their NEPA analyses, they have not usually included the full range of effects or the appropriate scale required for adequate consideration of biodiversity." This is still the case today.

A focus on limited contaminant effects

We have been passing laws that focus on contaminants that have given license to poisoning and contamination without asking why it is necessary to do so. Virtually every environmental law, while affording government agencies the authority to protect biodiversity, instead have been focused on developing what the chemical industry has called "so-what" levels of chemical exposure and residues, knowing that those analyses are deficient in their comprehensiveness and evaluation of key health and environmental endpoints.

But we are not just writing to critique an historical and continuing problem, but rather to again highlight, from a critical angle, the extraordinary model for protecting biodiversity that we have as a nation in our organic law. It is a law, the *Organic Foods Production Act*, that is focused on food production, but lays out an approach to saving biodiversity and the earth. The law is based on a core value of protecting the systems that support life. This must be a basic tenet in community and personal decisions, including the decision of our local institutions and our daily decisions in the marketplace.

Biodiversity actually supports human existence, but not if exploited without concern for its health. For example, biodiversity itself keeps unwanted insects and plants (so-called invasive species) in check. It is actually a free service that organic farmers have incorporated into their thinking on how they treat their soil, attract natural predators, and support a balanced ecosystem. Organic farmers have consistently pointed out that nature is their pest control, healthy soils supporting healthy plants that are not vulnerable to disease and infestation. The concept of "pest" is absent from the system. I was at a meeting of organic farmers and consumers recently and, after listening to a researcher from a respected land grant university discuss research on the efficacy of natural pest control products, a farmer said, "I don't have any of these pest problems since I switched by fertility program to a manure-based compost program." To the researcher's credit, though in a separate research project, he is also studying the effect of nurturing the soil food web and all the microorganisms in the soil. Synthetic fertilizers are harmful to the balance of microbial activity in the soil, as is discussed in this issue.

Expanding the application of the organic model

This understanding of the relationship between healthy soil and healthy plants is not unique to agriculture, which is a critical point. Turf management, which uses more fertilizer and pesticides on a per acreage basis than agriculture, must turn to the same principles that organic farmers embrace. In nurturing the soil and the mechanisms that contribute to plant health, there is no need for toxic chemicals in our parks, schoolyards, home yards, and rights-of-way.

Our goal is to bring public attention to biodiversity to a higher level, with an understanding that pest outbreaks are a function of our destructive exploitation of nature, supported by decisions that allow adverse impact up to a threshold of harm not completely understood and defined. So, we see honey bees disappearing while cause and effect is not fully established, as we dump millions of pounds of unnecessary, systemic neonicotinoid pesticides with known harmful effects on farms, lawns, and gardens, despite regulatory deficiencies. What sets organic apart in environmental law is its embracing of a precautionary approach.

The biodiversity article in this issue is a tool to be used in our communities to bring a higher consciousness to the urgent need to transition to organic approaches in the management of our land and buildings and in our state and federal environmental laws.

Jay Feldman is executive director of Beyond Pesticides.

Contents

page 9

Pesticides and You © 2012 (ISSN 0896-7253) is published 4 times a year by Beyond Pesticides. Beyond Pesticides, founded in 1981 as the National Coalition Against the Misuse of Pesticides (NCAMP), is a voice for health and the environment, promoting protection from pesticides and safe alternatives; donations are tax-deductible.

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Printed on 100% post consumer waste with soy inks.

Congratulations on 30 Years – Happy Anniversary!

Hi Jay and Beyond Pesticides Staff and Supporters,

I was so privileged to have participated and then be on the Board from 1984-1996. I treasure my continuing membership and always love the news of your dedication and successes. My first (National Coalition Against the Misuse of Pesticides - NCAMP) conference was in 1984 in Maryland and then I got into many alternatives to toxics especially pesticides projects. I am so blessed to have the NCAMP- now Beyond Pesticides experiences in my life. I enjoy my trove of bumper stickers, T-shirts, publications and the raps and songs, as well as the memories of the great conferences and Board Meetings.

Again, Happy Anniversary!

Sharon Jacobsen
Former Beyond Pesticides Board Member

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Dear Beyond Pesticides,

I read Jay Feldman's interview from the Safelawns blog that you sent out and was really inspired reading about the journey that he took which grew into Beyond Pesticides. After being poisoned over 20 years ago by a termite application of Dursban (chlorpyrifos) I was so happy to find the support, information, and advocacy that Beyond Pesticides provides. I've attended two National Pesticide Forums (one with my 15 year old son) that really exceeded my expectations, and look forward to future forums. I truly appreciate all of the help you've given me and wanted to thank you for all you do. I'm currently a produce manager for a market on an organic farm about 25 miles northwest of Philadelphia and have been talking to other staff members and farmers about your organization and the resources you provide.

Again, thank you!

Janice DeNito Branagh
Beyond Pesticides member

Low Food Prices

In response to the article "The Real Story on the Affordability of Organic Food"

Dear BP,

Thanks for reviewing the literature on the important subject of the overall costs of conventional vs. organic nutrition. For anyone hesitating about improving what they ingest, perhaps because of high price, they should at a minimum buy organic dairy products--what carries a lot of pesticides, and the most persistent & bioaccumulating ones. Also, eating as a vegetarian uses all the cost-saving strategies you listed, and is strongly associated with many chronic disease reductions, even after controlling for confounding variables.

Sincerely,
Tony Tweedale, M.S.
R.I.S.K. (Rebutting Industry Science with Knowledge) Consultancy

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Dear Beyond Pesticides,

I really enjoyed the great articles in Pesticides and You on "The Real Story on Affordability of Organic Food."

Today I am putting a copy of a book in the mail to you as a follow up. I had seen something about it last year but didn't actually track it down until the holidays. It was written by Linda Watson, and is full of strategies and recipes for eating organic on $5/day. Really! It focuses on the nuts and bolts (well, beans and veggies) and is a good counterpoint to your emphasis on the policy questions.

Ms. Watson has written before about eating on food stamp budgets and decided to see if she could do it organically.

Take a look and see if you think it is worth a mention as a follow up to Stephanie's helpful hints on Eating Organic on a Budget. Ms. Watson had a little more space to get specific!

Together all of this knocks the socks off the 'organic is elitist' arguments.

All the best,

Allen Spalt
Former Beyond Pesticides Board Member

P.S.: I was surprised to learn that aminopyralid is a botanical, used against mosquitoes, and has no known environmental effects! Please alert the editor...

Thanks for catching this mistake! We have corrected this in the online version of Pesticides and You which you can find at www.beyondpesticides.org/infoservices/pesticidesandyou. Correction: The ChemicalWatch Stats box has been replaced with:

CAS Registry Number: 150114-71-9
Chemical Class: pyridine carboxylic acid herbicide
Use: Non-cropland areas: forests, right-of-ways, rangelands
Toxicity rating: Toxic
Signal Words: Caution
Health Effects: Severe eye irritation, possible developmental effects

Get Printed!

Beyond Pesticides always welcomes your questions, comments or concerns! Have something you'd like to share or ask us? We'd like to hear about it! If we think something might be particularly useful for others, we will print your comments in this section. Mail will be edited for length and clarity, and unless you specify otherwise, your contact information will remain anonymous.

There are many ways you can contact us. Join other members and activists in discussions on our facebook page facebook.com/beyondpesticides or follow us on twitter twitter.com/bpncamp! And as always, you can send questions and comments to: 701 E Street SE, Washington, DC 20003, or info@beyondpesticides.org

From the Web

Beyond Pesticides' Daily News Blog features a post each day on the health and environmental hazards of pesticides, pesticide regulation and policy, pesticide alternatives and cutting-edge science, www.beyondpesticides.org/dailynewsblog. Want to get in on the conversation? Become a "fan" by liking us on Facebook! www.facebook.org/beyondpesticides.

Demineralization of Food (from Jessica, via Facebook)

The amount of calcium in a collard leaf has gone down over 80% since 1963 because of the depletion of minerals in our soil (and lack of replenishment). This is according to the USDA. Civilization cannot survive the demineralization of food. Pesticides and improper agricultural processes that do not re-mineralize the soil will cause disease in human beings. Organic does not guarantee that the mineral content of the food will be higher. The mineralization of the soil is the key.

From Second Nature Garden Design, via Facebook

Choosing organic is always best. Not only is organically-tended soil much less depleted of minerals, it is full of microbes, arthropods, fungi (essential for mineralization). Chemical fertilizers kill soil life and wreak havoc downstream.

Inspections Find 40% of Farmers Planting Bt Corn Fail to Manage for Resistance

Excerpt from Beyond Pesticides blog post (2/16/2011): Newly released data indicates that more than 40% of American farmers who planted certain varieties of genetically engineered (GE) corn in 2011 failed inspections to verify compliance with mandatory management practices to prevent insect resistance.

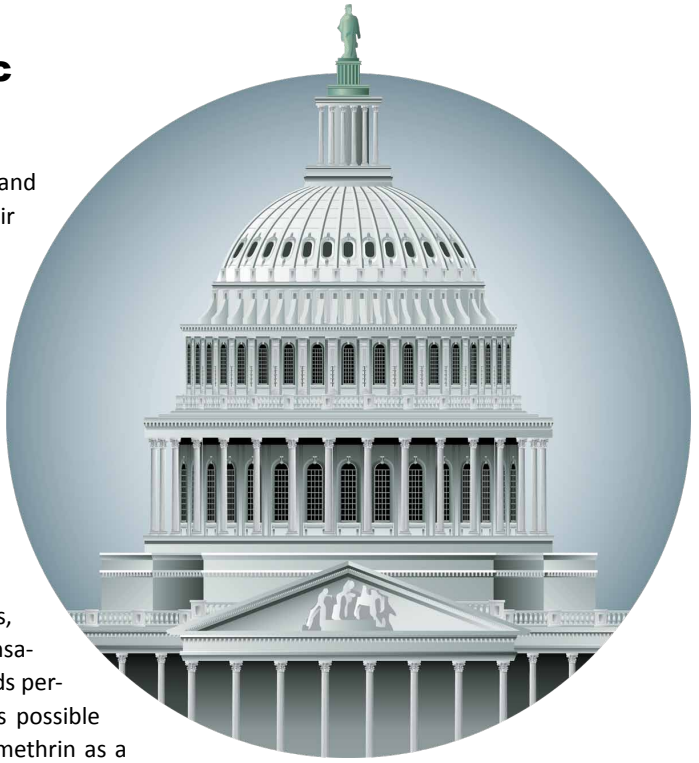
From Marla Scripter, via Facebook

Insanity...the farmers are blamed for failing to invest their resources to overcome the flawed science of genetically modified organism (GMO) production. Monsanto is criminal...no other excuses!

From Beyond Pesticides via Facebook

We all need to resist the false promises of genetically engineered crops. Instead of increasing yields, genetic engineering has so far only increased pesticide use and threatens organic farming with contamination. We need to support the farmers who do NOT use GMOs, and buy organic food whenever possible. There is also a campaign to label GMOs as a means to identify the products in the marketplace and drive down consumer demand. For more info, see: http://www.beyondpesticides.org/gmos/labelit/index.htm

EPA Proposes Expansion of Neurotoxic Pyrethroid Uses



Beyond Pesticides, along with Center for Environmental Health, Farmworker Justice, Healthy Schools Network, The Endocrine Disruption Exchange and over 100 national, state, and local grassroots organizations, told the Environmental Protection Agency (EPA) to protect public health and eliminate unnecessary pyrethroid pesticides. The group criticized EPA's cumulative risk assessment, which concluded that pyrethroids "do not pose risk concerns for children or adults," ignoring a wealth of peer reviewed studies linking this class of chemicals to cancer, respiratory, and reproductive problems. EPA went as far as to state that it will consider additional uses, opening the flood gates and endangering public health. EPA is mandated to complete cumulative risk assessments for pesticides, like pyrethroids, that have the same mechanism of toxicity. However, as the commenters point out, "EPA's evaluation ignores various routes of exposure, underestimating the risks. The agency also chose to reduce the *Food Quality Protection Act* (FQPA) safety factor from ten to three times for children less than six years of age and eliminate it completely for children over six. The FQPA safety factor is intended to protect infants and children to account for their special vulnerability to pesticides. Given that children are particularly sensitive to certain pyrethroids, this reduction is egregious."

Pyrethroids are used for indoor pest control, mosquito management, in agriculture, and on pets. Exposure has been reported to lead to headaches, dizziness, nausea, irritation, and skin sensations. EPA classifies pyrethroids permethrin and cypermethrin as possible human carcinogens, and permethrin as a suspected hormone disruptor. Pyrethroids have also been linked to respiratory problems and asthma attacks. Many are persistent and the Centers for Disease Control and Prevention (CDC) reports that pyrethroids contaminate the bodies of more than half of all U.S. residents. There are established methods for managing homes, schools, and other buildings without toxic pesticides, including exclusion techniques, sanitation and maintenance practices, as well as mechanical and least-toxic, non-volatile pesticides. Organic agriculture, which now produces yields similar to or greater than chemical-intensive farming, has proven that these chemicals are not necessary on the farm. It is more effective to fight mosquitoes with natural larvicides than it is to fog with pyrethroids. The data supports the conclusion that pyrethroid use is hazardous and unnecessary.

Groups Petition To Ban GE Salmon As an Unsafe Food Additive

Consumer groups submitted a formal petition in February 2012 asking the Food and Drug Administration (FDA) to classify and evaluate AquaBounty's "AquAdvantage" genetically engineered (GE) salmon and all of its components as a food additive. Currently, FDA's review process classifies the GE salmon as a new animal drug, which the petitioners find insufficient to protect public health. The groups, Center for Food Safety, Food & Water Watch, and Consumers Union say that the agency is required by law to review the GE salmon under a more rigorous process for food additives. The salmon would be the first GE animal meant for human consumption. "The data FDA has on GE salmon, which were supplied by Aquabounty, are incomplete, biased, and cannot be relied upon to show that the GE salmon is safe to consume," say the petitioners. "Aquabounty's own study shows that GE salmon may contain increased levels of IGF-1, a hormone that helps accelerate the growth of the transgenic fish and is linked to breast, colon, prostate, and lung cancer." The potential risks of GE salmon, the groups warn, are no different from food additives FDA has banned in the past, including carcinogens.

In order to create the transgenic fish, Aquabounty genetically engineered an Atlantic salmon by inserting a Chinook salmon growth-hormone gene, as well as a gene sequence from an ocean pout. The company claims this engineering causes the GE salmon to undergo an increase in growth rate that allows the fish to reach market size in half the normal time.

Judge Dismisses Case Against Monsanto, Farmers To Appeal

A U.S. District Court Judge on February 24 dismissed the case of *Organic Seed Growers and Trade Association (OSGATA) et al v. Monsanto*, but organic farmers, seed growers, and agricultural organizations vowed to fight on. The plaintiffs filed this lawsuit to shield farmers from being sued for patent infringement by Monsanto should they become contaminated by drift of the company's genetically engineered (GE) seed, a legal strategy Monsanto has been pursuing for years. The case challenges Monsanto's patents on genetically modified seed. The suit was originally filed on behalf of 60 plaintiffs on March 29, 2011, with 23 new plaintiffs, including Beyond Pesticides joining on June 1. The 83 plaintiffs involved in the suit represent a combined membership in excess of 300,000 people. Daniel Ravicher, lead attorney for the plaintiffs represented in the lawsuit, said, "While I have great respect for Judge Buchwald, her decision to deny farmers the right to seek legal protection from one of the world's foremost patent bullies is gravely disappointing…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." Mr. Ravicher said the judge failed to address the purpose of the *Declaratory Judgment Act* and mischaracterized the Supreme Court precedent that supports the farmers' standing. The plaintiffs will appeal.

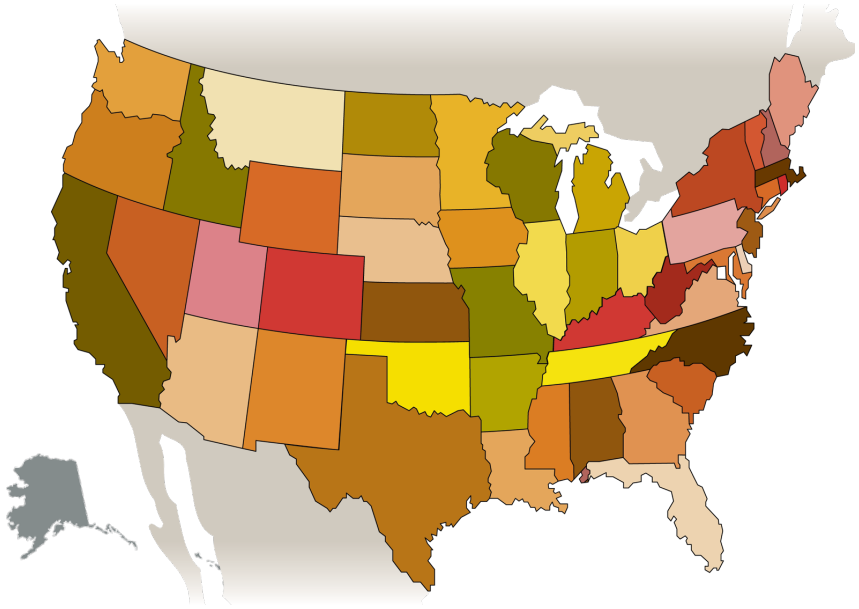
Monsanto's history of aggressive investigations and lawsuits brought against farmers in America has been a source of concern for organic and non-GE agricultural producers since Monsanto's first lawsuit brought against a farmer in the mid-1990s. Since then, 144 farmers have had lawsuits filed against them by Monsanto for alleged violations of their patented seed technology. Monsanto has sued more than 700 additional farmers who have settled out-of-court, rather than face Monsanto's belligerent, and well-financed, litigious actions. Seed contamination and pollen drift from genetically engineered crops often migrate to neighboring fields. If Monsanto's seed technology is found on a farmer's land without a contract, the farmer can be found liable for patent infringement.

With Industry Objecting, EPA Sets Dioxin Limits for Acute Effects

For the first time since its initial evaluation almost 30 years ago, the U.S. Environmental Protection Agency (EPA) has revised, despite objections from the chemical industry, its dioxin exposure assessment for acute human health risks –setting an "acceptable" level of 0.7 picograms per kilogram per day. Environmentalists said EPA's estimated average exposure, currently at 0.5–3 picograms per kilogram per day, puts a portion of the population above the EPA danger threshold. The agency has not completed its assessment for chronic health effects, but says it will finalize the guidelines "as expeditiously as possible," although it gave no new deadline. Dioxins, linked to cancer and endocrine disruption, are contaminants in numerous pesticides, including the widely used herbicide 2,4-D, the wood preservative pentachlorophenol, and the disinfectant triclosan.

Work on updating the health assessment began in 1991 and is partially completed with the February release of the *Final Non-Cancer Dioxin Science Assessment*. EPA characterized the findings as showing that "generally, over a person's lifetime, current exposure to dioxins does not pose a significant health risk." The reference dose does not contribute to enforceable standards, but is crucial for setting many guidelines, including cleanup of Superfund and other hazardous waste sites, industrial emission controls, drinking water standards and dietary guidelines for fish. The new EPA reference dose is lower than the World Health Organization's daily limit of roughly 2.3 picograms.

Arnold Schecter, PhD, of the University of Texas School of Public Health, an experienced dioxins researcher, said EPA's statement about people in general not being at risk could be misleading. "I am puzzled regarding the statement about the health risk over a lifetime. As phrased it seems correct, for the average person, but we vary in sensitivity and time of exposure and there are some instances of higher exposure. Why not mention these as well?," Dr. Schecter commented. According to the Center for Health, Environment & Justice, which has worked on dioxin issues for decades, the average background exposure of the public in the U.S. to dioxin in food is very close to or above the EPA new reference dose.



Legislators Consider Repealing Pesticide Ban on CT School Grounds

In February 2012, the Connecticut General Assembly's Planning and Development Committee held a hearing to consider a bill that would repeal the state's ban on toxic pesticide use on school grounds by allowing their use as part of a weak "integrated pest management" (IPM) system. If you live in Connecticut, you can ask your state legislators to oppose this bill and preserve the health of school children (Take Action: http://bit.ly/Protect-CT-Ban).

Current state law, adopted in 2005 and amended in 2007 and 2009 to cover facilities from day care centers up through grade 8, prohibits pesticides on playgrounds and playing fields at schools (except under emergency situations), allowing instead for non-toxic pest and fertility management. The bill currently under consideration, HB 5155, would repeal the ban, making pesticide use allowable as part of an IPM program defined by various bureaucratic offices.

Although IPM can be a helpful tool in the transition from a pesticide-intensive to a non-toxic management system, it makes no sense to weaken an already strong standard aimed at protecting the health of children. The effort to adopt such a system through passage of HB 5155 is being led by public works officials and groundskeepers, with support from the lawn chemical industry. They believe highly toxic pesticides are needed to make lawns and athletic fields playable, despite the success of proven organic land management practices that are effective, sustainable, and protective of children's health in Connecticut and across the country. Given the perspective of the legislation's advocates, it can be presumed that the adoption of the new bill will result in a serious increase in the application of pesticides around schools.

Organic Farming Improves Pollination for Strawberries

A new study finds organic farming practices in strawberry production result in much greater pollination success than chemical-intensive methods. Researchers also determined that this effect was apparent within just two to four years of conversion to organic, suggesting that there is not a significant lag time before pollination benefits are seen after adopting organic farming practices. The study, *Organic Farming Improves Pollination Success in Strawberries*, adds to a growing body of research that highlights the necessity of switching to organic agriculture. Pollination success not only benefits the crops, but the entire ecosystem as well. According to researchers, butterfly and plant species richness has been found to increase rapidly after transition to organic farming. This suggests that pollinator richness may respond rapidly too.

Approximately 90 percent of all flowering plants require pollinators to survive. In agriculture, nearly a third of pollination is accomplished by honey bees. Threats to pollinators, especially commercial honey bees, concern the entire food system and economy. With one in three bites of food reliant on pollination, beekeepers and environmental organizations are focusing on this wide-scale problem. The shift to organic practices is essential for our health and the environment.

For more information on pesticides, honey bees and other pollinators, including tips on what you can do, see Beyond Pesticides Protecting Pollinators program page: www.beyondpesticides.org/pollinators.

Research Shows Structural IPM Reduces Pests and Pesticides

Adding to a growing body of work, a new study recently published in the *Journal of Integrated Pest Management* (JIPM) shows that from 2003 to 2008 the use of insecticide active ingredients was reduced by about 90% in University of Florida (UF) housing buildings after an Integrated Pest Management (IPM) program was implemented. The results of the study show that pest pressure was effectively managed throughout this period as well. These findings demonstrate that indoor IPM can be an effective management tool for institutional pest problems, confronting pests while reducing human exposure to dangerous chemicals. In their article, *Advancement of Integrated Pest Management in University Housing*, the authors find that by educating residents on the importance to IPM of sanitation and maintenance most pest problems were able to be dealt with effectively without having to resort to chemical controls.

This is not the first study to demonstrate the benefits of indoor IPM. A 2009 study by the New York City (NYC) Department of Health, Columbia University and the NYC Housing Authority published in *Environmental Health Perspectives*, shows that even "single visit" IPM at the building level (rather than individual rental units) is more successful than regular pesticide applications in managing public housing pests and allergens.

Beyond Pesticides defines IPM as a prioritized program of prevention, monitoring, and control that eliminates toxic chemical use in favor of least-toxic pesticides only as a last resort. However, IPM is a term that is used loosely with many different definitions and methods of implementation. Beware of chemical dependent programs masquerading as IPM.

Pesticide Reform Proposal Gaining Momentum in DC

A legislative proposal to strengthen the District of Columbia's pesticide restrictions, with a specific focus on protecting children's health, is moving forward after a hearing that brought together supporters of the effort –physicians, a toxicologist, environmental advocates, a pest management practitioner, and the head of District's Department of the Environment. The *Pesticide Education and Amendment Control Act of 2012* would, among other provisions, restrict the application of pesticides at schools and day care centers, on public property and near waterways and establish publicly available courses on pesticides at the University of the District of Columbia. With targeted improvement, this legislation has the potential to make a comprehensive approach to integrated pest management the foundation for pesticide regulation in the nation's capital and place the burden of proof for allowing toxic pesticides on the companies seeking to market such products.

Beyond Pesticides Executive Director Jay Feldman joined the numerous witnesses at a hearing in February, presenting testimony in support of the basic tenets of the bill and proposing recommendations to strengthen it. The legislation is opposed by pesticide industry groups that testified at the hearing, including the National Pest Management Association and Responsible Industry for a Sound Environment (RISE), trade groups that have consistently opposed local and state legislation across the country to ban or tighten restrictions on pesticides and implement nontoxic management practices.

As drafted, the bill authorizes the District's Department of the Environment (DDOE) to designate pesticides registered in the District as either restricted use or minimum risk based on toxicity toward human and environmental health. The bill further requires DDOE to weigh the necessity for a pesticide's use against the availability of effective and economical alternatives when making this designation. It would further benefit from an enhanced definition of integrated pest management prioritizing non-chemical practices that prevent pests from entering a site or becoming established. There should be no allowance for any pesticides or synthetic fertilizer ingredients in lawn and landscape maintenance since they hurt soil health, creating plant vulnerability to disease and infestation, and organic practices are effective.

Endosulfan Found in Bone Marrow of Children with Blood Cancers

Researchers have found high levels of endosulfan, a highly toxic organochlorine pesticide, in the bone marrow of children, including those suffering from hematological malignancies (blood cancers) in areas using the pesticide. Children who have endosulfan in their bone marrow have 7.5 times more risk of developing blood-related cancer compared to those with no detectable pesticide in the bone marrow. While the findings are based on research in India, the insecticide is still used in the production of dozens of crops in the U.S., even though EPA found that exposure to the chemical exceeds the agency's acceptable risk criteria and announced in 2010 a six-year negotiated phase-out plan with industry that stretches from 2012 to 2016.

This study, *Pesticide (Endosulfan) Levels in the Bone Marrow of Children with Hematological Malignancies,* published in the journal *Indian Pediatrics*, involved 26 patients in the age group of one to 15 years with blood-related cancer and an equal number of patients suffering from other blood-related disorders, but not cancers. Children with blood cancer had elevated levels of endosulfan in the bone marrow compared to those without the disease. Six out of 26 children with blood cancer tested positive for endosulfan in the bone marrow, compared to one out of 26 children who did not have cancer.

Last May, endosulfan was added to the Stockholm Convention's list of internationally banned substances. The decision follows recommendations from the December 2009 Stockholm Convention Persistent Organic Pollutants Review Committee (POPRC), which called for urgent "global action" to address health and environmental impacts of the toxic pesticide. Scientific experts at the POPRC concluded that endosulfan is likely to cause significant adverse human health and environmental effects as a result of the chemical's medium- and long-range transport on a global scale and subsequent accumulation in nearly all environmental media.

For more information, see Beyond Pesticides' Pesticide Induced Diseases Database, www.beyondpesticides.org/health.

California Farm County Says No to Methyl Iodide

In February, the Monterey County Board of Supervisors urged California Governor Jerry Brown to reconsider the state's approval of the carcinogenic fumigant methyl iodide. Monterey County, one of the largest agricultural counties in California, joins Santa Cruz County in mounting pressure to re-examine the controversial decision to approve the toxic chemical as a replacement to the ozone-depleting methyl bromide. This news comes at the heels of the announcement earlier this month that Gov. Brown appointed Brian Leahy, a former organic farmer and the former assistant director at the California Department of Conservation, to head the state Department of Pesticide Regulation (DPR). According to *The Californian*, agricultural interests present asked County Supervisors to take no action. However, with dozens of local farmworkers in attendance pleading their case, the board passed the resolution on a 4-1 vote recommending that Gov. Brown take another look at the fumigant.

Methyl iodide is known to cause miscarriages, thyroid dysfunction, and cancer, and is applied to crops like strawberries and peppers. It was approved by California state pesticide regulators in December as an alternative to methyl bromide, an ozone-depleting chemical being phased out under international treaty. In 2007, EPA fast-tracked the registration of methyl iodide for use as a soil fumigant, despite serious concerns raised by a group of over 50 eminent scientists, including six Nobel Laureates in Chemistry.

Organic strawberry farmers have demonstrated that methyl iodide and other fumigants are not necessary to cultivate strawberries. A 2010 study shows that organic farms produce more flavorful and nutritious strawberries while leaving the soil healthier and more biologically diverse than conventional strawberry farms. *For more information on organic versus conventional agricultural practices, see Beyond Pesticides' Organic Food program page, www.beyondpesticides.org/organicfood.*

Consumer Choice and the Spread of Genetically Engineered Food

By Stephanie Davio

Genetic engineering (GE) in the U.S. has grown drastically in the U.S. in the past two decades –from seven percent of soybean acres and only one percent of corn acres in 1996 to 94 percent of soybean and 88 percent of corn acres in 2011. In recent years, the U.S. Department of Agriculture (USDA) has been on a fast-track to deregulate GE crops, leaving leery consumers and organic farmers behind to fend for themselves. In spite of the huge spike in producing GE food, the safety of these crops for human consumption has not been sufficiently addressed. Long-term health effects of consuming genetically modified food are still largely unstudied and unknown, yet they abound in the marketplace without any labeling requirement to set them apart for consumers unwilling to be guinea pigs. For all of those who would prefer not to eat genetically modified (GM) food, products that are certified organic are the only guaranteed way to go. But, as GE crops become more prevalent, organic is under threat from contamination. So what can be done? Here is a look at some of the legal battles and consumer efforts that are underway.

Background

The U.S. decision to deregulate GE crops fails to take into account several scientifically-validated environmental concerns, such as the indiscriminate nature of genetically modified gene flow in crops, a heavy reliance on faulty data, and a high degree of uncertainties in making safety determinations. It overlooks the problem of herbicide-resistant weeds and insects, as well as the widespread corruption of conventional seed varieties by genetically modified strains, along with documented severe economic injury to farmers and markets.

In fact, GMO products have so far done the opposite. Numerous reports, including *Failure to Yield* by Union of Concerned Scientists and *The GMO Emperor Has no Clothes: A Global Citizens Report on the State of GMO's*, highlights scientific research and empirical evidence around the globe demonstrating the failure of genetically modified organisms (GMOs) to deliver on their advertised promises to increase yields, reduce pesticide usage, and tolerate drought with "climate ready" traits.

Furthermore, the accelerated speed of deregulating GMO crops is a direct threat to organic farmers and producers. Back in 2003, the Organic Farming Research Foundation conducted a nationwide survey which found certified organic farmers reporting financial and related operational impacts associated with the threat of contamination by GMO's for the first time.

In addition to contamination concerns, there are serious public health and pest resistance problems associated with GM crops. Organic farmers have expressed concern since the introduction of GMOs that the overuse of GM technology will lead to pest resistance and leave many farmers without the important tool of organic agriculture. This is inevitable when genetically engineered material is incorporated into every cell of a plant.

Emerging GMO Crops

Since the Summer 2011 issue of *Pesticides and You*, many new varieties of genetically engineered plants have been introduced or are on their way to the market place. Here is a look at some of the emerging crops and an update on some of the legal battles

that are being fought:

2,4-D-Tolerant Corn

Dow AgroSciences has developed a crop that is resistant to the herbicide 2,4-D, a major component in Agent Orange. In its petition, Dow AgroSciences states that 2,4-D is increasingly important for chemical farmers because of the presence of weeds that have developed resistance to glyphosate, as a result of the widespread use of Monsanto's genetically engineered glyphosate-resistant crops. When Monsanto introduced glyphosate, it was touted as a safer and less toxic alternative to herbicides like 2,4-D. An emerging body of scientific literature is raising serious concerns about the safety of glyphosate as well.

While USDA attempts to assure the public that 2,4-D is safe, scientists have raised serious concerns about the safety of this herbicide. 2,4-D is a chlorophenoxy herbicide, and scientists around the world have reported increased cancer risks in association with its use, especially for soft tissue sarcoma and malignant lymphoma. Four separate studies in the U.S. report an association with chlorophenoxy herbicide use and non-Hodgkin's lymphoma.

USDA is currently accepting public comments on Dow's petition until the end of April 2012. An online petition by The Cornucopia Institute opposing Dow's 2,4-D corn variety, which will be sent to President Obama and Secretary Vilsack, can be signed at www.cornucopia.org/say-no-to-dows-ge-corn/

Dicamba-Tolerant Soy

Growing recognition that pervasive planting of glyphosate-tolerant "Round-Up Ready" corn, soybeans, and cotton is accelerating weed resistance has prompted GE seed companies to rush to the market 'stacked' varieties that are resistant to additional herbicides. In addition to 2,4-D corn, Monsanto has been partnering with BASF on dicamba and glyphosate-tolerant crop varieties since 2009 with a focus on soybeans, cotton, and corn. Commercial release of engineered seeds for these crops is projected for the mid-point of this decade. Dicamba is a neurotoxic chlorinated benzoic acid herbicide that the Environmental Protection Agency classifies as acute toxicity class III, slightly toxic. The material is a recognized eye irritant, moderately persistent in the environment and highly mobile in both soil and water. Chronic exposure is linked to reproductive and developmental effects.

Drought Tolerant Corn

Despite nearly 45,000 public comments in opposition to MON87460 and only 23 in favor, USDA approved the purported 'drought-tolerant' variety of corn in late December 2011. There are a host of problems with this new variety, including lack of efficacy and health data. Back in May, 2011, USDA found that the crop did not perform well. Furthermore, this is of high threat to organic farmers, as USDA in its Environmental Assessment concedes that gene flow of corn pollen is likely to occur. It is well-established that corn pollen travels, and pollen from genetically engineered plants will contaminate natural corn plants.

Glyphosate-Tolerant Alfalfa

In January 2011, USDA announced plans to fully deregulate glyphosate-resistant, "Roundup Ready" alfalfa, which would primarily be fed to dairy cattle, but also beef cattle, pork, lamb, and sheep. Center for Food Safety (CFS) is leading a suit filed against USDA in March 2011, which Beyond Pesticides has joined. This is the second case challenging the legality of USDA's handling of GE alfalfa.

In 2007, in another case brought by CFS, a federal court ruled that the USDA's approval of the engineered crop violated environmental laws by failing to analyze risks, such as the contamination of conventional and organic alfalfa, the evolution of glyphosate-resistant weeds, and increased use of Roundup. The case resulted in USDA undertaking a court-ordered four-year study of GE alfalfa's impacts under the National Environmental Policy Act (NEPA). Remarkably, it marked the first time USDA had ever undertaken an Environmental Impact Statement (EIS) in over 15 years of approving GE crops for commercial production. While USDA worked on the EIS, GE alfalfa remained unlawful to plant or sell, a ban that remained in place despite Monsanto appealing the case all the way to the U.S. Supreme Court, where the EIS requirement was upheld.

However, this past January U.S. District Judge in San Francisco has issued a ruling finding that USDA's decision to deregulate GE alfalfa was not unlawful. Judge Samuel Conti of the U.S. District Court for the Northern District of California found that USDA did not act improperly by deregulating the GE Roundup Ready alfalfa, developed by Monsanto, and that the agency's environmental review of the product was adequate. According to the *San Francisco Chronicle*, Judge Conti stated that USDA is not required to "'account for the effects of cross-pollination on other commercial

crops in assessing the risks posed by a new crop."

Glyphosate-Tolerant Sugar Beets

Glyphosate tolerant, "Roundup Ready" sugar beets were initially deregulated in 2005. A coalition of environmental groups and organic seed companies, led by the Center for Food Safety, challenged the USDA approval in 2008. It argued that GE sugar beets would contaminate organic and non-GE farmers of 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 U.S. agriculture. In September 2009, Judge Jeffrey S. White in the federal District Court in San Francisco agreed, and ordered USDA to prepare an EIS assessing these and other impacts, as required by NEPA. In August 2010, after a year of vigorous litigation over the proper remedy for USDA's unlawful approval, the court again agreed with the plaintiffs, threw out the USDA's approval, and halted planting.

In summer 2010, USDA and the biotech industry, led by Monsanto, demanded the court allow planting to continue unabated. 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 precedential ruling was also preserved by the Appeals Court 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. Last fall, USDA announced the availability of a draft EIS and accepted public comments through December 2011.

GE Turf

Scotts Miracle-Gro Company has developed Kentucky blue grass that been engineered to be resistant to the herbicide glyphosate, commonly sold as Roundup. Kentucky bluegrass is a popular choice for yards and fields as well as pastures and prairies, and the GE seed is expected to be made available for consumers to plant in their home lawns, potentially making it one of the most widely planted GE crops in the country.

Last July, USDA issued a decision stating that it does not consider a new type of genetically engineered (GE) turf grass to be subject to federal regulations. In the decision announced by the USDA's Animal and Plant Health Inspection Service (APHIS), the agency stated that it does not have the authority to regulate the introduction or transportation of the GE grass seed under the provisions of the *Plant Protection Act*.

"Roundup Ready" alfalfa would primarily be fed to dairy cattle

Seed Patenting

In early 2011, a group of 81 family farmers, seed businesses, and organic agricultural organizations, including Beyond Pesticides, preemptively filed suit against Monsanto in an effort to protect farmers from patent infringement in the event of drift contamination by the company's GE seed. The suit, *Organic Seed Growers and Trade Association, et al. v. Monsanto*, was filed in Federal District Court in Manhattan on behalf of Public Patent Foundation (PUBPAT). The crux of the federal District Court case is Monsanto's claim that it has the right to sue farmers whose crops are contaminated for infringing upon the company's intellectual property. The intellectual property Monsanto is referring to is the patented genetic material in the drifting pollen that is ultimately expressed in the contaminated organic or non-genetically engineered crop. On February 24 2012, much to the dismay of organic farmers and environmentalists, the District Court dismissed the case, denying farmers without a contract with Monsanto the right to seek legal protection from the biotech giant. The plaintiffs have vowed to appeal.

What Consumers Can Do

Support Organic

The best way to avoid genetically engineered foods in the marketplace is to purchase foods that have the USDA certified organic seal. Under organic certification standards, genetically modified organisms and their byproducts are prohibited from being used. Unlike chemical-intensive agriculture and genetically engineered food, researchers continue to discover the environmental and health benefits of eating and growing organic food. There are numerous health benefits to eating organic, besides a reduction in pesticide exposure.

Unfortunately, the current lax regulations on genetically engineered crops in the U.S. present a unique risk to organic growers. Wind-pollinated and bee-pollinated crops, such as corn and alfalfa, have high risks of cross pollination between GE crops and unmodified varieties. No provision exists to effectively protect organic farms from contamination. Furthermore, under the current law, biotech seed companies bear no legal or financial responsibility for such contamination, so the burden is on organic growers to prevent contamination of their crop.

Beyond Pesticides maintains extensive resources related to the environmental, economic, and human health benefits of organic production system, including information on supporting organic production and upholding the integrity of organic certification. For more information, see Beyond Pesticides' organic program page at www.beyondpesticides.org/organicfood.

Consumer Guides

- True Food's Shopper Guide: How to Avoid Foods Made with GMOs, Center for Food Safety http://truefoodnow.files.wordpress.com/2011/02/cfs-shoppers-guide.pdf
- Guide to Verified GMO-free Brands and Food, NON-GMO Project http://www.nongmoproject.org/take-action/search-participating-products/

Further Reading

- Kimbrell, George, Genetically Engineered Food Failed promises and hazardous outcomes, *Pesticides and You*. Summer 2011 http://www.beyondpesticides.org/gmos/index.htm
- Genetically Engineered Food An Overview, Food and Water Watch, September 2011 http://documents.foodandwaterwatch.org/doc/GeneticallyEngineeredFood.pdf
- Shiva, Vandana, et al., "The GMO Emperor Has No Clothes, A Global Citizens Report on the State of GMOs," Navdanya International. October 2011. http://www.centerforfoodsafety.org/wp-content/uploads/2011/10/GMO-EMPEROR-FINAL-10-11.pdf
- Gurian-Sherman, Doug, Failure to Yield: Evaluating the Performance of Genetically Engineered Crops, Union of Concerned Scientists. April 2009 http://www.ucsusa.org/assets/documents/food_and_agriculture/failure-to-yield.pdf
- Benbrook, Charles, Impacts of Genetically Engineered Crops on Pesticide Use: The First Thirteen Years, The Organic Center. November 2009 http://www.organic-center.org/science.pest.php?action=view&report_id=159

Just Label It! Campaign

Beyond Pesticides has partnered with the JUST LABEL IT: We Have the Right to Know campaign, which is made up of a broad-based coalition of 460 partner organizations demanding that consumers have the right to know what is in their food. The campaign is dedicated to the mandatory labeling of genetically engineered foods, also referred to as genetically modified, or GMOs. The JUST LABEL IT message is: consumers have a right to know what is in our food so we can make informed choices about what we eat and feed our families. At JustLabelIt.org people can submit a comment to FDA in support of the petition, learn about the science behind GMOs and ways to avoid it in the marketplace.

Currently, there are no FDA requirements that mandate the labeling of genetically engineered foods. Just Label It was created with the premise that people have a right to know what is in their food and what they are feeding their families. The goal of the campaign is to provide a way for the consumer's voice to be heard by flooding the FDA with comments in support of the petition. So far, over a half-million consumer comments have been generated in support of the petition, which calls for food that is produced with genetically engineered (GE) ingredients to disclose this information on the label.

The coalition filed a legal petition with the Food and Drug Administration (FDA) that calls for the mandatory labeling of GE foods. Hundreds of partner organizations representing the health care community, consumer advocates, farmers, concerned parents, environmentalists, food and farming organizations, and many more concerned with protecting the consumer's right to know have joined together in support of the FDA petition and the mandatory labeling of genetically engineered foods.

Sign the petition and submit your comments at www.justlabelit.org/takeaction.

Beyond Pesticides' goal is to push for labeling as a means of identifying products containing GE ingredients in an effort to allow consumers to make informed choices in the marektplace. The European Union, Japan, Australia, Brazil, Russia, and China, require labeling for GE foods. Recently, the German corporation BASF announced that it would stop developing genetically engineered products targeting the European market, in part due to low consumer demand. Given that 93% of Americans support mandatory labeling of GE foods, Beyond Pesticides believes that the Just Label It campaign can have the same impact in the U.S. as in Europe.

Preserving Biodiversity
As If Life Depends on It

Our survival depends on our ability to protect biodiversity. Someone who lived before the advent of cities and agriculture would have encountered many more –perhaps hundreds more– different species of plants and animals every day. Chances are they would have met some that are now extinct or nearly so. Bison roamed the prairies –which themselves contained hundreds of plant species– but also eastern forests. White bears occasionally ranged as far south as the Delaware River. Skies were darkened for hours or even days at a time by flocks of birds. The forest of eastern North America was united by a mycelial mat from the Atlantic Ocean to the Mississippi River. These species were part of a community with the humans who lived there –species that humans might eat, or provide food for those they ate, or who might even eat them. Then and now, members of the community also interact in more complex ways –microbes in the gut of humans help digest our food, and microbes in the soil help feed plants. Many of the species that were once a part of daily life for people are now gone or very rare. They are gone for many reasons, but mostly because their homes were turned into farms and cities. Many species that enriched the lives of our ancestors are no longer here to enrich ours, but it is not just a matter of enrichment. Without those species, the communities they supported are crumbling. We see the loss of these communities in the proliferation of "invasive species," climate change, and epidemics of disease. No longer are we simply losing "enrichment" –our own survival is now at risk. If we are to survive, we must help the community survive –from the bottom up– starting with the soil.

Organic and chemical-intensive land management feature sharply contrasting approaches to interacting with the biodiversity of the ecosystem in which they operate. This divergence has enormous consequences for the sustainability of life. Recognizing that various land management practices may have different effects on the web of life that makes up the environment is crucial to maintaining the intricate balance and life-sustaining benefits of nature. In this context, local, state, and national land management practices and laws, which can play an instrumental role in conserving biodiversity, often miss the mark and contribute to costly and devastating impacts.

The long historical recognition of the importance of biodiversity in national and international law has given insufficient attention to natural approaches that avoid harm or uncertainties. Risk-based standards in environmental law allow hazards up to limits deemed "acceptable," neglecting the availability of alternatives free of harm. The *Organic Foods Production Act* establishes a national working model for avoiding the reliance on practices and inputs that introduce hazards and threats to biodiversity at any level. Instead, the law affirmatively seeks to protect biodiversity as a precious resource that supports a productive agricultural system and a sustainable environment.

How does biodiversity benefit the community?

Biodiversity is literally the diversity of life. From a taxonomical perspective, biologists have identified approximately 1.8 million species on Earth and estimates are that between 80 and 90 percent of the actual total remain undiscovered or unnamed. (IUCN 2009) Yet, biodiversity is in dire peril. The Earth's rich biological heritage of species, communities, and ecosystems, which has evolved across millions of years, is rapidly deteriorating and in many instances irreversibly disappearing.

In its most general sense, biodiversity refers to the combination of species that share a defined habitat to form a community. The study of ecology (from the Greek oikos, or household) teaches that the species of a community continually interact both directly with one another and indirectly through their effect on the nonliving (abiotic) environment. For example, a native bee pollinating a flower supports biodiversity by facilitating services –fertilization for the plant, nutrition for the insect– that are essential for their survival and reproduction. Similarly, a lichen may be the first species to colonize a rock outcropping, liberating mineral nutrients that enable others to become established. Each species within the biodiversity that shares a habitat contributes to the integrity and endurance of the community as a whole.

More specifically, research strongly indicates that biodiversity promotes productivity, stability, and resilience. In general, com-

What is Biodiversity?

A highlight of the United Nation's (UN) 1992 Conference on Environment and Development, known as the "Rio Conference," was the presentation of the UN Convention on Biological Diversity, which 192 nations and the European Union –though not the United States– have subsequently signed. The Convention defines biological diversity (biodiversity) as "the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems." (UN 1992)

Biodiversity operates at three distinct levels in natural systems. First, genetic biodiversity exists within every species. Species must maintain sufficient diversity within their collective gene pool for future generations to adapt. Secondly, species biodiversity represents the collection of different species that co-exist as a community within an ecosystem. An ecosystem is a distinct environmental habitat combining interdependent organisms and non-living elements, such as a coral reef or tall grass prairie. In general, ecosystems with greater biodiversity are better suited to withstand disturbance and to recuperate from adverse impacts. Finally, ecosystem biodiversity measures the abundance or variety of adjoining yet subtly self-contained ecosystems within a larger geographic area.

When many people hear the word, "biodiversity," they think of the tropical rainforest. While rainforests are one of the most biodiverse ecosystems on the planet, biodiversity is important to many types of ecosystems, from rainforests and reefs, to the soil of a farm or backyard turf.

munities with greater biodiversity generate more biomass (the combined weight of all organisms), are more resistant to environmental disturbances, such as drought, and bounce back more quickly after being affected by such disturbances. Mutualistic relationships, such as the exchange of nutrients that takes place between mycorrhizal fungi in soil and vascular plants growing nearby, can more efficiently allocate resources and spur overall productivity.

Of most immediate importance, from how food is grown to the management of, gardens, lawns and landscapes, parks, forests, and rights-of-way, human decisions concerning management practices have a direct impact on biodiversity. In these contexts, biodiversity is a balance without the concept of "pest," as organisms keep each other in check through systems of support and predation, and the habitat ensures nourishment for all living things. The value of biodiversity as an essential tool cannot be dismissed, since chemical dependency in land management has resulted in organism resistance to synthetic chemicals and increasing costs to society in billions of dollars of crop loss, lost pollinators, water contamination, toxic cleanup, and illness. (Tegtmeier and Duffy 2004; Pimentel 2005)

Biodiversity is a foundational principle in the organization of communities at all levels, from a spade full of organically managed soil teeming with microbial life to a pasture seeded with grasses and forbs to a mature tropical rainforest. Biodiversity shapes the characteristics and capacities of every species and creates the conditions under which all living creatures interact and evolve.

Most notably, agriculture is both a prime cause and essential remedy to the biodiversity crisis. Decisions made to use toxic chemicals in land management or food choices in the grocery store every day are directly connected to the future of biodiversity, and the organic choice offers the brightest prospect for a sustainable future.

Differences in Organic and Chemical-Intensive Land Management

The conservation of biodiversity is both a core premise of organic land management and a specific requirement of organic crop, livestock, and wild crop certification. This compatibility between organic management and biodiversity reflects the primary importance that the original organic practitioners attached to nature as the model for successful agriculture. One hundred years of practice and an increasing body of research have subsequently established that biodiversity can impart advantages in managed systems similar to those it does in the wild. Conversely, chemical-intensive land management practices have moved away from

treating biodiversity as an integral component of the production process. By targeting individual species –both as commodities to produce and pests to attack– chemical-intensive land management sacrifices the benefits of biodiversity and jeopardizes the very species that comprise it. The science and policy choices that are used to regulate pesticides are especially deficient in preventing their adverse impacts on biodiversity.

Federal Organic Law and Biodiversity

Organic certification does not have a long regulatory history –the U.S. Department of Agriculture's (USDA) standards only took effect in 2002– but the legal protection it affords biodiversity runs deep. In fact, the statutory definition of an organic production system requires that certified farmers "conserve biodiversity" among their other responsibilities. Certification requires that farmers operate a system that responds "to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity." (7 CFR § 205.2)

Organic certification is an especially practical tool for this mandate because it features a systems approach to farm management in which each management practice and material input is evaluated in the context of the farm's overall integrity, and are held to standards that are monitored and enforced. According to the preamble to the standards, "Compliance with the requirement to conserve biodiversity requires that a producer incorporate practices in his or her organic system plans that are beneficial to biodiversity on his or her operation." (65 Fed. Reg. 80550) The organic plan must address every critical management practice including pest, disease, and weed management, soil fertility, and rotations for crop farmers and the provisions for feed and living conditions, including pasture for livestock producers. Certified wild crop operations are held to the same biodiversity standard.

The National Organic Standards Board (NOSB) in 2009 approved comprehensive guidance on conserving biodiversity with a recommendation covering organic system plans as well as material review considerations. The recommendation is designed to maximize the benefit from nature's ecosystem services: pollination, pest control, beneficial predation, advantageous fire, flood and erosion control, nutrient cycling, and improved water quality and quantity. It does this by requiring biodiversity to be evaluated during the review of all chemicals used in organic production. The organic system plan component includes a checklist for biodiversity criteria for both the productive and uncultivated areas on the farm. The criteria include giving consideration to hydrology and the current condition and survival requirements of native species, including insect and birds, invasive species potentially spread by production practices, and concerns surrounding fencing and other pest/predator containment issues. (NOSB 2009)

On cultivated land, maintaining a biologically rich microbial community within the soil represents the fundamental commitment to conserving biodiversity. Additionally, using site-appropriate plant varieties (including the species composition of pastures) and livestock breeds is critical for preserving biodiversity at the genetic level. Management of biodiversity on non-cultivated ground primarily entails maintaining natural habitat, including food, water, and living conditions suitable to nesting and protection from the elements for native species. Buffer zones, hedgerows, woodlands, wetlands, waterways, and riparian zones are all habitats that

continued on page 20

The Impacts of Federal Policy on Biodiversity

The various federal statutes that could and should collectively protect biodiversity fall short of the coordinated framework that is needed.

The Federal Insecticide, Fungicide and Rodenticide Act

(7 U.S.C § 136 et seq.; 40 C.F.R. Parts 150-189)

EPA's regulation of pesticides under the *Federal Insecticide, Fungicide and Rodenticide Act* (FIFRA) and its "unreasonable adverse effects" standard has minimal focus on protecting biodiversity. FIFRA defines the term ''unreasonable adverse effects on the environment'' as ''(1) any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide." The "reasonable certainty of no harm" standard of the *Federal Food Drug and Cosmetic Act*, under the *Food Quality Protection Act*, despite its apparently clear language, authorizes the use of risk assessment calculations that allow for an "acceptable" degree of adverse effects associated with pesticide residues on food in combination with non-food exposures (not including occupational exposure). EPA requires that chemical manufacturers conduct human health, environmental fate, and ecological risk assessments for each pesticide it registers. The pesticide's use profile will determine what types of risk assessments are conducted and, if the pesticide will be used outdoors, an ecological risk assessment will be among them. (7 USC § 136)

Ecological assessments determine the likelihood that exposure to one or more pesticides may cause harmful ecological effects, such as fish kills, bird reproductive abnormalities, or wildlife deaths. According to EPA, ecological risk assessments are done to determine the risks posed by a pesticide and whether changes to the use or proposed use are necessary to protect the environment. The Environmental Fate and Effects Division (EFED) in the Office of Pesticide Programs (OPP) then reviews and evaluates data submitted by the registrant concerning risks to non-target species and makes its recommendations.

OPP does not incorporate comprehensive ecosystem or habitat impacts in its ecological risk assessments. While the agency may look at specific effects that a pesticide has on algae, for example, no further consideration is made to address how the effects on the algae would impact higher trophic members of the aquatic ecosystem, which depend on this keystone species. Secondary exposures to pesticides are sometimes considered, like the exposure of predatory birds to rodenticides. as a result of their feeding behavior. However, broader effects of rodenticides, such as a decline in predatory bird populations or other non-target predators, are not typically incorporated in an ecological risk assessment.

Acute and chronic toxicity tests are performed to evaluate various endpoints, but the effects of sub-lethal pesticide doses are rarely assessed. Sub-lethal effects can occur at very low doses of pesticides, and have been shown to affect reproductive, neurological, and behavioral traits in various organisms, which can ultimately affect ecosystem health and biodiversity.

Incomplete Data

Often, incomplete testing for ecological impacts occurs, and pesticides are registered without a full understanding of the ecological impact, with the agency instead relying on collecting data after the pesticide has done its damage to the environment. In spring 2011, thousands of spruce trees died after the application of the herbicide Imprelis to kill broadleaf weeds like dandelion and clover. In this case the agency negotiated with the manufacturer to

withdraw the product from the market, arguing that the product was misbranded. Usually, the agency recommends various mitigation measures, like amending product labels, adjusting application rates or recommending buffer zones requirements to mitigate rather than prevent environmental exposure. EPA grants a "conditional registration" if it deems the data at the point of initial registration to be unnecessary to determining the reasonableness of the risk.

Science focused on incidents not prevention

According to EPA, an ecological incident is defined as an event in which pesticide use is known or suspected of causing the death or other adverse toxicological effect to wild animals and plants other than the intended target species. Information on ecological incidents is available to EPA staff from several avenues, such as the ecological incident information system (EIIS), aggregate incident reports from manufacturers, and the avian incident monitoring system (AIMS). Through these databases, EPA considers "major" incidents of intensive impacts, but fails to consider the even greater impacts of routine pesticide use.

The complex and data-intensive approach to evaluating and protecting individual species and broader communities under FIFRA creates a false sense of security, since the law's acceptance of established levels of risk and damage, coupled with large uncertainties, is fundamentally at odds with the holistic and systemic management approach that is necessary to be precautionary, prevent harm, and protect biodiversity.

The Endangered Species Act and its Implementation through FIFRA

(16 U.S.C. § 1531 et seq.; 50 C.F.R. Part 17)

The *Endangered Species Act* (ESA) is a valuable tool in averting a crisis in species extinction, but does not preventively enhance biodiversity. ESA is a temporary solution designed to soften the catastrophic effects on particular species of a regulatory system that fails to protect the planet's ecosystems. The Act establishes a framework under which biological criteria are used to identify ("list") species as either "endangered" or "threatened," which are then afforded specific protections. The Fish and Wildlife Service (FWS) of the Department of the Interior oversees listing of terrestrial and fresh water species while the National Marine Fisheries Service (NMFS) in the Department of Commerce manages endangered and threatened species in bodies of salt water.

When a species is proposed for listing as endangered or threatened under ESA, the Service must consider whether there are areas of critical habitat believed to be essential to the species' conservation. Critical habitat is a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. It may include an area that is not currently occupied by the species, but will be needed for its recovery. Every federal agency is required to ensure that any actions it funds, carries out, or authorizes will not result in adverse impacts to species on the list or to the critical habitats of those species on which they depend. Private land owners and occupants are also required under ESA to avoid damage to endangered or threatened species.

Under ESA, EPA is required to determine how a pesticide will affect endangered species when that chemical is registered or has its registration reviewed. The law requires the agency to consult with FWS and NMFS for any necessary additional information and analysis. To implement these procedures, EPA's Endangered Species Protection Program (ESPP) utilizes risk assessment tools to evaluate any concerns about effects to listed endangered species.

FIFRA's standard to protect against "unreasonable adverse effects to man and the environment," while broad enough to evaluate and reduce impacts on biodiversity, instead has been used to establish standards of use that result in levels of harm deemed acceptable. EPA's risk assessment process does not function to protect the most vulnerable in biological systems, but institutes restrictions intended to mitigate risks. The mandated consultations with FWS and NMFS could present the opportunity to evaluate alternative practices that would avoid harm to endangered species, but unfortunately has been largely limited to the risk management framework that has so long dominated EPA's approach to regulating pesticides.

"Although federal agencies have routinely evaluated the effects of proposed actions on certain specific resources (primarily wetlands and endangered species) in their NEPA analyses, they have not usually included the full range of effects or the appropriate scale required for adequate consideration of biodiversity."

The failure of current pesticide regulatory procedures to adequately protect biodiversity has prompted diverse coalitions to litigate, in some cases successfully. However, EPA's failure to consult with federal wildlife agencies regarding the impacts of hundreds of pesticides known to be harmful to more than 200 endangered and threatened species is the subject of ongoing litigation. (see Washington Toxics Coalition, et al. v. EPA, 2001; Center for Biological Diversity & PANNA v. EPA, 2011)

Clean Water Act

(33 U.S.C. § 1251 et seq.; 40 C.F.R. Parts 100-149)

The *Federal Water Pollution Control Act*, commonly known as the *Clean Water Act* (CWA), has a strong statement of purpose when it comes to protecting the national waterways and the wildlife that inhabits them: "The objective of this chapter is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters…for the protection and propagation of fish, shellfish, and wildlife." (33 USC § 1251(a)) The word "restore" is particularly notable, as it points toward improvement and not just protection or conservation, like many other environmental laws. It is the intent of CWA to accomplish this restoration by progressively reducing, with the aim of eliminating, water pollution in all its forms. Although important progress has been made toward this goal, the enforcement programs set up by EPA to regulate waterways are often inadequate if the intention is truly to eliminate water pollution in the U.S., particularly with respect to "nonpoint" pollution. Agricultural pollution, including pesticide chemicals, is alarmingly widespread throughout many of the rivers, lakes, and streams across the country. Studies of major rivers and streams document that 90 percent of all fish, 100 percent of all streams, 33 percent of major aquifers, and 50 percent of shallow wells contain one or more pesticides at detectable levels. (Gilliom, et al., 2006) In a 2009 court decision, the 6th U.S. Circuit Court of Appeals found that the National Pollutant Discharge Elimination System (NPDES), outlined in section 402 of the CWA (33 U.S.C. § 1342), requires those spraying pesticides in a manner that discharges into water to obtain a permit. (National Cotton Council v. EPA) However, the "general permit" EPA issued to cover these instances has many limitations. Although the statutory authority is present under the CWA for strong regulation of chemicals and other pollutants in U.S. waterways, EPA's enforcement programs, if left unchanged, will continue to fall short of achieving this goal.

Plant Protection Act

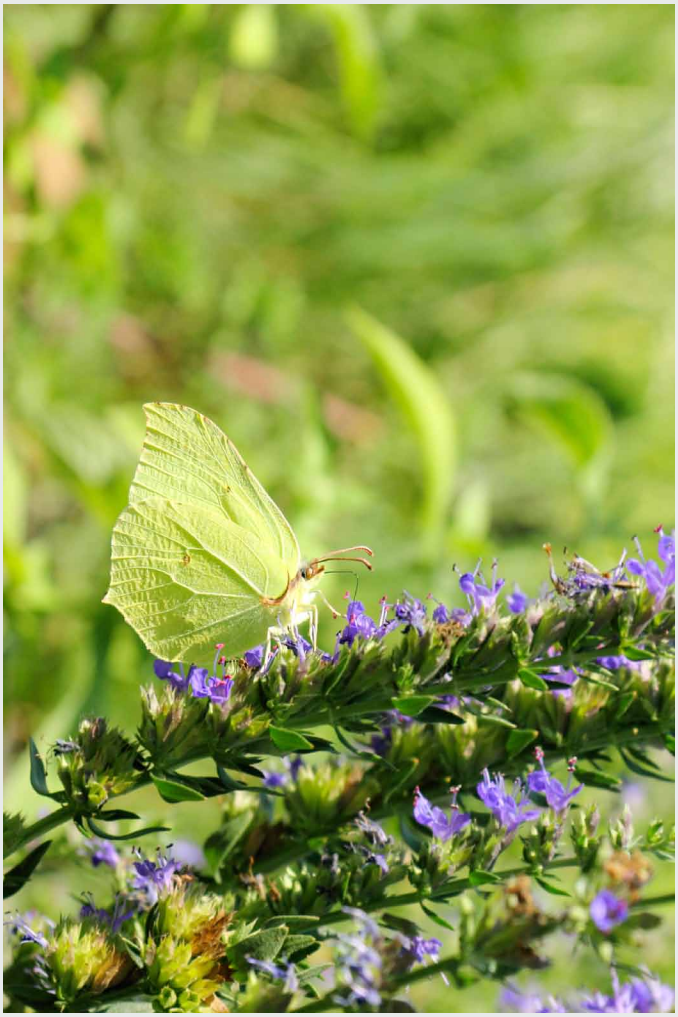
(7 U.S.C. § 7701 et seq.; 7 C.F.R. Part 330)

The explosion of genetically engineered plants in agriculture, including 90 percent of conventional corn and soybeans, cotton, alfalfa, and sugar beets, and introduction in turf grass, contributes to an escalating crisis in protecting biodiversity. (USDA 2011) Genetically modified organisms (GMO) take agriculture further down the road of increased chemical dependency with the proliferation of herbicide-tolerant and insecticide-incorporated plants. Herbicide-tolerant GMOs allow farmers to rely less on manual management of weed issues through crop rotation, enabling them to plant the same crop in the same field year after year, using nonselective herbicides, thus virtually eliminating any semblance of plant and habitat diversity on the farm. The *Plant Protection Act* requires USDA to evaluate genetically engineered plants on the basis that they may pose a risk of becoming or introducing a pest to other plants, but any consideration of the real hazards of GMOs has only occurred because *National Environmental Policy Act* (NEPA) applies to these decisions. There is a stark contrast here between chemical-intensive and organic agriculture, the latter prohibiting the use of GMO.

National Environmental Policy Act

(42 U.S.C. § 4321 et seq.; 40 C.F.R. parts 1500-1518; 40 C.F.R. Part 6; 7 C.F.R. part 372)

Enacted in 1970, the *National Environmental Policy Act* (NEPA) requires that consideration of any federal government action that may impact the environment includes any potential environmental effects before any action occurs. It requires federal agencies undertaking an action to produce either an environmental assessment (EA) or a more rigorous environmental impact statement (EIS). At minimum, a review must evaluate any impacts which the proposed action might have upon the environment as well as any possible alternatives that could be employed to lessen or avoid those impacts. The consideration of alternatives is one of the most critical and significant parts of the NEPA process. Agencies must give their reasoning for their choice of alternative.



The NEPA process can be highly beneficial for protecting biodiversity if properly applied because it can serve to fill in gaps between policy areas covered by various other laws and connect their respective policy considerations into a comprehensive environmental evaluation. As the White House Council on Environmental Quality (CEQ) stated in its guidance on incorporating biodiversity into NEPA evaluations, "Proper application of the NEPA process can reduce conflicts over resource management now burdening the *Endangered Species Act* by providing a mechanism for consideration of overall ecosystem health issues and of the needs of specific species prior to their becoming threatened or endangered." (CEQ 1993)

While the potential of the NEPA process is promising, the implementation has consistently fallen short. As CEQ noted in 1993, "Although federal agencies have routinely evaluated the effects of their proposed actions on certain specific resources (primarily wetlands and endangered species) in their NEPA analyses, they have not usually included the full range of effects or the appropriate scale required for adequate consideration of biodiversity." The presence of specific regulatory endpoints, such as listing a species through ESA or registering a pesticide under FIFRA, have supplanted the more holistic and comprehensive review procedures established in NEPA.

continued from page 15
organic farmers use to protect biodiversity. Even on small farms in relatively developed regions, vibrant native habitat can provide invaluable support for species on-site and also serve as wildlife corridors for species moving to larger protected areas.

Organic soil: How do organic and chemical-intensive agriculture affect biodiversity?

The most fundamental and ultimately most important difference between organic and chemical-intensive land management is their respective impact on the living network of biodiversity known as the soil food web. Each field, forest, or pasture has a unique soil food web with a particular proportion of bacteria, fungi, and other groups, and a particular level of complexity within each group of organisms. Maintaining a vibrant soil food web with site-specific characteristics resulting from soil, vegetation, and climate factors is crucial for the ecosystem as a whole to function effectively. The soil food web largely determines nutrient cycling and retention, water infiltration, disease suppression and the isolation and breakdown of contaminants to the system. Biodiversity works synergistically within soils to provide these essential ecosystem services, and its decline leads to a cascade of worsening environmental consequences.

From its inception, the organic paradigm has placed the establishment and nurturance of a rich and diverse biological community within the soil as its paramount objective. "Feed the soil, not the plant" sums up the principle of building biodiversity at the microbiological level that originated with organic visionary Sir Albert Howard at the turn of the 20th century. The bacteria, fungi, and larger organisms that surround plant roots, an area known as the rhizosphere, are an especially important community within the broader soil biodiversity. Plants derive almost all of their fertility, including all of their nitrogen, from the rhizosphere and the presence of an active species-specific microbial community is essential for optimal nutrition and performance. In fact, Sir Howard theorized that optimally fed plants sustained by a healthy rhizosphere would be invulnerable to pest and disease pressure and that deficiencies in plant nutrition would create susceptibility to such pressure that would move up the food chain to livestock and humans. Organic farmers and land care specialists continue to build strength and resilience throughout the systems they manage by "feeding the soil."

An 8,500 square mile dead zone has formed in the Gulf of Mexico, not far from the mouth of the nutrient-laden Mississippi River.

Chemical-intensive agricultural and land management practices result in highly adverse impacts upon soil biodiversity. Dependence on fertilization through synthetic nitrogen sources that are "fixed" from fossil fuel feed stocks, such as urea and anhydrous ammonia, are especially damaging because their high salt content is toxic to soil microorganisms. These fertilizers fundamentally disrupt the dynamic between plant roots and soil biodiversity in the rhizosphere. Chemical-intensive agriculture and land management can induce plants to increase their nitrogen uptake, which produces rapid lush growth, but at the expense of overall soil health and long-term productivity. Contemporary chemical-intensive management yields demonstrably vulnerable plant communities that are dependent on an arsenal of pesticides for their defense.

Creating Dead Zones

Perhaps the most extreme example of the downstream effects of chemical-intensive agriculture on biodiversity is the formation of so-called Dead Zones. They are formed when excess agricultural nutrients, especially nitrogen and phosphorus, are washed downstream and accumulate in the calmer waters of an estuary or bay. Algae capitalize on the abundance of nutrients and reproduce in large blooms that deplete dissolved oxygen from the surrounding waters as they die and decompose. Marine life flees or dies as dissolved oxygen drops below the levels they need to survive. With the food chain broken, populations of the avian and terrestrial species that feed on aquatic life also shrink away as biodiversity is extinguished and a once stable and productive ecosystem stagnates.

Chemical-intensive agriculture is intrinsically prone to triggering the formation of Dead Zones because of its excessive nutrient loading and the vulnerability of those nutrients to escape treated land. Spring storms and flash flooding have been especially devastating in the Midwest in recent years where even a conservative estimate places topsoil losses at 5.2 tons per acre per year. (EWG 2011) Fueled largely by agricultural run-off from the Mississippi River drainage basin, the Gulf of Mexico contains the world's largest Dead Zone, which has been measured as large as 8,500 square

miles. (LUMCON 2011)

Organic agricultural and land management systems are also vulnerable to nutrient loss through leaching and erosion, but organic practices reduce the risk. Organic farmers and land managers use natural, less soluble sources of nitrogen, phosphorous and magnesium, including cover crops, compost, manure and mineralized rock, that promote increases in soil organic matter and a healthy soil structure. Healthy soil structure allows water to infiltrate the ground slowly, rather than escaping across the surface and carrying soil particles, nutrients, and other inputs with it. Healthy soil structure also allows plants to establish vibrant root systems that resist erosion. Additionally, organic certification requires that ruminant livestock are maintained on pasture that provides a substantial portion of their nutritional needs during grazing season. Well-managed pasture provides year-round ground cover that is the ultimate defense against erosion and a farmer using good rotational grazing practice is supplying non-toxic natural fertilizer as well.

Organic agriculture and genetic biodiversity

The devastating impacts that chemical-intensive agriculture and land management practices have on biodiversity are increasingly being recognized at the ecosystem and global levels. However, a quieter biodiversity crisis unfolding within agriculture today is tied to a combination of new technologies and corporate control that has resulted in the loss of thousands of traditional seed varieties and livestock breeds. The Food and Agriculture Organization estimates that some 75% of crop genetic diversity has been lost over the past century worldwide, as indigenous farmers have switched from local varieties (landraces) to genetically uniform, high-yielding varieties. Similarly, half of all breeds of domestic livestock raised in Europe one hundred years ago are now extinct, and 43 percent of the remaining breeds are endangered. In the U.S., 95 percent of the cabbage, 91 percent of the field maize, 94 percent of the pea, 86 percent of the apple and 81 percent of the tomato varieties cultivated in the last century have been lost. (FAO 1996, 1998)

Why is the precipitous decline in traditional seed varieties and livestock breeds so consequential? Lost along with each traditional variety and breed is the genetic biodiversity nurtured over countless generations with which these plants and animals adapted to the environmental conditions specific to their place of origin. While modern varieties and breeds may promise higher yields under favorable conditions, they almost always require more intensive inputs such as fertilizers, irrigation, and feed supplements to achieve such results. Additionally, traditional plant breeding practices used to develop seed varieties with desirable production and performance attributes –higher yields or better drought and pest tolerance, for example– can only be as effective as the pool of genetic resources available to the breeder. Once lost, the genetic biodiversity in traditional varieties and breeds is irreplaceable. Despite well-funded claims to the contrary, genetically engineered seeds do not match the benefits that traditional plant breeding continues to make available. Certified organic crop and livestock farmers select varieties and breeds suitable to their site-specific pest, disease, and parasite pressures, in the process preserving unique resources of biological diversity. (FAO 1996, 1998)

Conclusion

The urgency to advance organic practices is amplified when factoring in the critical importance of biodiversity to the sustainability of life. Strategies that tinker with risk assessment and establish acceptable thresholds of harm, while giving inadequate emphasis to the impacts on biodiversity and the spiraling reductions in the benefits of healthy and diverse species to effective land management, are short-term and short-sighted. While causing harm to biodiversity, chemical-intensive strategies are not proven to be necessary in light of effective organic practices. Simple reductions in chemical use in chemical-dependent management do not move land management to practices that protect and nurture biodiversity. Organic systems and the federal organic law do.

Contributors to this article include Mark Keating, Jay Feldman, Chris Ryan, Nichelle Harriott, and Terry Shistar.

Groups to EPA: Ban bee-killing pesticide

Agency begins process of reviewing the neonicotinoid pesticide clothianidin

photo by Ines Boehnert

Over 250 organizations and businesses joined with Beyond Pesticides in February 2012 to urge the U.S. Environmental Protection Agency (EPA) to ban the bee-killing pesticide clothianidin. The public comments, submitted as part of the agency's pesticide review process, cite numerous scientific studies and call on EPA to take swift action and cancel the chemical's registration. The groups believe that because this pesticide is toxic to honey bees and wild pollinators, and has not been properly evaluated in field studies as required by EPA, it should be banned.

Clothianidin is in the neonicotinoid family of systemic pesticides, which are taken up by a plant's vascular system and expressed through pollen, nectar, and gutation droplets from which bees forage and drink. Scientists are concerned about the mix and cumulative effects of the multiple pesticides bees are exposed to in these ways. Neonicotinoids are of particular concern because they have sublethal effects on insect pollinators that correspond to symptoms of honey bee colony collapse disorder (CCD) –namely, neurobehavioral and immune system disruptions.

Clothianidin has been on the market since 2003. With a soil half-life of up to 19 years in heavy soils, and over a year in the lightest of soils, commercial beekeepers are concerned that even an immediate stop-use of clothianidin will not save their livelihoods or hives in time.

Comments Challenge Pesticide Registration

Beyond Pesticides, in its comments, states, "Honey bees are the most economically valuable pollinator worldwide, and many high-value crops, such as almonds and broccoli, are entirely reliant upon pollination services by commercial beekeepers and their honey bees. Globally, 9.5% of the total economic value of agricultural production for human consumption comes from insect pollination –in 2005, this amounted to just under $200 billion. However, each year since 2006 commercial beekeepers have reported annual losses of 29-36%. Such losses are unprecedented, and approximately double what is considered normal. Groups are calling on EPA to take action against the neonicotinoid class of chemicals, like in France, Germany, and other European countries. Clothianidin and thiamethoxam [a neonicotinoid precursor that converts to clothianidin in plants and animals] are not only extremely persistent in the environment, but they are highly toxic to bees and other non-target insects. Clothianidin's use as a systemic pesticide means that every part of the plant is potentially toxic to the honey bee, and can result in widespread contamination of soil and wild plants. Risks posed by clothianidin and other neonicotinoids have been underestimated by the agency, especially given the outstanding honey bee data that have yet to be adequately reviewed. In light of the agency's mandate in Section 3(c)(7)(A) of [the Federal, Insecticide, Fungicide, and Rodenticide Act (FIFRA)] to ensure that pesticides do not pose unreasonable adverse effects on the environment, clothianidin and its parent thiameth-

oxam should be cancelled."

Clothianidin's Toxicity to Honey Bees

Clothianidin, like other neonicotinoids, is an insecticide that is highly toxic to a range of insects, including honey bees and other pollinators. It is particularly dangerous because, in addition to being acutely toxic in high doses, it also results in serious, though sub-lethal, effects when insects are exposed to chronic low doses. Exposure occurs through pollen and water droplets laced with the chemical as well as dust that is released into the air when coated seeds are planted. These effects cause significant problems for the health of individual honey bees as well as the overall health of honey bee colonies and they include disruptions in mobility, navigation, feeding behavior, foraging activity, memory and learning, and overall hive activity.

Clothianidin's Registration Lacks Field Data

Clothianidin was initially registered by EPA in 2003 on the condition that the registrant, German chemical manufacturer Bayer, would complete and submit a field study demonstrating the chemical's effects on pollinators. In addition to any registration of clothianidin being a violation of FIFRA's prohibition of chemicals that pose "unreasonable adverse effects on the environment," in December 2010 it was revealed that the pollinator study Bayer had submitted had been downgraded by EPA and deemed insufficient to fulfill the field study requirement upon which the chemical's registration was contingent. However, EPA took no action to ban or restrict clothianidin in light of this development and still does not have an acceptable pollinator field study for clothianidin. Thus, following the agency's own logic, there is no basis for allowing clothianidin to remain registered until a valid study shows bees are adequately protected.

EPA Understanding of Pollinator Adverse Effects Deficient

Judging by the pollinator data requirements that EPA has stated it is seeking for clothianidin's registration review, the agency is severely lacking in its understanding of how the chemical affects pollinators, and honey bees specifically. Despite allowing the chemical to be used on thousands of acres of American farmland over the past nine years, there is still a great deal EPA does not know about how bees are exposed to clothiandin and what the consequences of exposure actually are for bee health on the individual, colony, and species level.

Research Shows Bees Exposed to Higer Levels of Clothianidin than Previously Thought

A Purdue University study shows that honey bees' exposure to the bee-killing pesticide clothianidin, as well as its sister chemical, thiamethoxam, is greater than previously thought. Most pesticides that are toxic to bees carry a warning that the product cannot be applied while foraging bees are present. But, like other neonicotinoid pesticides, clothianidin is systemic and expressed through pollen, nectar, and gutation droplets. It is most commonly applied by seed treatment. The study, *Multiple Routes of Pesticide Exposure for Honey Bees Living Near Agricultural Fields*, published January 3, 2012 in the online edition of *PLoS ONE*, has been replicated by researchers at the University of Padova in Italy, published January 31. 2012 in *Environmental Science and Technology*.

During the spring planting season, the researchers found extremely high levels of the neonicotinoids in planter exhaust material (dust) produced during the planting of seed treated corn. Plants visited by foraging bees, dandelions in particular, growing near these fields were found to contain neonicotinoids in their plant material, suggesting uptake by wild plant species. During the spring, when neonicotinoid levels are highest, dead bees collected near hive entrances were found to contain clothianidin as well.

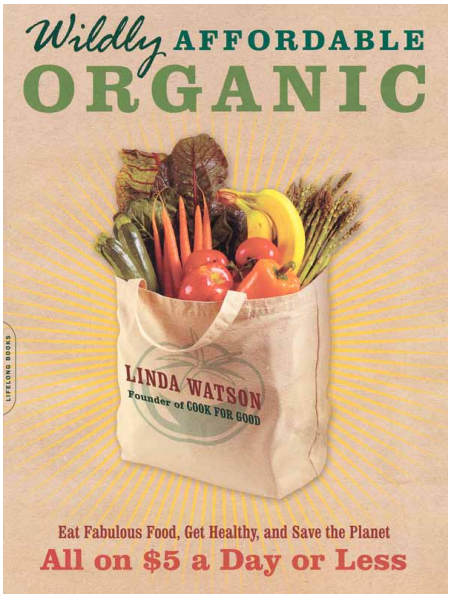
After the spring planting season, bees foraging through the summer continue to be exposed. When the corn begins to flower, the pollen is also contaminated with neonicotinoids. The authors note that the levels of clothianidin in bee-collected pollen that they sampled are approximately 10-fold higher than reported from experiments conducted in canola, which EPA had reviewed earlier during the registration process.

by Jay Feldman

Wildly Affordable Organic

Eat Fabulous Food, Get Healthy, and Save the Planet, All on $5 A Day or Less

(*By Linda Watson, 2011. Da Capo Lifelong Books. 272 pp.*) This book is a how-to manual with menus and recipes for eating organic food inexpensively. It's a myth buster for those who want to but are unsure that they can afford to eat certified organic food, those who dismiss organic as food for the elite, or those who don't think they have the time to cook. But, this is more than a cookbook and roadmap to an organic household. The book provides the reader with a succinct explanation of why the act of shopping for food is among the most important steps that we can collectively take to save the planet. These are personal choices that taken together as a society and world community will reverse the looming public health and environmental threats associated with toxic chemical use.



In the Summer 2011 issue of *Pesticides and You*, we published an article entitled the *The Real on the Affordability of Organic Food* with the intent of evaluating the health and environmental costs of chemical-intensive agriculture to society and taxpayers. These externalities take the form of real dollar outlays for toxic chemical cleanup, water treatment, and medical care that are not paid at the grocery checkout, but in the form of necessary local, state, and federal government programs to try to remediate the hazards of pesticide use. The author recognizes the importance of this and cites Beyond Pesticides' *Eating with a Conscience* guide that shows consumers that their food choices affect the health of the environment and farmworkers regardless of the residues on the food commodity. In that issue, we provide suggestions on how to find less expensive organic food through co-ops, buying clubs, local farmers markets, and in growing small gardens in yards and/or containers.

The book answers the basic question –Is it is affordable ($5 a day) to eat organic food from your local grocery store and farmers market? The answer is emphatically yes. For those who want or need to spend less than that, the author provides the option of including a mix of non-organic ingredients.

In many ways, this book simply instructs us on how to organize a household to eat healthy food, recognizing that, if organic is not a large part of the recipe, it is counterintuitive to consider the food healthy for you, your family, and the environment that supports life. Yes, we have to give up the prepared foods, but the author "streamlines the steps of feeding your family –from navigating a farmers market to unlocking the power of your freezer" to taking advantage of the seasonal cost of food purchased at their peak, and learning to buy certain items in bulk, to planting in the kitchen window basil and chives. Turning what may normally be wasted into a delicious sauce or soup is instructive and cost-busting. For example, you'll find a recipe for asparagus sauce made from the fibrous stalk of asparagus. Tor those who do not like fresh asparagus, this book is filled with choices –and the author is extremely sensitive to the time constraints that busy people and families endure. She even separates the recipes into "active time" that it takes you to cook and "total time" that includes cooking in the oven or on the stove. Hummus takes 10 minutes of active time! There is a section, the "starter plan," where your cooking is limited to 20 minutes a day. While I cannot yet vouch for the tastiness of the recipes, which look great, as a cook and a father who raised two children in a two-parent working family, this book is incredibly instructive, breaks it down, and puts the fun back into food despite busy schedules.

Clearly, this book is researched and tested with the author spending three years of refinement before getting to its final form. The book provides a lot of useful suggestions for planning ahead so that you're not cooking every day with suggestions like cooking "planned-overs" instead of "left-overs" for future meals that can be frozen.

The author's cooking style was influenced by a chapter in Anthony Bourdain's *Kitchen Confidential*, "How to Cook Like a Pro," in which he says, "Good food is very often, even most often, simple food. Some of the best cuisine in the world –whole roasted fish, Tuscan-style for instance– is a matter of three or four ingredients. Just make sure they're good ingredients, fresh ingredients, and then garnish them. How hard is that?"

This book will help you conquer the kitchen with an affordable organic approach. And, it doesn't stop there. The author has founded the organization Cook for Good with a website (www.cookforgood.com) that will keep you updated with new ideas. Happy organic eating!

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We rely on bees, and they're relying on us.

Bees are in trouble –in part because of pesticides– and policymakers are not acting quickly enough to help them. But backyard gardeners, sideline beekeepers and ordinary people all over the country have been stepping up.

Show your support with a Pesticide Free Zone yard sign.

At eight inches in diameter, these painted metal signs will not rust and will retain their bright colors for years. The sign comes with valuable information on organic lawn and garden management, pollinators, and how to talk to your neighbors about pesticides. ***Signs are available for $13 each ($10 plus shipping for ten or more) at www.shopbeyondpesticides.org.***

Another way to show your support is by taking the online pledge to protect bees in your backyard, and then putting your yard, park, or school grounds on the honey bee map! This will demonstrate the national groundswell of citizen support to protect pollinators from pesticides now. See www.honeybeehaven.org.

Other ways to protect pollinators:

■ **Go Organic.** Choosing organic food is not only good for your health, but it also helps protect honey bees and wild pollinators. In addition to toxic pesticide residues on the food we eat, our food buying decisions support or reject hazardous agricultural practices, protection of pollinators, as well as contributing to working conditions and communities for farmworkers and families.

■ **Become a backyard beekeeper.** For those who may be feeling highly motivated, there is also the option of keeping your very own colony of bees in your backyard. This provides a safe haven for the bees while also allowing you the opportunity to harvest the fresh honey! If you are interested in keeping honey bees, the American Beekeeping Federation recommends that you find a local bee club in your area. ***Learn more at www.beyondpesticides.org/pollinators/protect.***