Maine Board of Pesticides Control

Miscellaneous Pesticides Articles June–July 2012

(***identified by Google Alerts or submitted by individuals***)

From: NANCY ODEN [mailto:cleanearth@myfairpoint.net]
Sent: Saturday, May 19, 2012 10:51 AM
To: Jennings, Henry
Subject: Lawn care company faces $37,000 fine | The Portland Press Herald / Maine Sunday Telegram

Henry - You will note my comments as "cleanearth" following this article in the PPH (website below).
It seems the issue of toxicity almost never comes up.....why?
And then you halve their fine? Why? No, double it instead , since this was done egregiously.
- Nancy Oden

http://www.pressherald.com/news/lawn-care-company-faces-_37000-fine-_2012-05-19.html?cmpid=morning-news-update-html

May 19, 2012

Lawn care company faces $37,000 fine

The firm's founder, saying it did nothing wrong, is upset that a proposed consent agreement was made public.

By Gillian Graham ggraham@mainetoday.com
Staff Writer

A lawn care company that is accused of applying chemical pesticides for customers who believed they were getting organic treatments faces as much as $37,000 in fines in a proposed consent agreement with the state pesticides board.

RELATED DOCUMENTS

PDF: Proposed Administrative Consent Agreement

The state Board of Pesticides Control says Purely Organic Lawncare of York Harbor violated pesticides laws and regulations by applying chemical pesticides at Colby College in Waterville and the Wainwright Recreation Complex in South Portland.

The company's founder and chief operating officer says his employees applied chemical pesticides only for customers who agreed to the treatment. James Reinertson said his company did nothing wrong and he is upset that the consent agreement was released publicly before it was finalized.

On May 11, the board tabled consideration of the proposed agreement pending further discussion. Reinertson said he will meet with the board again in September to take up the issue.

The proposed agreement describes the company as "engaged in a pattern of fraudulent business practices involving both commercial and residential customers."

The board's investigator also reported that employees were not wearing the protective gear needed for the pesticide that was found in tests. The federal Environmental Protection Agency requires workers who handle that pesticide to wear long-sleeve shirts, long pants, shoes and socks, and chemical-resistant gloves.

"The violations were not isolated incidents, but ingrained operating practices of the company. The types of violations were extensive," reads the proposed settlement. "The company realized an economic benefit and competitive advantage from their practices."

Purely Organic would have to pay $18,000 of a $37,000 fine under the consent agreement.

Reinertson said he employs seven service people. The lawn care company is part of a family of companies owned by Reinertson that also manufactures organic lawn care products in Seabrook, N.H. The company sells those products retail and wholesale.

The state pesticides board says it began its investigation in 2010, when two incidents involving Purely Organic came to its attention.

According to the proposed consent agreement, a board inspector who was doing a routine inspection of a Purely Organic job site at Colby College got positive test results for chemical herbicides, even though company signs on the turf said it had been treated with organic fertilizer.

A Purely Organic foreman told the inspector that the application was organic, and a Colby grounds supervisor said he had ordered an organic weed management product, according to the proposed agreement.

Reinertson said Friday that the contract with Colby allowed Purely Organic to use both organic fertilizer and traditional -- non-organic -- herbicides.

A week after the inspection at Colby, the board says, it got a complaint from a parent in South Portland, who said he believed the Wainwright fields had been treated with an herbicide but no signs were posted to notify the public.

Purely Organic had treated the fields a week earlier under an agreement with the city that dated to 2008. The city paid Purely Organic about $10,000 per year for organic turf treatments.

Samples taken by an inspector from two locations at Wainwright tested positive for an herbicide not listed in any of the company's job proposals, product information sheets or invoices, according to the proposed consent agreement.

"Based on the above evidence," the proposed agreement says, "it was determined that Purely Organic engaged in fraudulent business practices in the application of pesticides at the South Portland Wainwright Recreation Complex."

Reinertson denied that Friday. He said his company applied only organic fertilizer at the field and his crews did not have weed control products with them. "Our view is that they tested a field we don't even treat at that property," he said.

In a letter to customers, included with the board's May 11 meeting agenda, the company said that at the time of the investigation in 2010, it had transitioned from using chemical applications, and chemical residues remained on trucks that were used to apply treatments.

"We believe that all of our products were safe and continue to be safe and what they are labeled as being," says the letter, which characterized the initiation of the investigation as a "witch hunt" started by competitors.

After the proposed agreement was released with the board's May 11 agenda, South Portland City Manager James Gailey said he felt "blindsided" by it, and decided to "step away" from using Purely Organic, which had continued to provide lawn care services for the city.

"We didn't even know there was an investigation going on," Gailey said.

The city received the results of the 2010 lab test, but didn't hear anything else from the board.

In Scarborough, Town Manager Tom Hall said Purely Organic recently submitted a bid to provide organic turf management services in town, but he decided to consider other bids after learning about the proposed consent agreement.

"That was reason enough for me to look elsewhere," he said. "There's nothing they can say or do to cause me to think differently."

Henry Jennings, director of the pesticides board, would answer questions only by email Friday.

He said the board investigates an average of 100 complaints each year and ratifies an average of 13 administrative consent agreements annually.

Under state law, a pesticide is "any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pests" and any substance or mixture that is used as a plant regulator, defoliant or desiccant.

Companies that apply pesticides must be licensed by the state. In his email, Jennings said about 300 companies are licensed in Maine, and the state does not differentiate between organic and non-organic application companies.

Staff Writer Gillian Graham can be contacted at 791-6315 or at:

ggraham@mainetoday.com

Further Discussion

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Comments

- **cleanearth** 5 days ago
  - Why have large, espensive-to-maintain "lawns," anyway? Food gardens would be a much better use of the land.
  - Have the Colby College students build 2' high raised beds, fill with good soil (not "biosolids," because that's sewer sludge - not good to eat!), plant seeds, weed, eat. Not at all difficult, no machines needed, no pesticides, no noisy, polluting lawn mowers, and nearly-free food for the College.
  - Same with parks' departments and individuals' yards which are nothing but large swaths of grasses cut to within an inch of their lives.
  - Cut lawns are ecological dead zones.
  - Pesticide-treated lawns are deadly to birds and bees, as well as harmful to children, pets, and all creatures who contact the grasses. And these poisons seep down into your drinking water.
  - Using a machine lawn mower for 1/2 hour equals the pollution created by driving a car about 55 miles.
  - Are we never going to get past poisoning our own environment? Our children's earth? . .
- **cleanearth** 5 days ago
  - The Pesticide Control Board doesn't fine anyone very often - has to be truly egregious misuse of these poisons for them to get fined. And then they're going to cut the fine in half? Why?
  - Pesticides don't go away, they all have final metabolites which stay in our soil and water for many years, some for hundreds of years. It's simply suicidal to keep permitting this completely unnecessary poisoning of us all. I say this as an organic farmer who's never used pesticides, whether called "organic" or not. No need.
  - "Lawn Care?" Please. Why are people afraid of Dandelions when they are among the more nutritous of greens? Better to pull them after a rain, eat the greens and flowers, grind up the roots as a coffee substitute, OR just let them grow because they're hardy and beautiful.
  - So, the real issue is, why does the Pes. Ctl. Bd. allow pesticides (all of them are poisonous) to be used in public areas, schools, apartment buildings, old folks' homes, and on/in our food crops?

- Because they're part of the Dept. of Agriculture, which culture is still controlled by the big chem. guys because virtually all gubernatorial appointees on the Pes. Ctl. Bd. are in pay of, one way or another, Big Chem.Big Pharma.
- To those complaining about "small business" being harmed - - if a "small business" wanted to spread nuclear waste around a public park, would that be okay, too? What wouldn't be all right for a "small business" to do?
- Harming the public health just to make a dollar is unconscionable, and there's too much of it around. Time to get serious about what's important, and it's not a "small business" spraying poisons around our habitat.

Portland Press Herald

Yesterday at 12:00 AM

Maine Gardener: Wet and warm weather brings uncommon pests, plus the usual suspects

By Tom Atwell

The wet spring and warm winter have resulted in a lot more pests attacking gardens across Maine, James Dill, a pest management specialist with the University of Maine Cooperative Extension in Orono, said last week.

Some of the pests are ones we deal with every year -- slugs, ticks, aphids, cutworms and the like -- while others are pests new to Maine that could cause major problems for home gardeners and commercial farmers.

Over the winter, state officials warned growers about four pests. Now that the growing season has started, some of them have been found in the state, but for others the watch continues.

"The brown marmorated stink bug is still knocking at our door," Dill said. "I'm sure it is in the state somewhere, but we have not seen a problem with it yet. I expect it will cause some problem in the next few years because it will attack apples."

The brown marmorated stink bug has an alternating black-and-white edging on its shield-shaped back and alternating black and white antennae.

The European crane fly attacks turf and has been found along the coast in places such as Mount Desert Island, but it has not been a big problem in other parts of the state.

The spotted wing drosophila was found last fall in parts of Maine, and the state is monitoring it closely to see where it shows up this summer.

"We probably have at least 100 places where we have traps set up -- in crops such as strawberries, high-bush blueberries and greenhouse tomatoes," Dill said. "We will set up 100 or 200 more for the low-bush blueberries."

The drosophila is a fruit fly, but unlike most fruit flies, it will eat fruit that is ripening, not just fruit that is past its prime.

Dill said the threshold for treating the spotted wing drosophila is one, which means that if the pest is seen in an area with low-bush blueberries, the fields will have to be sprayed weekly for for five to six weeks -- which will be a huge expense for the blueberry growers, who now do not have to spray for the most part.

Dill said the drosophila starts out slowly, so it is not surprising it has not been seen this early in the season.

But it tends to pick up as the summer progresses, so people who grow such crops as fall raspberries will be hit especially hard.

"Those are mostly pick-your-own operations, and since you can't let people in right after you've sprayed,

some growers are saying they will just get out of the business if this comes," Dill said.

Dill also said that homeowners who grow cherries are going to be affected by the drosophila, because they love cherries.

Winter moth is another pest that is going to affect blueberries and cranberries.

The pest has been in Massachusetts for several years, but has just started coming into Maine, Dill said.

The moth gets its name because it flies throughout the cold months, coming to houses in swarms. But it is the caterpillar form that is out now and is going to be attacking the fruit.

The browntail moth is expanding its range in Maine.

It normally has been a coastal pest, mostly in Casco Bay, but has shown up in spots as much as 60 miles inland, Dill said.

With all of the rain in June, slugs have been a problem and, somewhat surprisingly, so have snails, Dill said.

"There have been a lot of calls about snails climbing up ornamentals and leaving slime trails and on lupines, as well as grass-type crops," he said.

Most commercial slug killers use iron phosphate, and the manufacturers recommend that people use it around their vegetable gardens -- not in them -- so Dill wonders how safe they are.

But he says beer does work if you have the lip of the can or pie plate level with the ground. And you can put a row of coarse sand around the garden plants you want to save, because the slugs get bogged down by the weight of the sand sticking to them.

It also has been a bad year for cutworms in vegetable gardens and wire worms, especially where people created new gardens in areas that had been covered by sod.

The gypsy moth comes and goes, and this is looking like a year that will have an outbreak of that pest.

"We have had quite a few hydrangea leaf tiers," Dill said. "This is not a serious pest, but it is kind of unusual. It ties the leaves up and gets inside of them and just feeds."

Dill urges people to let the state know if they have seen any of the new pests, and to send the state an example of any insect that they don't recognize.

The process is described at the University of Maine Cooperative Extension's home and garden website, http://umaine.edu/home-and- garden-ipm, or people can contact their county extension office for directions on how to send something to the state's diagnostic lab.

TWELVE GARDENS will be open to visitors from 9 a.m. to 3 p.m. Saturday during the Saco Celebrates with Gardens tour, part of the city's 250th anniversary celebration.

Tickets cost $12 and are available at Saco's Dyer Library, The Blue Elephant Cafe, Biddeford's McArthur Library, Nonesuch Books at Biddeford Crossing and, on the day of the show, at the Saco train station.

Tom Atwell has been writing the Maine Gardener column since 2004. He is a freelance writer gardening in

Cape Elizabeth and can be contacted at 767-2297 or at:tomatwell@me.com

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Find this article at:
http://www.pressherald.com/life/homeandgarden/wet-and-warm-weather-brings-uncommon-pests-plus-the-usual-suspects_2012-07-01.html

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High: **69°** | Low: **53°**
High Tide: **5:57PM**
Low Tide: **12:09AM**

The Portland Press Herald

Monday, June 11, 2012

Posted:Today
Updated: 10:33 AM

New gardens nurture nature naturally

By Kelley Bouchard kbouchard@mainetoday.com
Staff Writer

PORTLAND - Wedged between the calm waters of Back Cove and the near-constant roar of Interstate 295, there's an unexpected oasis of natural beauty and a learning opportunity for experienced and wanna-be gardeners alike.

Established over the past two years, the YardScaping Gardens at Back Cove showcase nearly 2,000 trees, shrubs and perennials that can help Maine gardeners reduce water use and reliance on fertilizers and pesticides.

"With a garden like this, you don't need to have those chemicals around your home or running into our waterways," said Gary Fish, coordinator of the Maine YardScaping Partnership and manager of pesticide programs at the Maine Board of Pesticides Control.

On Tuesday, the partnership will celebrate the grand opening of the state's first Earth-friendly demonstration gardens that are safe and beneficial to people, pets and wildlife.

Special events are planned from noon to 2 p.m., including free garden tours and instructional presentations. The partnership has more than 30 members, including state agencies, environmental groups and garden centers across the state.

Fish and several volunteer master gardeners were at the Back Cove gardens Friday, weeding, spreading mulch and otherwise getting them ready for Tuesday's debut.

The gardens spread across 2.5 acres of city-owned land off Preble Street Extension, beside soccer fields and the Back Cove recreational trail. Walkers and joggers regularly pass through the gardens and note their enjoyment of the various plantings.

"It's beautiful," a woman called out as she jogged by Fish on Friday. "Everything looks great!"

Fish took the compliment in stride. "We hear it all the time," he said.

The gardens feature a few permanent signs that explain the benefits of sustainable gardening and highlight several varieties of disease-, pest- and drought-resistant perennials, shrubs and trees. A more detailed list, map and growing tips are available on Maine's sustainable gardening website, www.yardscaping.org.

There are native lowbush blueberries and pitch pines, wine-hued black lace elderberry shrubs that provide

click image to enlarge

Aurelia Scott of Portland weeds a section of the YardScaping Gardens at Back Cove containing Walker's Low catnip in Portland on Friday. A grand opening with special events is set for noon to 2 p.m. Tuesday.

Derek Davis/Staff Photographer

click image to enlarge

Eric Handley of Portland places mulch in a section of garden containing native Maine plants.

Derek Davis/Staff Photographer

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Select images available for purchase in the Maine Today Photo Store

FOR MORE

Learn more about earth-friendly gardening in Maine, visit www.yardscaping.org.

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excellent shelter for wildlife, disease-resistant gold flame spirea, and spikey mounds of drought-tolerant blue fescue.

The gardens are designed for various landscapes, from urban to suburban to rural meadows. They also bloom spring through fall. Now, pink flowers are popping on bigroot geraniums, yellow petals dapple the buttercup potentilla and purple spires rise from Walker's Low catnip. Purple coneflowers and black-eyed Susans will follow in summer, and autumn joy sedum will bloom red in early fall.

Even experienced gardeners may see something new. There's a lovely cluster of young river birch trees -- native to the Ohio River valley -- which Fish recommends to Mainers seeking a heartier, insect- and disease-resistant alternative to white birch. There are lush black tupelo trees -- native to but rare in Maine -- which Fish recommends as strong, slow-growing and largely trouble-free.

The gardens were funded by a $34,000 federal environmental grant, a $10,000 grant from the Davis Conservation Foundation in Yarmouth and about $20,000 in donations from various garden clubs and businesses, Fish said. With the addition of free labor, donated plants and growing time, the gardens are worth as much as $500,000 today, he said.

The gardens were developed and are maintained by about a dozen volunteer master gardeners, most of them trained through the University of Maine Cooperative Extension in Falmouth.

Nicki Griffin, a semi-retired Portland resident, works in the gardens two or three days each week.

"People are so relaxed and get so much pleasure when they walk through the gardens," Griffin said. "They stop and talk and ask questions, and I'm glad to share what I know."

The gardens have already won awards from the Friends of Casco Bay and the International Society of Arboriculture. The goal is to develop a nonprofit organization to manage the gardens in the future.

Fish plans to produce an online video tour of the gardens, to be posted on the yardscaping website this fall, that visitors can download to their smartphones. He also hopes to develop similar demonstration gardens elsewhere in Maine.

Built on a former landfill next to one of the state's busiest highways, the YardScaping Gardens at Back Cove thrive as a testament to hard work, unconditional love and patience. It's a powerful example for gardeners waging the endless battle against weeds, disease and insects.

"You just have to relax and lower the bar," Fish said. "Don't stress out over your yard too much. It's OK to have a few weeds, and you don't have to haul out pesticides the moment you see a bug."

Staff Writer Kelley Bouchard can be contacted at 791-6328 or at:

kbouchard@pressherald.com

Were you interviewed for this story? If so, please fill out our accuracy form

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Additional Photos

A bee visits some

click image to enlarge

Gary Fish of Wayne, coordinator of the Maine YardScaping Partnership, looks

click image to enlarge

Wayne Wilson, left, of Old Orchard Beach and Eric Cushing of Scarborough walk through the YardScaping Gardens at Back Cove on Tuesday.
Shawn Patrick Ouellette/Staff

click image to enlarge

Russian sage.
Derek Davis/Staff Photographer

for spots to plant swamp milkweed.
Derek Davis/Staff Photographer

Photographer

click image to enlarge

Aurelia Scott of Portland tends a section of the YardScaping Gardens at Back Cove containing Walker's Low catnip, back right, and Russian sage, left, in Portland on Friday. The gardens showcase nearly 2,000 trees, shrubs and perennials.
Derek Davis/Staff Photographer

Further Discussion

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ScottTopsum 6 hours ago

"Built on a former landfill next to one of the state's busiest highways..." This is inaccurate. It is filled land (dry land created by dumping soil in a water body) but was never a landfill (repository for buried trash). You can't have a landfill in a body of water, which this was. The reporter's minor error does not take away from the beautiful achievement of the gardeners.

Graycatbird 6 hours ago

It's Walker's Low catMINT, not catnip. They sound similar, but there's a big difference.

Like Reply

ijus 7 hours ago

One of Portland's best kept secrets, until now. Congratulations and thanks to all who participated.

Like Reply

JJFW 9 hours ago

How very nice! Thank you volunteers.

Like Reply

Reactions

WoodhillOrg 4 hours ago

From Twitter

New gardens nurture nature naturally: http://t.co/8pQRW3sc

bigtexworms 11 hours ago

From Twitter

New gardens nurture nature naturally - Press Herald http://t.co/xfUdusxs

jaygardens 12 hours ago

From Twitter

New gardens nurture nature naturally - Press Herald http://t.co/3veCOQbo

Lovinggardening 12 hours ago

From Twitter

New gardens nurture nature naturally - Press Herald: Press HeraldNew gardens nurture nature naturallyPress Heral... http://t.co/eBqfr75V

Tammiev52 12 hours ago

From Twitter

The following is an archived video story. The text content of that video story is available below for reference. The original video has been deleted and is no longer available.

Yardscaping Gardens in Back Cove celebrates its grand opening

There's a new garden in Back Cove in Portland, with a special mission. Tuesday was the grand opening for the new Yardscaping Gardens, an intensive landscaping project that showcases sustainable gardening.

The project has been a long time coming, it's taken six years to transform the two and a half acre open field into the landscaping showcase.

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8:00pm - How I Met Your Mother
8:30pm - 2 Broke Girls
9:00pm - Two and a Half Men
9:30pm - Mike and Molly
10:00pm - Hawaii Five-0
11:00pm - News 13 at Eleven

Complete Schedule »

Today in History

July 02, 2012 07:09 GMT

Today is Monday, July 2, the 184th day of 2012. There are 182 days left in the year.

Today's Highlight in History:

On July 2, 1937, aviator Amelia Earhart and navigator Fred Noonan disappeared over the Pacific Ocean while attempting to make the first round-the-world flight along the equator.

On this date:

In 1776, the Continental Congress passed a resolution saying that "these United Colonies are, and of right ought to be, free and independent States."

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YardScaping Gardens at Portland's Back Cove

6:36 PM, Jun 7, 2012 | 0 comments

Written by
Helen Dailey

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207

COMMUNITIES

Portland
South Portland

YARDSCAPING GARDENS

The YardScaping Gardens at Back Cove in Portland will hold a grand opening on Tuesday, June 12th from noon to 2. Working with the City of Portland, the YardScaping Partnership selected two and a half acres along the Back Cove's walking trail for the project. The site showcases appropriate plantings in urban to rural settings in a beautiful, homeowner-doable way, plus serves as a model for municipalities across the state.

For more information on the YardScaping Gardens click here:
YARDSCAPING GARDENS

Maine gardeners "yardscape" their lawns

BY SUSAN VARNEY
Correspondent

What is "yardscaping" and why should people care? We are all connected — people, bugs, pets, birds, mammals, spiders, snakes; we all breath the air, drink the water, grow and hopefully flourish.

Yardscaping is about low-impact, low-maintenance, environmentally-friendly, non-toxic ways to deal with yards. Yardscaping is particularly important the nearer a person lives to rivers, lakes, streams and the ocean.

So many pollutants come from people's activities, especially automotive activities; oil and gas drop to the roadways and get washed into the waterways. The more buffer there is between activities — from mowing the lawn to driving a vehicle, — and from water, the better chance there is for the pollutant to be stopped or delayed from entering the water table.

Cutting back on toxic poisons used to kill weeds, bugs and pests also helps protect water from pollution. By cutting the size of lawns, by using native plants for landscaping landowners begin to understand yardscaping, naturalizing an area instead of flattening it and turning it into acres of lawns. Acres of lawns demand maintenance, feeding, mowing and raking. Think of all the time that could be saved by cutting back on all of that.

Take time to find out what is living in the area alongside the home: birds, mammals, reptiles, amphibians, insects and spiders. Some are welcome, some are a challenge and others are considered pests. Remember bats keep the mosquito population down, bees are pollinators and assure that flowers and fruit blooms will produce, lady bugs eat aphids and spiders are predators that trap flies. Bird song and squirrel chatter are entertaining and welcome in most gardens, while woodchucks and Japanese beetles are discouraged.

Get to know the friends and pests and use the least toxic solution to the problems. Think first, spray last to avoid killing all the good guys, too. There are ways to encourage and welcome the wanted wildlife and discourage the unwanted naturally. Using toxic substances on weeds and garden pests not only kills unwanted weeds and bugs, but also beneficial species — and are potentially poisonous to humans.

According to a web source *www.dirtworks.net/Lawn-Mower-Pollution.html* on lawn mower pollution "Over 17 million gallons of gas are spilled each year refueling lawn and garden equipment, more oil than was spilled by the Exxon Valdez."

Some evaporates into the air adding to air pollution, some is absorbed by the soil, basically making it toxic, and some seeps into the water table to be recycled into gardens, drinking water and the fish in the sea.

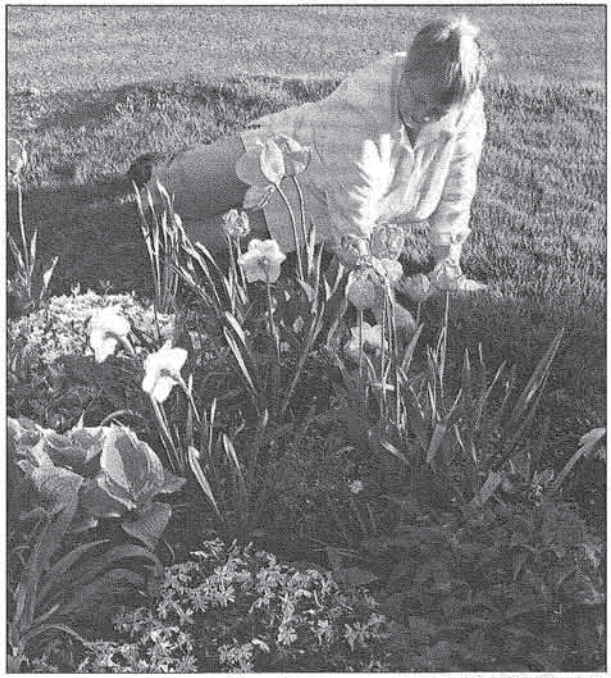
The yardscaping website *www.yardscaping.org* claims: "a lawnmower pollutes as much in one hour as an automobile driving 400 miles."

Look around the neighborhood and guess how many hours you and a neighbor are spend mowing lawns in any given season ; an hour once a week for four or five months is about 8,000 miles. That's enough miles to go from Augusta, Maine to San Francisco Calif. and back (at 6,520 miles) with about 1,500 miles for side trips along with way.

Habitat diversity including lawns, trees, ground covers, perennials and annuals, shrubs, bird feeders, patios, fruit trees and beds, herb and vegetable gardens, sheltering thickets and a birdbath. Always having something in bloom attracts insects that will in turn attract birds.

How are you going to use your yard? Parties, barbeques, quiet reading, children playing, gardening, bird watching, or just day dreaming. Break it up into "rooms" that suit your needs. Use tables and chairs, shrubs and flowers, trellises to define areas. Perhaps a view with a swing, a screen house with a picnic table, a shady place for a kayak on the riverbank.

More on YARDSCAPE, Page 69



Photos by Susan Varney

Theresa Bonsey, Waterville weeds her garden as she gradually takes over her lawn with flower, herb and vegetable gardens.

Plant gardens not lawns: lawns are high maintenance, demanding many resources and time for feeding, watering and mowing. Planting a garden will provide hours of pleasure, as well as food and flowers for your family.

Yardscape

Continued from Page 68

Local sources for information on identifying pest, native plants & shrubs, soil tests:

Franklin County Soil & Water Conservation District
107 Park Street
Farmington, ME 04938
Telephone: (207)778-4279
Fax: (207)778-5785
Email: *info@franklincswcd.org*
Website: *www.franklincswcd.org*

Kennebec County Soil & Water Conservation District
21 Enterprise Drive, Suite #1
Augusta, ME 04330
Telephone: (207)622-7847
Fax: (207)626-8196
Email: *info@kcswcd.org*
Website: *www.kcswcd.org*

Somerset County Soil & Water Conservation District
12 High Street
Skowhegan, ME 04967
Telephone: (207)474-8324
Fax: (207)474-0638
Email: *carol.weymouth@me.nacdnet.net*
Website: *www.somersetswcd.org*

Waldo County Soil & Water Conservation District
266 Waterville Road
Belfast, ME 04915
Telephone: (207)338-1964
Fax: (207)338-4972
Email: *kym.sanderson@me.nacdnet.net*
Website:
www.waldosoilandwater.org
If you live in a county not listed here: *maineswcds.org/locations.htm*
Plants to Use and Plants to Avoid: *umaine.edu/publications/2500e/*
Beneficial Insects and Spiders in Your Maine Backyard: *umaine.edu/publications/7150e/*

For More Information
Gary Fish, manager,
Pesticide Programs
Maine Board of Pesticides Control
Augusta. 207 287-7545
www.ThinkFirstSprayLast.org
www.YardScaping.org
www.GotPests.org

the FORECASTER
Your hometown newspaper

Portland public garden promotes low-impact planting techniques

By Andrew Cullen
E-mail and share
Jun 12, 2012 10:40 am

PORTLAND — A new public garden, almost a decade in the making, is meant to enhance the cityscape and inform its gardeners.

City and state leaders hosted the formal opening of the Yardscaping Gardens at Back Cove last week.

The gardens, which having been quietly growing since 2006, stretch 2.5 acres between the water and Interstate 295, near the Back Cove soccer fields. They provide a burst of color and dense floral variety along one of the city's most popular walking paths.

The grounds flash with purple and yellow flowers, leaves that span the spectrum from deep crimson to crisp spring yellow, and green pine branches.

The gardens contain more than 2,000 types of trees, shrubs, and perennials, most of which rarely need to be watered, city arborist Jeff Tarling said.

Most are native to the area, with a few other hardy species from elsewhere mixed in. They were chosen, in part, for their range of flowering buds and texture, Tarling said.

Some may be easily overlooked elsewhere, a gardener's sleeper surprise, said Tarling, citing sweetfern as an example. Actually a deciduous shrub which sometimes grows in places like ditches or rock quarries, sweetfern has a crocodile-tail shape that is both pleasing and primordial.

Photo: Andrew Cullen / The Forecaster

A cyclist rides through the YardScaping Gardens at Back Cove in Portland, a landscaping project designed as an example of trees, shrubs, and flowers that Maine gardeners can plant to reduce their use of fertilizer, pesticide, and irrigation water.

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But the gardens are also meant to be educational, and were designed to inspire gardeners and property owners to make their lawns and flower beds less resource-needy, Paul Schlein, the Maine Board of Pesticide Control's public education specialist, said in an email.

"These gardens are different because they are designed as a sustainable landscape that minimizes the need for fertilizers, weed and insect controls and water," Schlein said.

Though the city's donation of land gave the project a home, the driving force behind the project is a state program run by the Board of Pesticide Control called Yardscaping, which began in 1999.

The Yardscaping program, a collaboration of state, municipal and other organizations, is a response to rapid increase in residential pesticide use in Maine, and a general concern for cautious resource use.

Pesticide use by lawn- and tree-care companies at private homes amounted to 800,000 pounds in 1995, according to data provided by Schlein. By 2007, the total was over 6 million pounds spread annually.

Monitoring "has been done in conjunction with the Friends of Casco Bay and by the BPC on its own that shows the presence of several lawn-care pesticides in the waters of Casco Bay and other areas of Maine," Schlein said. "Some have been found at levels that may be affecting aquatic invertebrates and the food chain in those systems.

"Our partners have also seen effects on our lakes and bays from fertilizer nutrients like nitrogen and phosphorus which can cause algae blooms," he said.

After half a decade of work, almost exclusively by volunteers, the Back Cove garden is close to its permanent state. But there will always be upkeep to do, Tarling said.

The Yardscaping program has already erected informational signs about the garden, its plants and their resource-preserving power, Schlein said. Next, they plan to produce an online tour of the garden to help interested planters identify plants – most of which will be available at local plant nurseries – for their own homes and lawns.

That virtual tour and more information about the project can be found on the **Yardscaping website**.

*Andrew Cullen can be reached at 781-3661 ext. 100 or **acullen@theforecaster.net**. Follow him on Twitter: @ACullenFore.*

July 4

Natural Foodie: Another good reason to choose organic sweet corn

By Avery Yale Kamila akamila@mainetoday.com
Staff Writer

Corn is a traditional Fourth of July treat, whether roasted on the grill, steamed in a large pot or layered into a lobster bake. Yet this all-American food is increasingly raising red flags among independent scientists and farmers.

This summer marks the first time that Monsanto's Bt sweet corn has been approved for planting in Maine. Unlike genetically modified field corn, which farmers in Maine and across the country have been growing for years as livestock feed, sweet corn is intended for human consumption.

Bt, or Bacillus thuringiensis, is a naturally occurring soil bacteria that organic farmers have used for years as a diluted spray to fend off pests. Chemical companies such as Monsanto are now inserting patented strains of the toxins produced by Bt directly into the DNA of various plants. Bt sweet corn is the latest example.

Two recent studies illustrate the potential harm posed by these genetically modified Bt crops, which have never been independently tested for safety.

In February, the Journal of Applied Toxicology published the results of a study carried out at the University of Caen in France. In this study, researchers found that the toxins produced by genetically modified Bt plants can break open and destroy human cells.

While chemical companies and government regulators claim that these genetically modified toxins are destroyed by digestion, a recent Canadian study found otherwise.

Rob Johanson checks on his new field of organic sweet corn at Goranson Farm in Dresden recently. Johanson predicted that the corn would be knee-high by the Fourth of July. click image to enlarge

Photos by Gordon Chibroski/Staff Photographer

The study published in the journal Reproductive Toxicology detected genetically modified strains of Bt toxins in the blood of 93 percent of pregnant women and 80 percent of unborn babies tested. No one knows what the short-term or long-term effects of such exposure will be.

In a written statement, Monsanto spokesperson Carly Scaduto dismissed the Canadian study, saying "the study authors did not establish that the source of the protein detected was from GM plants." In regards to the French study showing human cell death from genetically modified Bt toxins, Scaduto said that Bt "has no impact on non-target insects, animals or humans."

Because genetically modified foods are never labeled, the only way to be sure you're not eating Bt sweet corn is to buy certified organic sweet corn. A number of Maine stores are offering organic sweet corn this summer, and a handful of Maine farmers intend to sell it later in the season.

Rob Johanson, who farms Goranson Farm in Dresden, has planted three acres of organic sweet corn, which he estimates will be available by the end of July.

In addition to concerns about the health affects of genetically modified sweet corn, Johanson also worries about genetic drift from neighboring farms. Corn pollen travels on the wind between plants, which means that a conventional farmer growing genetically modified sweet corn or field corn can easily contaminate the fields of a neighboring organic farmer.

"We're pretty well isolated here, and as far as I know, my neighbor, who's conventional, isn't growing any GMO sweet corn," Johanson said. "But it is a concern, absolutely. Quite frankly, it's trespass as far as I'm concerned. We should have the right to not be contaminated by those genetics if we so choose."

A group of farmers led by the Organic Seed Growers and Trade Association is suing Monsanto in federal court. The case challenges the chemical company's patents on genetically modified seeds, and seeks blanket protection from patent-infringement lawsuits for organic farmers should their crops become contaminated by Monsanto's genetically altered plants. By law, certified organic crops cannot contain genetically modified material.

Most locally owned health food stores, which tend to only stock organic produce, are already selling organic sweet corn or have plans to do so once it becomes available from suppliers. The challenge for stores is that few organic farmers grow enough sweet corn to sell it wholesale.

"It's not something that a lot of the local farms grow," said Darren Stotz McFarland, produce buyer for Royal River Natural Foods in Freeport. "A lot of the farms we deal with don't grow it on a large scale. If we can't get it locally, we'll

The tag identifies the naturally developed hybrid of non-genetically modified corn.

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WHERE TO FIND ORGANIC SWEET CORN

STORES

The following health food stores are all currently stocking organic sweet corn or plan to do so when it becomes available from their suppliers. It's a good idea to call ahead to see if it will be available on the day you plan to shop.

Axis Natural Foods, 120 Center St., Auburn. 782-3348

Lois' Natural Marketplace, 152 U.S. Route 1, Scarborough. 885-0602

Morning Glory Natural Foods, 60 Maine St., Brunswick. 729-0546

Royal River Natural Foods, 443 U.S. Route 1, Freeport. 865-0046

FARMS

Once the crop ripens, these farms plan to sell organic sweet corn directly to customers. Corn is typically available from Maine farms starting in late July or early August.

Farmer Kev's Organic Produce expects to have it available in mid-August. Find it at the Winthrop Farmers Market on Saturdays or order it from the farm for delivery to your doorstep by contacting fmrkev@gmail.com or 446-2899.

Freedom Farm expects to have it available in late

probably order from our distributor, and that would probably come out of Massachusetts. It sells very well whenever we have it."

Staff Writer Avery Yale Kamila can be contacted at 791-6297 or at: akamila@pressherald.com

Twitter: AveryYaleKamila

Were you interviewed for this story? If so, please fill out our accuracy form

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August. Find it at the Portland Farmers Market on Wednesdays and Saturdays, the Belfast Farmers Market on Fridays, the Bar Harbor Eden Farmers Market on Sundays and the Orono Farmers Market on Saturdays.

Goranson Farm expects to have it available by late July. Find it at the farm stand located at 250 River Road, Dresden. The stand is open daily from 9 a.m. to 6 p.m. Also available at the Boothbay Harbor Farmers Market on Thursdays, the Damariscotta Farmers Market on Fridays and the Bath Farmers Market on Saturdays.

Stonecipher Farm expects to have it available by late July. Find it at the Portland Farmers Market on Wednesdays and Saturdays. The farm also sells organic sweet corn to restaurants including Local 188, Sonny's and Hugo's.

CSAs

If you're lucky enough to be a member of one of these CSAs, you should see organic sweet corn in your pick-up box later in the season. Contact the farm if you're interested in buying a share in next year's CSA.

Full Circle Farm, Vassalboro. 923-4216

Long Meadow Farm, West Gardiner. 582-4817; longmeadowfarmmaine.com

South Auburn Organic Farm, Auburn. 415-8380; southauburnorganicfarm.com

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Tuesday, July 10, 2012

Yesterday at 12:00 AM

Maine Voices: Column misses mark with absurd claims about threat posed by GMO corn

The writer repeats talking points made by ideologues who think any non-organic farm product is bad for you.

By MICHAEL BENDZELA

GORHAM - A recent column by Avery Yale Kamila, "Another good reason to choose organic sweet corn" (Natural Foodie, July 4), contains so many omissions, errors and outright falsehoods that one has to wonder if there is a vetting process at the Press Herald.

Kamila's fantastic, frightening claims appear repeatedly in discussions of organic farming. Its advocates often appear to be ideologues who are not embarrassed to repeat the worst sort of dishonesty and debunked nonsense to advance their message that any farming outside of organic is dangerous to your health.

PPH Opinion

The writer describes Bt corn this way: "Chemical companies such as Monsanto are now inserting patented strains of the toxins produced by Bt directly into the DNA of various plants. Bt sweet corn is the latest example."

No "toxins" are "inserted" into plant DNA. A stretch of DNA that codes for a crystalline protein called Cry1Ab is first isolated from a strain of the organism Bacillus thuringiensis. That piece of information is then incorporated into the DNA of a strain of sweet corn so that the foliage produces the protein, which is then ingested by the larvae of a key insect pest. The toxic properties of the protein are activated by specific enzymes in the insect's gut.

In the very next paragraph, Kamila commits a howler: "Two recent studies illustrate the potential harm posed by these genetically modified Bt crops, which have never been independently tested for safety." How does one cite two studies to show such studies have "never" been done?

Agricultural scientist Steve Savage has pointed me toward a major review of 24 long-term, independent studies that appears in Food and Chemical Toxicology. The conclusion: "Results from all the 24 studies do not suggest any health hazards and, in general, there were no statistically significant differences within parameters observed." How can Kamila make such an omission, and why does the Press Herald let her get away with it?

The two papers she cites have been not only widely debunked but ridiculed by scientists for their poor design and faulty conclusions.

Kamila fails to mention that the first study, which purports to show that Bt toxin can "break open and destroy human cells," is the Greenpeace-funded work of Gilles-Eric Seralini. Greenpeace, to its shame, is the virulently anti-genetic-engineering group that advocates vandalizing field trials of genetically engineered crops.

Bruce M. Chassy, professor of food science and human nutrition at the University of Illinois, has written that Seralini's work is "irrelevant." According to Chassy, "Numerous peer-reviewed scientific articles have (already) established that Bt proteins are non-toxic to animals or humans."

Worse, Seralini just dropped the toxin on human kidney cells growing on a petri dish, thus killing them, which doesn't come close to real world conditions. You can achieve the same effect with table salt.

The other study Kamila cites, which claims to have "detected genetically modified strains of Bt toxins in the blood" of pregnant women and unborn babies, comes close to being an outright fraud. Savage calls it "completely bogus."

First, the experimenters did not even bother to check whether their subjects had eaten any corn, let alone genetically modified varieties. They even say so:

"Our study did not quantify the exact levels of (pesticides-associated genetically modified foods) in a market-basket study. However, given the widespread use of GM foods in the local daily diet ... it is conceivable that the majority of the population is exposed through their daily diet."

For all they know, the women had eaten organic corn, or no corn at all. This means there cannot be even a semblance of controls in the study.

Worse, they used the wrong test to look for the Cry1Ab protein, and they have been excoriated in the scientific press for it.

Applied geneticist David Tribe calls the study "nonsense," going on to say: "The assertion that the protein Cry1Ab pesticide (is) absorbed in the blood of pregnant and non-pregnant women, probably due to intake and the passage of GM foods, is not based on immunological reliable results."

I have no dog in this fight. I am neither an organic farmer nor one who grows Monsanto's Bt corn. A group of us simply grow food on one acre for several subscribers (often called Community Supported Agriculture).

I do know that farming in Maine is difficult -- it is a cold, dank, stony, fungal place -- and our plight is not helped by propagandists like Kamila, who paints the majority of us in the worst light possible every chance she gets.

Michael Bendzela teaches writing and critical thinking at the University of Southern Maine in Gorham and helps operate a small farm in Standish. Sources are available by emailing michael.bendzela@usm.maine.edu.

BANGOR DAILY NEWS

Maine's 2011 wild blueberry harvest worth $70.1 million

Gabor Degre | BDN

Just-raked baskets of blueberries are seen here at Spruce Mountain Blueberries in Rockport in 2010. *Buy Photo*

By Tom Walsh, BDN Staff
Posted March 26, 2012, at 2:06 p.m.

MACHIAS, Maine — Maine's 2011 wild blueberry harvest tipped the scales at 83.1 million pounds, according to yield results calculated by the U.S. Department of Agriculture.

That's 100,000 pounds more than the 2010 crop, which the USDA estimated at 83 million pounds.

While the last two crops were virtually identical in yield, prices paid to growers were up significantly in 2011, jumping from 61 cents per pound in 2010 to 85 cents per pound last year. At that price, Maine's 2011 wild blueberry harvest was worth $70.1 million, or 42 percent more than the 2010 crop.

David Yarborough, the Maine Extension Service wild blueberry specialist, said Monday that midcoast growers saw lower yields per acre than did their Down East counterparts due to wet weather during spring pollination and a lack of rainfall during the run up to harvest in late August.

"The Down East berries really plumped up with the rains just before harvest," Yarborough said.

The 2011 wild blueberry crop in Canada weighed in at 132.3 million pounds, up from 125 million pounds in 2010, Yarborough said. The USDA estimates that the total U.S. blueberry crop in 2011 was 428 million pounds, including 345

million pounds of cultivated berries. Oregon accounted for 65.5 million pounds of the cultivated berries, while growers in New Jersey and Georgia had yields of 62 million pounds in each state.

Yarborough said last week's wave of record-setting high temperatures shouldn't affect this year's blueberry production. "It's early enough that, at this point, the plants are dormant," he said.

Maine has 60,000 acres of blueberry barrens, with only half of those acres in production each year, given a two-year cultivation cycle. There are six companies in Maine that process, freeze and can wild blueberries, as well as one fresh-pack cooperative. An estimated 99 percent of all the berries harvested in Maine are frozen for use as a food ingredient.

Colo. judge limits bug spraying near organic farm

Updated 02:08 p.m., Friday, July 6, 2012

DELTA, Colo. (AP) — A Colorado judge has ruled that a farmer spraying against mosquitoes needs to prevent the pesticide from drifting into a neighboring organic farm, likening the action to a form of trespassing.

Judge Charles Greenacre ruled Thursday that two farmers cannot use pesticides within 150 feet of an organic farm run by a neighbor. The case originated in Delta County, an area known for its orchards and farms, many of them organic, as well as wineries.

James and Georgia Hopper, farmers near Hotchkiss, had sprayed Fyfanon, a pesticide containing malathion, in 2010 in efforts to protect themselves against the mosquito-borne West Nile virus. Georgia Hopper was hospitalized after becoming ill with the virus in 2006.

Their property is near Gordon MacAlpine and Rosemary Bilchak's farm, which can lose its organic status if the presence of pesticide is detected. The couple started their farm to avoid food with pesticides because MacAlpine has leukemia and pesticides can suppress his immune system.

Greenacre ruled that the Hoppers have a right to protect themselves from West Nile virus but that they applied Fyfanon without regard for MacAlpine and Bilchak's property rights. In his decision, he said the couple had a right not to have their property "invaded by third persons or things."

Photo G

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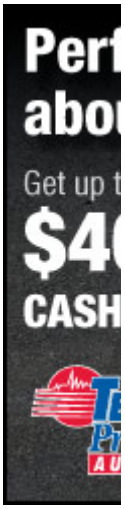

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Boulder lawyer Randall Weiner, who represented MacAlpine and Bilchak, believes it is the first ruling in Colorado to treat pesticides as a form of trespass.

The judge also said the Hoppers could only apply the pesticide when winds would not cause it to drift onto their neighbor's property.

Conn. studies lobster deaths in Long Island Sound

Associated Press

HARTFORD, Conn. — Connecticut environmental officials are trying to get to the bottom of a mysterious decline in the Long Island Sound lobster population that has left a local fishing industry on the verge of collapse, officials said Tuesday.

The lobster haul from the sound has shriveled from 3.7 million pounds in 1998 to 142,000 pounds last year, with the crustaceans turning limp and dying in large numbers each late summer.

The testing and analysis of lobsters from across the sound by the state Department of Energy and Environmental Protection will focus on stress factors such as warm water temperatures and the presence of pesticides.

"We are now developing the procedures and protocols for a study that will rely on a Sound-wide sampling of lobsters and sophisticated laboratory tests to obtain a better understanding of why this species — and an industry it has historically supported — is now in danger of collapse in Long Island Sound," DEEP Commissioner Daniel Esty said.

The local lobster population has been declining steadily since the late 1990s. The hardest hit areas are the central and western sound, where officials say landings have fallen by 99 percent since 1998.

More than 300 lobstermen plied the sound in the 1990s, but their numbers have dwindled to only a few dozen in recent years.

Some fishermen blame the die-off on the use of methoprene, a pesticide used to kill

in coastal areas was approved in the Connecticut House of Representatives this year but it did not come up for a vote in the state Senate.

Previous studies have not provided evidence to determine what is causing the deaths.

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Linking lawns to lobsters

By **Ron McAllister**
June 20, 2012 2:00 AM

There is a home in my neighborhood with a lawn that looks like a carpet. It is golf-course green, weed free, and always trimmed. Seeing it, you want to take your shoes off and step right off the street onto it. You know it would be so cool and easy on the feet. Every time I see it I wonder what it costs to keep a lawn looking so perfect. Then I find myself thinking about Henry David Thoreau, who once said: "The cost of a thing is the amount of what I will call life which is required to be exchanged for it, immediately or in the long run."

So, what is the cost of keeping a perfect lawn? Well, there's the equipment you need: a power mower, edger and leaf blower. Then there is the labor involved. Of course, it may not be work if you love doing it and would not prefer to be doing something else instead. Then there are the chemicals. A lawn like this could not be maintained without plenty of water, fertilizer, weed killer and pesticide. What Thoreau says, however, goes beyond the immediate outlay of cash and labor: "or in the long run," he says, but what is the long run and who pays the costs in that long run?

Then I found myself thinking about the Pacific bluefin tuna that have been found to contain radioactive contamination from Fukushima's nuclear power plant. They were caught recently off the coast of California, 6,000 miles from Japan. The levels of radioactive cesium found in these bluefins were 10 times higher than the amount measured in tuna off the California coast before the 2011 earthquake and tsunami. There is a lesson here.

What we do on the land has consequences for the oceans as well as for the habitats and marine creatures that live there. People would not knowingly drink polluted water, of course, any more than they would eat fish contaminated by radiation. We would never ingest fertilizer or pesticides either, but that may be just what we are doing. Do we think that the chemicals we spray on our lawns just disappear or get used up? What is the cost of our lawns, really?

Then I found myself thinking: Why do we care so much about lawns? Before 1830, only aristocrats could afford to maintain the sort of groomed landscape everyone seems to prize today. The modern lawn is a product of two revolutions: the industrial and the democratic. The lawn mower as we know it was invented by an English engineer named Edwin Budding. Today, everybody has a lawn mower and many people are quick to spread chemicals to maintain the perfect lawn. They have a right, of course. It's private property, right? Well, yes but the runoff from people's lawns is not contained on those lawns. Eventually, everything makes its way into the water table or into the rivers and to the sea.

In December last year, a group of people from the Cape Neddick River Association, the York Rivers Association, the York Land Trust as well as the York Water District and the Conservation Commission came together to establish an initiative they are calling: Lawns to Lobsters. Christine Grimando, York's town planner, told me why: studies conducted off the coast of Maine have found multiple pesticides in runoff from residential areas. Such contaminated runoff is a threat to species that normally thrive in the coastal waters. Lobsters, a veritable symbol of Maine and a species that is profitably harvested off the coast, can be greatly affected by insecticides. It was concerns about our two rivers and the health of the ocean that led to Lawns to Lobsters.

The organization is about to launch a major educational campaign offering good advice for everyone with a lawn: don't fertilize when it is rainy, don't apply more fertilizer than your lawn requires, only water when your lawn needs it, keep your lawn at least three inches long, clean up after your pets (even in your own yard), and don't broadcast herbicides. You'll be hearing more about Lawns to Lobsters in the weeks ahead.

The last time I mowed my own lawn I found a great variety of plants growing in it: grasses, clover, spurge, dandelion and other unknown plants mixed in. So what? It's green. I'm happy with it. Then, when I finished mowing, I found myself thinking about the lowly lobster ... with drawn butter. Lawns to lobsters indeed.

Ron McAllister is a sociologist and writer who lives in York. He is currently a candidate for the Maine House of Representatives.

Discovery of hundreds of dead fish in P.E.I. brook spawns pesticide concerns

By The Canadian Press July 9, 2012

COLEMAN, P.E.I. - The discovery of hundreds of dead fish in Prince Edward Island is spawning concerns from environmentalists about the use of pesticides in the province's agriculture industry.

Dale Cameron of Trout Unlimited says more than 2,000 fish have been scooped from a three-kilometre stretch of Barclay Brook in Coleman since Thursday following heavy rainfall.

Cameron, who discovered the fish kill, said that's more than triple the amount of fish that washed up on the same shores of the brook last July, though the current discovery is concentrated in a smaller area.

"This one looks worse," said Cameron.

He said he believes the actual number of dead fish is much higher, adding that predators and river currents would have quickly taken away the remains of other fish.

Rosanne MacFarlane, a freshwater biologist with the province, said an investigation is underway to determine the exact cause of the fish kill. But she said the water temperature and oxygen levels were within acceptable ranges and the fish looked healthy and well-fed.

"That leads one to believe that this was an acute toxic event, which we have seen in the past," said MacFarlane.

Provincial Green party Leader Sharon Labchuk said legislation that requires a 15-metre buffer zone between waterways and farm fields is not working.

She said pesticides should be eliminated from the province's agriculture industry altogether, as pesticide runoff has historically been a major cause of fish kills.

"There's a lot of support in P.E.I for a 100 per cent organic province," said Labchuk.

"There's a very strong sense in P.E.I. that the root cause of all this is industrial agriculture and that there are no ways that these kind of effects can be mitigated through ... (a piece) of new legislation."

Two years ago, trout and other fish were found dead over a two-kilometre section of the Montrose River after heavy rainfalls.

In July 2007, investigators suggested that pesticides from farmers' fields had killed thousands of fish that were found floating in the Dunk and Tryon Rivers in western P.E.I.

Labchuk said she's concerned that fish kills are becoming accepted as normal.

"The concern is that this has been going on for decades, and it's just, 'Ho hum, that's the way that it is in P.E.I.,'" she said.

"People are at a loss as to how they can influence government to make it stop."

Gretchen Fitzgerald of Sierra Club Canada agrees with Labchuk, saying that the use of pesticides should at least be reduced and the province should better enforce buffer zone regulations.

Environment Minister Janice Sherry said last year's fish kill prompted the provincial government to draft changes to regulations that she hopes will be introduced in the legislature this fall.

"My department has certainly been working diligently to look at all areas, the grass headlands and the buffer zones," Sherry said.

She said the department has been working with the P.E.I Potato Board and other agricultural bodies over the past year to get feedback.

"There's a more open willingness to work together in moving forward and finding solutions that are positive and effective for our agriculture community because, let's face it, it's the backbone of our economy," said Sherry.

"I see that as growth and I see that as something positive moving forward."

— By Aly Thomson in Halifax

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Changes to school pesticide law debated

Published 10:31 p.m., Wednesday, February 22, 2012

HARTFORD -- Seven years after the General Assembly banned the use of pesticides around Connecticut's elementary schools, an effort to overturn the law is getting some support from suburbs that claim their athletic fields are now crabgrass-strewn lots.

But during a public hearing Wednesday, the chairman of the Legislature's Environment Committee joined ecology watchdogs in attacking the attempt to roll back the law.

Rep. Richard Roy, D-Milford, the veteran committee chairman who helped write the 2005 ban, said that the effort of some local public works officials and the lawn-care industry to end the synthetic chemical ban, is unwarranted.

While Roy admitted that no single pesticide or lawn chemical has been directly linked to ailments, the ban acknowledged the fragile bodies of children.

"We don't know just about any of the chemicals, but there is a huge mixture that is pouring into our environment daily," Roy said. "There is something happening throughout the environment and we're trying to mitigate that as much as possible," Roy said.

-- Ken Dixon

Ken Dixon "Every time you put the chemicals on the ground, some little 6-year-old boy is going to come rolling in it. I do hope that this bill fails."

Other environmental activists noted that the Journal of the National Cancer Institute found that exposure of children to home and garden pesticides makes youngsters seven times as susceptible to leukemia and that chemicals are routinely tracked into schools on children's shoes.

"With so many unknowns and with plausible evidence of harm to children it makes no sense for our children to be involuntarily exposed to the unnecessary use of these toxic chemicals especially when there are safe, effective affordable alternatives," said Bill Duesing, who runs the chemical-free Old Solar Farm in Oxford.

But municipal officials from Glastonbury, Madison and South Windsor claimed that without pesticides administered through Integrated Pest Management protocols, their athletic fields are becoming unplayable.

"The continued selective and judicious use of pesticides is needed and is only one tool required to maintain safe playing surfaces for student athletes," said Raymond E. Purtell, Glastonbury's parks and recreation director. "It's an expensive item to go back and redo fields," said Matthew B. Galligan, South Windsor's town manager, agreeing with committee members that the possibility of a compromise could arise during the legislative session, which runs through May 9.

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Debunking the Health Claims of Genetically Modified Foods

By Marion Nestle

In a new book, critics of crop modification take a science-based approach to advocacy.

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I've just been sent GMO Myths and Truths, a review of research on claims made for the safety and efficacy of genetically modified (GM) foods. The authors are Michael Antoniou, Claire Robinson, and John Fagan, scholars with critical positions on GM foods.

I've been writing about GM foods since the mid-1990s, and am impressed by the immutability of positions on the topic. As I discuss in my book *Safe Food: The Politics of Food Safety*, the pro-GM and anti-GM advocates view the topic in quite different ways that I call for lack of better terms "science-based" versus "value-based."

In *GMO Myths and Truths*, the authors attempt to cross this divide by taking a science-based,

heavily referenced approach to dealing with claims for the benefits of GM foods.

On the basis of this research, they argue that a large body of scientific and other authoritative evidence demonstrates that most claims for benefits of GM foods are not true. On the contrary, they say, the evidence presented in their report indicates that GM crops:

Are laboratory-made, using technology that is totally different from natural breeding methods, and pose different risks from non-GM crops
Can be toxic, allergenic or less nutritious than their natural counterparts
Are not adequately regulated to ensure safety
Do not increase yield potential
Do not reduce pesticide use but increase it
Create serious problems for farmers, including herbicide-tolerant "superweeds", compromised soil quality, and increased disease susceptibility in crops
Have mixed economic effects
Harm soil quality, disrupt ecosystems, and reduce biodiversity
Do not offer effective solutions to climate change
Are as energy-hungry as any other chemically-farmed crops
Cannot solve the problem of world hunger but distract from its real causes - poverty, lack of access to food and, increasingly, lack of access to land to grow it on.

Whether or not you agree with these conclusions, the authors have put a great deal of time and effort into reviewing the evidence for the claims. This is the best-researched and most comprehensive review I've seen of the criticisms of GM foods.

Can the pro-GM advocates produce something equally well researched, comprehensive, and compelling? I doubt it but I'd like to see them try.

In the meantime, this report provides plenty of justification for the need to label GM foods. Consumers have the right to choose. To do that, we need to know.

Please let's just label it.

FOOD POLITICS

This post originally appeared on Food Politics, an Atlantic *partner site.*

Green

A Blog About Energy and the Environment

June 22, 2012, *9:36 am* 8 Comments

DuPont Facing 30,000 Claims for Tree Deaths

By JIM ROBBINS

Andrew Spear for The New York TimesA dead evergreen, apparently killed by the herbicide Imprelis, in Janet and Robert DaPrato's yard in Columbus, Ohio. The couple say they lost two trees last year and that two more have died since.

Living

A year after it became clear that a new and highly touted lawn herbicide called Imprelis was killing and damaging many thousands of trees around the country, the manufacturer, DuPont, is busy processing claims for compensation.

Some 30,000 homeowners, golf courses, municipalities and landscapers have submitted claims. The formal deadline for submission was Feb. 1, but a few are still trickling in and being accepted, the company said. The process will probably be completed by the fall, DuPont officials say.

DuPont would not estimate how many trees have died from exposure the chemical, but experts on trees say it is likely in the hundreds of thousands, if not more.

"We're making really good progress," said Rik Miller, DuPont's president for crop protection, who is in charge of the claims resolution process. Officials expect to have offers out to half of the claimants by the end of July, he added.

DuPont

The Baker National Golf Course in Minnesota, for one, has received an offer of $382,000 for its dead trees.

But many lawn care operators and homeowners say they are frustrated by the pace of the claims process and communications from the company. “We’re hearing nothing,” said Janet DaPrato of Columbus, Ohio, who saw two trees in her yard die last year and has had two more die since. “We put in a claim for two trees, and now the problem is getting worse.”

Stewart Hanson of Arteka, a Minnesota landscaping company, said that DuPont had valued the trees of his clients at about $2,400 for a 20-foot conifer and $7,100 for a 40- footer. “The numbers look fair,” he said, but in some cases “we don’t know when the customers are going to get the proposal. It’s frustrating.”

Compensation for damage to trees that are still living is estimated at around $500, a sum that would go toward restorative treatment.

Weeks after lawn care professionals began applying the new product on lawns, golf courses and cemeteries around the country last spring, many trees on those properties, primarily conifers, started turning brown and dying. By August DuPont had pulled the chemical from the market, and the federal Environmental Protection Agency banned it shortly afterward.

Heavily promoted to the lawn care industry as environmentally friendly because of its low toxicity to mammals, the product has proved costly for the company. DuPont officials say they have set aside $225 million for claims that people have already submitted and expect that the figure could eventually reach $575 million, though that is uncertain. Anything over $100 million would be submitted to DuPont’s insurers.

That does not include costs related to a class action lawsuit filed by thousands of homeowners, landscapers and others, consolidated in federal court in Philadelphia.

In some cases, property owners who lost trees and started filing claims in October feel that DuPont’s response has been satisfactory, said Tim Drummond of Arborscape Lawn and Tree Care in Dorr, Mich., who reported that 92 of his clients suffered damages.

But Mr. Drummond said that DuPont had been less responsive to larger claims and had made some mistakes, like writing checks in the wrong amount and then failing to respond to complaints. “Their strategy is to keep us in the dark,” he said. “It’s like writing a letter to Santa.”

Mr. Miller of DuPont disputed that assertion and said the company prided itself on its responsiveness. “I’ve never seen any inquiry go for days or weeks,” he said.

As a condition of settlement, clients must wait for an inspection of large dead brown trees in their yard, sometime 30, 40 or 50 feet tall, before removing them. Mr. Drummond said he had replaced trees at his own expense for some clients whose claims against DuPont are still pending.

“People have graduation parties coming up, and they are crying,” he said. He said he had “maxed out credit cards” and taken personal loans to keep those clients and keep his business going until the claims are processed.

While people with 40-foot dead trees are being compensated, realistically landscapers can only plant replacement trees that are 12 to 16 feet high, so people with very tall old trees are out of luck.

 Andrew Spear for The New York TimesConifers are said to be especially vulnerable to the herbicide Imprelis.

Then there is the question of how long Imprelis, the trade name for a chemical called aminocycopyrachlor, will stay in the soil and whether it could affect new trees.

Some experts suspect that the problem is not over. “There may be damage that has yet to be discovered,” said Bert Cregg, an associate professor of tree physiology at Michigan State University. “Some trees look worse this year.”

He has advised people to wait at least until fall to plant new trees.

While Mr. Drummond has already proceeded, he said he was being careful, “I’ve been injecting activated charcoal into the root zone” as well as root fungus, which may neutralize the chemical, he said.

Experts warn that grass clippings from lawns treated with Imprelis should not be composted and put in garden beds, where they could kill other plants.

The burden on lawn care operators has been considerable. DuPont will compensate them for their work to remove and replace trees, but not for the time spent dealing with homeowners as the crisis unfolded. “These guys are taking it in a big way,” Dr. Cregg said. “They are the ultimate victims.”

More information is at www.imprelis-facts.com.

Agriculture, Business, forests, Living, Science, Toxic Pollution, DuPont, herbicide, Imprelis, trees

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EPA Pesticide Program Updates

From EPA's Office of Pesticide Programs

www.epa.gov/pesticides

New Use Restrictions on Insecticide Chlorpyrifos Address Bystander Risk from Spray Drift; EPA's Partial Response to Chlorpyrifos Petition Denies Claims

EPA is requiring significant reductions in application rates and mandatory buffers around sensitive sites to protect children and other bystanders who live, attend school, play, or otherwise spend time next to sites where chlorpyrifos is applied. To ensure timely implementation of the spray drift mitigation, EPA is taking steps to make sure that the new use restrictions appear on all chlorpyrifos agricultural product labels starting in late 2012.

To increase protection for children and other bystanders, the lower application rates and other spray drift mitigation measures ensure that any chlorpyrifos exposure outside the application site will not reach harmful levels. Maximum aerial application rates are being significantly reduced from about 6 pounds per acre to about 2 pounds per acre. Other new mitigation measures include buffer zones for ground and aerial applications around sensitive sites such as residential lawns, homes, sidewalks, outdoor recreational areas, and all property associated with buildings typically occupied by people.

As part of the agency's ongoing registration review, EPA examined chlorpyrifos spray drift and potential bystander exposures using current scientific methods. EPA found that health risks from exposure to chlorpyrifos spray drift around treated fields can be lowered through the use of buffers and specific application methods. The buffer distances are greatest for aerial applications, which pose the highest risk. By adopting the new mitigation measures, applicators can effectively lower spray drift levels and reduce risks to bystanders.

EPA's new mitigation measures also respond in part to a petition filed by the Natural Resources Defense Council and the Pesticide Action Network North America that asked EPA to revoke all tolerances and cancel all registrations of chlorpyrifos. In a partial response addressing the first six of ten petition claims, EPA has found that none of the six claims warrants revoking tolerances or canceling registrations for chlorpyrifos at this time.

EPA's response to three of the remaining four claims involves highly complex assessments using precedent-setting risk assessment methodologies. Consistent with the agency's external peer review policy, EPA sought advice on these issues from the FIFRA Scientific Advisory Panel (SAP) at a meeting on April 10-12, 2012, and recently

received the SAP's final report, dated July 11, 2012. The agency will consider the panel's comments in completing the petition response and final human health risk assessment for the chlorpyrifos registration review. EPA will address the risk issues necessary to respond to the petition in its entirety by December 31, 2012. EPA intends to complete the comprehensive chlorpyrifos human health risk assessment, including both its dietary risk assessment and occupational risk assessment, in 2014.

The petitioners' fourth remaining claim, that EPA failed to incorporate inhalation routes of exposure, is partly addressed by the chlorpyrifos spray drift risk assessment and new spray drift use restrictions that the agency is announcing today. The agency is continuing to assess potential exposure and risk from spray drift and volatilization following chlorpyrifos applications, taking into consideration the recently received comments from the SAP. EPA will also address this claim fully, therefore, in its complete response to the petition in December 2012. Docket EPA-HQ-OPP-2007-1005 at Regulations.gov includes NRDC and PANNA's petition, EPA's partial response, and related documents. Docket EPA-HQ-OPP-2012-0040 at Regulations.gov includes documents related to the SAP's April 2012 meeting, Scientific Issues Associated with Chlorypyrifos Heath Effects.

Chlorpyrifos is used widely for controlling insects on food crops including fruits, nuts, vegetables, and grains, and on non-food sites such as golf course turf, industrial sites, greenhouses, nurseries, sod farms, and wood products. Public health uses include aerial and ground-based fogger treatments to control adult mosquitoes. An organophosphate, chlorpyrifos can cause cholinesterase inhibition in humans; that is, it can over-stimulate the nervous system if there is sufficient exposure.

For further information about EPA's registration review of chlorpyrifos including the agency's July 2012 spray drift risk assessment and new spray drift mitigation measures, see Docket EPA-HQ-OPP-2008-0850 at Regulations.gov.ov. See also the chlorpyrifos page in Chemical Search, www.epa.gov/pesticides/chemicalsearch/.

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New York Legislature Passes Minimum Risk Pesticide Bill

The New York Assembly and Senate recently passed legislation authorizing the Commissioner of the Department of Environmental Conservation to adopt regulations pertaining to the use of pesticides designated by the U.S. Environmental Protection Agency as 25(b) or minimum risk pesticides. Such pesticides are exempt from federal pesticide registration requirements. The measure will soon be forwarded to Governor Andrew Cuomo for his consideration. **Click here to read Senate Bill 4522**.

S4522B-2011: Relates to exempting minimum risk pesticides from pesticide applicator certification requirements

Relates to exempting minimal risk pesticides from pesticide applicator certification requirements.

TITLE OF BILL:
An act to amend the environmental conservation law, in relation to minimum risk pesticides

PURPOSE OR GENERAL IDEA OF BILL:
This legislation allows the commissioner the authority to adopt regulations pursuant classified as an minimum risk pesticides as defined by the EPA.

SUMMARY OF SPECIFIC PROVISIONS:
Section 1 of the bill would authorize the commissioner to promulgate rules and regulations as related to minimal risk pesticides. Section 2 is the effective date.

JUSTIFICATION:
The Environmental Conservation Law (ECL) requires all commercial applications of pesticides to be conducted by a certified applicator, regardless of whether the pesticides are safe for the environment. This imposes an unnecessary burden on producers and commercial applicators of environmentally safe products.

The United States Environmental Protection Agency (USEPA) defines certain pesticides as "minimal risk pesticides" because their ingredients, both active and inert, are demonstrably safe for the intended use. As such, they are exempt from USEPA registration under FIFRA Section 25(b). The Department has held a long-standing policy that pesticides exempt from registration by USEPA do not have to be registered in New York state. This legislation would further exempt minimal risk pesticides from the certification requirements provided in ECL 33-905. Doing so will promote the commercial use of environmentally safe products.

PRIOR LEGISLATIVE HISTORY:
New Bill.

FISCAL IMPLICATIONS:
None.

EFFECTIVE DATE:
This act shall take effect 120 days.

S4522B-2011 Text

S T A T E O F N E W Y O R K

4522--B
Cal. No. 1040
2011-2012 Regular Sessions
I N SENATE
April 8, 2011

Introduced by Sens. GRISANTI, DeFRANCISCO, MAZIARZ -- read twice and ordered printed, and when printed to be committed to the Committee on Environmental Conservation -- recommitted to the Committee on Environ mental Conservation in accordance with Senate Rule 6, sec. 8 - committee discharged, bill amended, ordered reprinted as amended and recommitted to said committee -- reported favorably from said commit tee, ordered to first and second report, amended on second report, ordered to a third reading, and to be reprinted as amended, retaining its place in the order of third reading

AN ACT to amend the environmental conservation law, in relation to mini mum risk pesticides

THE PEOPLE OF THE STATE OF NEW YORK, REPRESENTED IN SENATE AND ASSEM BLY, DO ENACT AS FOLLOWS:

Section 1.

Section 33-0905 of the environmental conservation law is amended by adding a new subdivision 2-a to read as follows:

2-A. THE COMMISSIONER MAY, PURSUANT TO PARAGRAPH E OF SUBDIVISION THREE OF SECTION 33-0303 OF THIS ARTICLE, ADOPT REGULATIONS ON THE USE OF PESTICIDES INCLUDING THE APPROPRIATE METHOD AND SETTING FOR THE USE OF PESTICIDES CLASSIFIED BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY AS AN EXEMPT MATERIAL UNDER 40 CFR PART 152.25, OFTEN CALLED MINIMUM RISK PESTICIDES, WHICH ARE EXEMPT FROM THE REQUIREMENTS OF THE FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT. SUCH REGULATIONS SHALL ENCOMPASS ALL FACTORS NECESSARY TO PREVENT DAMAGE OR INJURY TO HEALTH, PROPERTY AND WILDLIFE.

S 2. This act shall take effect on the one hundred twentieth day after it shall have become a law. Effective immediately, the addition, amend ment and/or repeal of any rule or regulations necessary for the imple mentation of this act on its effective date is authorized to be made on or before such effective date.

EXPLANATION--Matter in ITALICS (underscored) is new; matter in brackets [ ] is old law to be omitted.

LBD10768-05-2

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NJ using tiny crustaceans to fight mosquitoes

RICHARD DEGENER, The Press of Atlantic City
Updated 03:14 p.m., Saturday, June 23, 2012

MIDDLE TOWNSHIP, N.J. (AP) — They've tried blasting them with pesticides, draining the swamps they breed in, infecting them with bacteria, and even employing fish to eat them, but the latest weapon in the battle against mosquitoes is barely visible.

They're called copepods.

New Jersey recently delivered 10,000 of the tiny shrimp-like crustaceans to the Cape May County Department of Mosquito Control. They're already being used to fight mosquitoes in Bergen, Passaic and Morris counties. Ocean County is next on the delivery list and six other counties will follow.

"The days of driving a truck down the street and spraying pesticides are long gone. These copepods can pick up where fish leave off," Administrator Robert Kent, of the state Office of Mosquito Control, told The Press of Atlantic City (http://bit.ly/LNQpYs).

The state uses mosquitofish, fathead minnows, killifish, bluegill and other fish to combat the blood-sucking pests in larger waterways. Sometimes this involves digging ditches, not to drain the swamp as in the early days of mosquito control, but to give the fish access to the mosquitoes.

Copepods, which eat mosquito larvae but not adult mosquitoes, are meant for smaller freshwater applications such as roadside ditches, small pools, and near schools where there are strict regulations limiting pesticides.

Cape May County put some of the copepods in water-filled tires to see how they do in one of the smaller mosquito-breeding environments, but a batch was also delivered Friday afternoon to a scour hole filled with rainwater at Middle Township High School.

"Schools have to use the least toxic alternative or notify the parents. We can use them on school property without notification," said Claudia O'Malley of the state Office of Mosquito Control Coordination.

Reducing the use of pesticides is one of the big selling points. Copepods are natural and native to New Jersey, though this is the farthest north they have ever been used for mosquito control. New Orleans was the first to use copepods, and it taught New Jersey its system of growing them in a laboratory. New Jersey is the only the second state to use them and may be the only one at this point.

"Hurricane Katrina destroyed their facility in New Orleans," Kent said.

They are also inexpensive to produce at the state Department of Agriculture's Philip Alampi Beneficial Insect Rearing Laboratory in West Trenton. Mark Meyer, who works in the laboratory, said it takes about six weeks to make a batch using distilled water and wheat seed as a medium and feeding them paramecium.

"To me, its way cool because I am a bug nerd," Meyer joked.

The state Department of Agriculture is involved because mosquitoes are a vector for Eastern equine encephalitis and West Nile virus, both of which kill horses — and sometimes people.

"The public is not always aware of some of the things protecting them. This will help fight encephalitis," state Agriculture Secretary Douglas Fisher said.

Mosquitoes have long been a pest at the shore — and the invention of the screen is credited as one of the major developments in the history of the tourism industry.

But they can also be killers. A 1959 outbreak of Eastern equine encephalitis at the New Jersey shore killed 21 people and left about a dozen with brain damage. It also decimated the tourism industry as people canceled hotel reservations and left the shore in droves, reportedly taping quarters to their windows so they wouldn't have to open them at Garden State Parkway toll booths.

A 1968 outbreak killed six people and about 100 horses. In 1994 an outbreak killed seven horses and 10 emus. So far this year, there has only been one case. A horse in Burlington County was euthanized in May.

"We have a tourist business worth $5.1 billion (per year) in the county of Cape May. If we had a mosquito-borne illness, or outbreak, in this county it would hurt our economy," said Freeholder Director Gerald Thornton.

Such outbreaks are relatively rare and the public has been against heavy pesticide use since DDT was banned almost four decades ago. The agencies paid to control mosquitoes are always looking for safer alternatives.

Peter Bozak, Cape May County's director of Mosquito Control, set up a test plot with six small water holes. He put copepods in four of them and left two as control plots. He will follow the progress to see how many mosquito larvae are eaten and at what stage in their development. Mosquitoes hatch from eggs and then go through several stages toward adulthood.

The hope is birds and other wildlife will move the copepods around.

"We're trying to use our native species and take pesticides out of the environment," Bozak said.

Information from: The Press of Atlantic City, http://www.pressofatlanticcity.com

Pesticides and Their Involvement in Colony Collapse Disorder

Last Updated: February 20, 2012

CAP Updates: 18

by JIM FRAZIER, CHRIS MULLIN, MARYANN FRAZIER and SARA ASHCRAFT Department of Entomology; Penn State University, 501 ASI Building, University Park, PA

Jointly published in the American Bee Journal (http://www.americanbeejournal.com/) and in Bee Culture (http://www.beeculture.com/), August 2011.

Introduction

Do pesticides cause CCD? This is a question that beekeepers have been asking ever since CCD hit the national scene in 2007. In a series of articles in the American Bee Journal, Randy Oliver has done an exceptional job of distilling much of the recent research results into a meaningful update for beekeepers relative to this question (Oliver, R. 2010; See also Scientific Beekeeping.com). Researchers too have been asking this question and the CAPS project has specific objectives to investigate the factors responsible for CCD. In a 2008 American Bee Journal article we gave our initial results of the first 108 samples analyzed for pesticide levels in pollen, beebread, and wax and indicated that the levels found were reason for concern about pesticide interactions, sub-lethal impacts, and interactions with other stressors (Frazier et al, 2008). Here we report some of our more recent progress on these topics and include results from not only the CAPS project efforts, but also from other researchers in addressing these questions.

(/sites/default/files/w/b/b8/CAPsideLogo.jpg)

Managed Pollinator Coordinated Agriculture Program (CAP) Updates

A National Research and Extension Initiative to Reverse Pollinator Decline

This is part of an ongoing series of updates from the Managed Pollinator CAP. Additional installments can be found at the:

CAP Updates Table of Contents (/pages/24315/managed-pollinator-cap:-coordinated-agricultural-project)

More information about the CAP can be found at:

http://www.beeccdcap.uga.edu (http://www.beeccdcap.uga.edu)

What can we say about honey bee exposure to pesticides?

One of the first responses to the CCD eruption in 2007, was the immediate sampling of collapsing colonies across the US by the first cooperating group of researchers from university, state departments of ag and the USDA. Soon afterwards a migratory beekeeper study was initiated to follow selected migratory beekeepers from Florida through Maine and to sample their colonies after each stop along the way. It was from these studies that over 800 samples of bees, pollen, and wax have been analyzed for the presence of 171 different pesticides. We found that the 350 pollen samples contained at least one systemic insecticide 60% of the time and nearly half had the miticides fluvalinate and coumaphos, as well as the fungicide chlorothalonil. In bee-collected pollen we found chlorothalonil at levels up to 99 ppm and the insecticides aldicarb, carbaryl, chlorpyrifos and imidacloprid, fungicides boscalid, captan and myclobutanil,

and the herbicide pendimethalin at 1 ppm levels along with chlorothalonil. The pollen samples contained an average of 6 different pesticides each with one sample containing 39 different pesticides. Almost all comb and foundation wax samples (98%) were contaminated with up to 204 and 94 ppm, respectively, of fluvalinate and coumaphos, and lower amounts of amitraz degradates. We concluded that the 98 pesticides and metabolites detected in mixtures up to 214 ppm in bee pollen alone represented a remarkably high level for toxicants in the food of brood and adults. While exposure to many of these neurotoxicants elicits acute and sublethal reductions in honey bee fitness, the effects of these materials in combinations and their direct involvement in CCD remain to be determined.

Two other studies have measured multiple factors associated with CCD and non-CCD colonies across the US to see what risk factors were predictive of CCD (vanEnglesdorp, et al, 2009, 2010). The first study looked at one factor at a time among 61 variables as potential causes of CCD and found that no one factor could account for CCD. The second study borrowed from a proven approach used in epidemiological studies for unknown diseases, incorporating all types of factors that might be associated with the phenomenon and then subjecting them to a statistical approach of classification and regression tree analysis known as CART (Saegerman, et al., 2004). Using 55 different variables and determiing their relationships and interactions to CCD indicated that factors measuring colony stress (e.g., adult bee physiological measures, such as fluctuating asymmetry or mass of head) were important discriminating values, while six of the 19 variables having the greatest discriminatory value were pesticide levels in different hive matrices. These pesticide levels included coumpahos in brood, esfenvalerate in wax, coumaphos in wax, iprodione in wax, docofol in beebread, and chlorothalonil in wax. Coumaphos levels in brood had the highest discriminatory value of 100% and was highest in control (healthy) colonies. This may seem surprising, yet we do not know the timeliness of treatments for Varroa in these colonies, or if the bees have been selected for increased pesticide tolerance, either one of which could account for this outcome. While this study used an unbiased analysis of multiple factors that might be associated with CCD, the results certainly indicate that pesticides are very likely involved and that interactions with other stressors are very likely factors contributing to CCD and the decline of honeybee health.

Although our work represents the largest data set of pesticides in honey bee colonies to date, and was drawn from samples collected across 23 states and a Canadian province, it was not the product of a well designed systematic survey of honey bee colonies in the US. It thus does not give us a clear picture of the current state of pesticide residues in honey bee colonies. Such a study is critically needed yet we know of no current plans to accomplish this expensive task. In addition, the number of pesticides registered for use in the US is over 1200 active ingredients distributed among some 18,000 products, which makes the chemical use landscape for US beekeepers very different from those in other countries such as France, where some 500 chemicals are registered or in England where fewer than 300 are registered (Chauzat et al. 2010: Thompson, personal communication). Studies of pesticide contamination in bee colonies in other countries such as France, Germany, the Netherlands, or Belgium, thus may not tell us much about the likelihood of contamination of bee colonies in the US (Chauzat et al, 2010; Genersch et al. 2010; Tennekes, 2010; Nguyen, et al. 2010). Pesticide exposure for migratory colonies is likely very different from that of stationary colonies, and perhaps also very different from that of colonies kept by organic beekeepers, yet this also is not well documented. Pesticide use records are complete only for the state of California, in other states data are currently unavailable, or vary limited in scope (Grube et al, 2011). There are, thus many unanswered questions regarding pollinator exposure to pesticides. We do not currently have an accurate picture of what pesticides are used, where and in what amounts, nor do we have accurate measures of just what the maximum exposure is in agricultural or urban settings on blooming plants. Once contaminated pollen is collected, the potential transformations of pesticides in bee bread and royal jelly are also currently unknown. Clearly the potential for pesticide involvement in declining honey bee health is far from being understood, and it is clearly too early to discount them as key factors associated with CCD.

What can we say about the risk assessment of pesticides on bee health?

There is much truth in the adage ‘you are what you eat.’A parallel in pesticide analysis is ‘you only find what you look for.’ Our approach in documenting pesticides in apiary samples (Mullin et al., 2010) has been to search for a wide sweep of pesticides (> 200) that are used frequently in hives and around bees where they forage. For many published studies that document pesticide residues, this has not been the case, and more emphasis has been placed on the neonicotinoid

imidacloprid and other systemic insecticides with high bee toxicity. A focused study on one pesticide or a single class of chemicals allows for use of a more sensitive method of analysis, while an affordable method that detects many pesticides from widely different chemical classes is compromised by not attaining the lowest limit of detection (LOD) for every pesticide analyzed. We desired a more complete assessment of the toxic pesticide burden that bees encounter instead of a biased approach to search for only chemicals renowned for their bee toxicity. A caveat of this approach is that the attainable LOD for a focused method will generally be lower; the more chemically variable and greater number of pesticides in the screen increases costs of analysis while reducing, at least for some pesticides, the sensitivity of their detection (increasing LOD). Nevertheless, we chose an analysis that incorporates hive miticides and their metabolites in addition to a large number of potential pesticides from their foraging arena as a better way to measure potential sources of risk for honey bees.

Assessing the risk of pesticides and their metabolites requires a sensitive method for their analysis. However, is the most sensitive LOD the primary criteria for choosing a method of analysis? It may be if your major goal is to find a particular chemical. The lower the LOD, the more frequently it is detected in the samples analyzed. Thus, the percentage of samples with detections for a given pesticide increases with a LOD at parts per trillion (ppt) > parts per billion (ppb) > parts per million (ppm). However, risk assessors are more concerned about choosing methods that allow you to predict hazards and risks of exposure at levels above the no observable effect level (NOEL) or lowest observed effect level (LOEL). For bee foods and known acute toxicity or behavioral effects, and chronic sublethal effects on longevity and reproduction, generally a LOD greater than 1ppb is used which is sufficient even for the most toxic pesticides such as imidacloprid.

Assessing the risk of a pesticide to bees uses the effects after exposure such as the acute LD50 (lethal dose for 50% of treated bees) and long-term chronic or sub-lethal EC50 (effective concentration that reduces by 50% the growth, learning, longevity etc. of treated bees). The risk of exposure is predicted by both frequency and mean residue amounts in pollen, nectar, water and wax, and the persistence (time to remove 50% = half-life) and fate (degradation and metabolism rates) of the pesticide in the hive or exposed bee. Knowing the physicochemical properties of a pesticide active ingredient (octanol (oil)/water partition coefficient, water solubility, vapor pressure) will aid in predicting routes of exposure and the potential for bioconcentration. For example, the systemic imidacloprid in comparison to the miticide fluvalinate is about 10,000,000 times less soluble in oil than in water and greater than 700,000 times more water soluble. Thus, fluvalinate would be predicted to persist in the beeswax and fat tissues of bees, while imidacloprid would be 'washed' more readily out of the hive or be excreted by the bees.

Are neonicotinods the major pesticide risk for bees?

Systemic neonicotinoid use has greatly increased recently through transgenic seed treatments and use on many other major crops, ornamentals, turf and in structural pest control. Bee kills in France, Germany and the US have been associated with imidacloprid- and clothianidin-treated seeds (Minister of Ag, 2008). Acute LD50s average 28 and 24 ng/bee respectively, for imidacloprid and clothianidin, although sublethal effects have been reported at much lower levels (Decoutrye et al. 2004). Generally, the lowest observed sublethal effects for imidacloprid in the lab are at 1 ng/bee which is equivalent to 10 ppb for an average 100 mg bee. Achieving a 10 ppb dose would require consuming pollen with residues of 250 ppb imidacloprid at a consumption rate of 4 mg pollen/day (4% of bee's body weight). This high residue level is never found when label-rates of Gaucho are used as a seed treatment (generally 1-5 ppb in pollen). Nectar residues of imidacloprid are usually less than in pollen, although more is consumed over the bee's life. However, even if a forager ingests 10% of their body weight in nectar per day, it would require 100 ppb of imidacloprid in the nectar to achieve a 10 ppb dose per day, regardless of the high turnover rate of this water-soluble insecticide in the bee. Imidacloprid is known to be rapidly metabolized and is excreted by adult bees with a half-life of about 5 hours (Suchail et al., 2004). This means that more than double the above doses of imidacloprid in the food is required to maintain a body level that keeps up with its rapid clearance from the bee. It is unlikely that doses of neonicotinoids from routine systemic seed treatments will attain the necessary > 100 ppb levels in pollen or nectar to acutely impair honey bees. Dusts from im-properly formulated or applied seed treatments, however, (Minister of Ag, 2008) or guttation water from

glandular exudations on treated plants (Girolami et al, 2009) do have the necessary high residues levels to directly kill bees (Wallner, 2009).

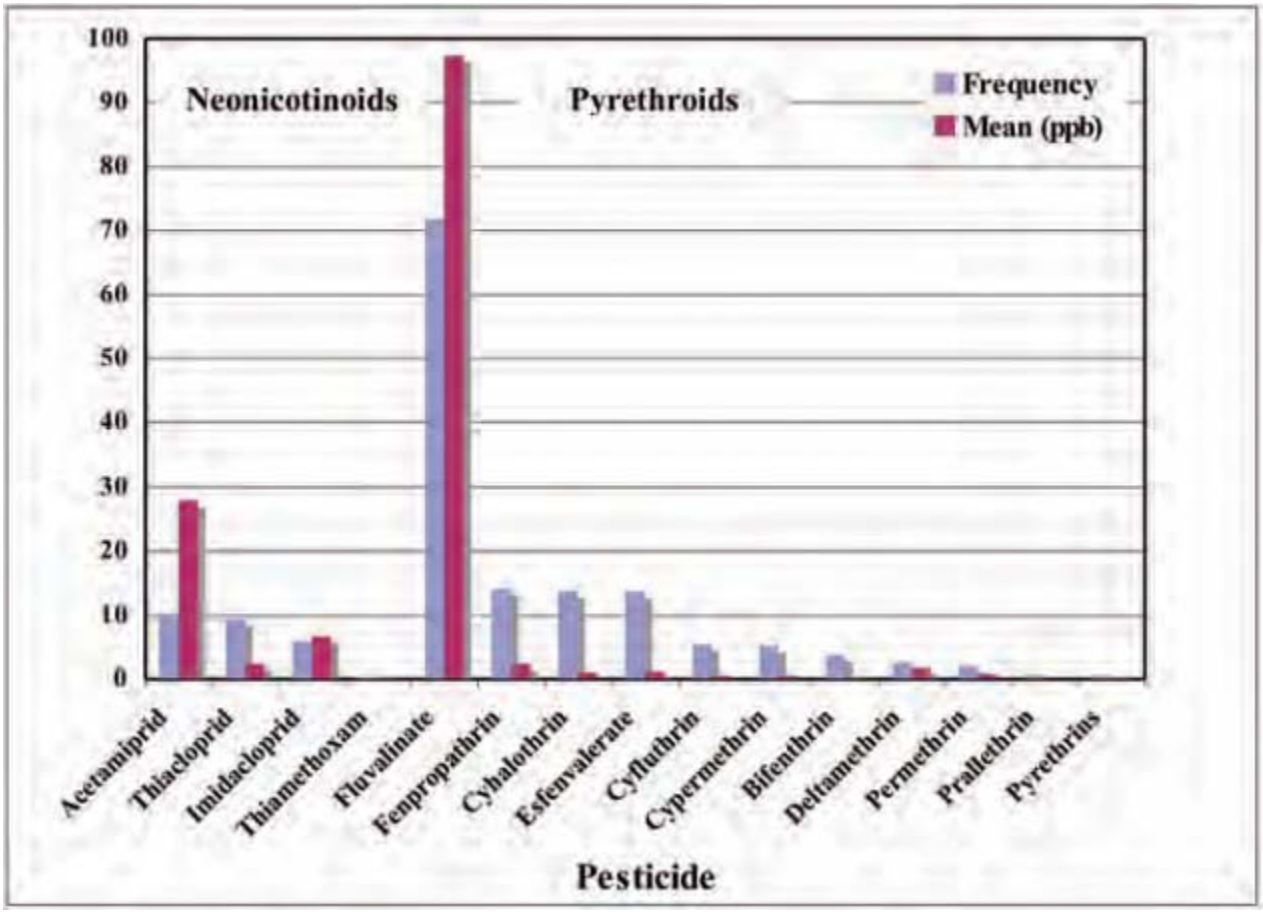

Figure 1. Frequency and mean residue amounts (non-detects = 0 ppb) of neonicotinoids and pyrethroids in 503 pollen samples.

Our residue results based on 1120 samples which include Mullin et al. (2010) and subsequently more than 230 additional samples do not support sufficient amounts and frequency of imidacloprid in pollen to broadly impact bees. For all samples, only 41 (3.7%) contained imidacloprid above the 2 ppb LOD with a mean residue of 12.3 ppb (scoring non-detects at 0 ppb). Among the other neonicotinoids, 66 detections (5.9%) were found for acetamiprid, 59 (5.3%) for thiacloprid, 3 (0.3%) for thiamethoxam, 2 (0.2%) for clothianidin and 0 for dinotefuran, and 9.9% of samples contained at least one neonicotinoid, mostly the less toxic acetamiprid and thiacloprid. This is in contrast to pyrethroids which were found in 79.4% of samples at 36-times higher amounts than the neonicotinoids, on average. For the 503 pollen samples that included some mixtures such as pollen with some nectar, wax etc, or whole anthers, which would maximize neonicotinoid levels, only 15.3% contained any neonicotinoid (Figure 1). The mean neonicotinoid residue was 37 ppb (scoring non-detects as 0 ppb), of which only 6.7 ppb was imidacloprid. Pyrethroids, by comparison, were present at a mean residue of 106 ppb and a frequency of 80.3% in pollen samples (Figure 1). These included fenpropathrin (LD50 = 50 ng/bee), cyhalothrin (79 ng/bee), cyfluthrin (22 ng/bee), bifenthrin (15 ng/bee), deltamethrin (50 ng/bee) and prallethrin (28 ng/bee); all of which are similar in acute bee toxicity to imidacloprid (LD50 = 28 ng/bee) and clothianidin (24 ng/bee). Indeed, if a relative hazard to honey bees is calculated as the product of mean residue times frequency detected divided by the LD50, the hazard due to pyrethroid residues is three-times greater than that of neonicotinoids detected in pollen samples (Figure 2).

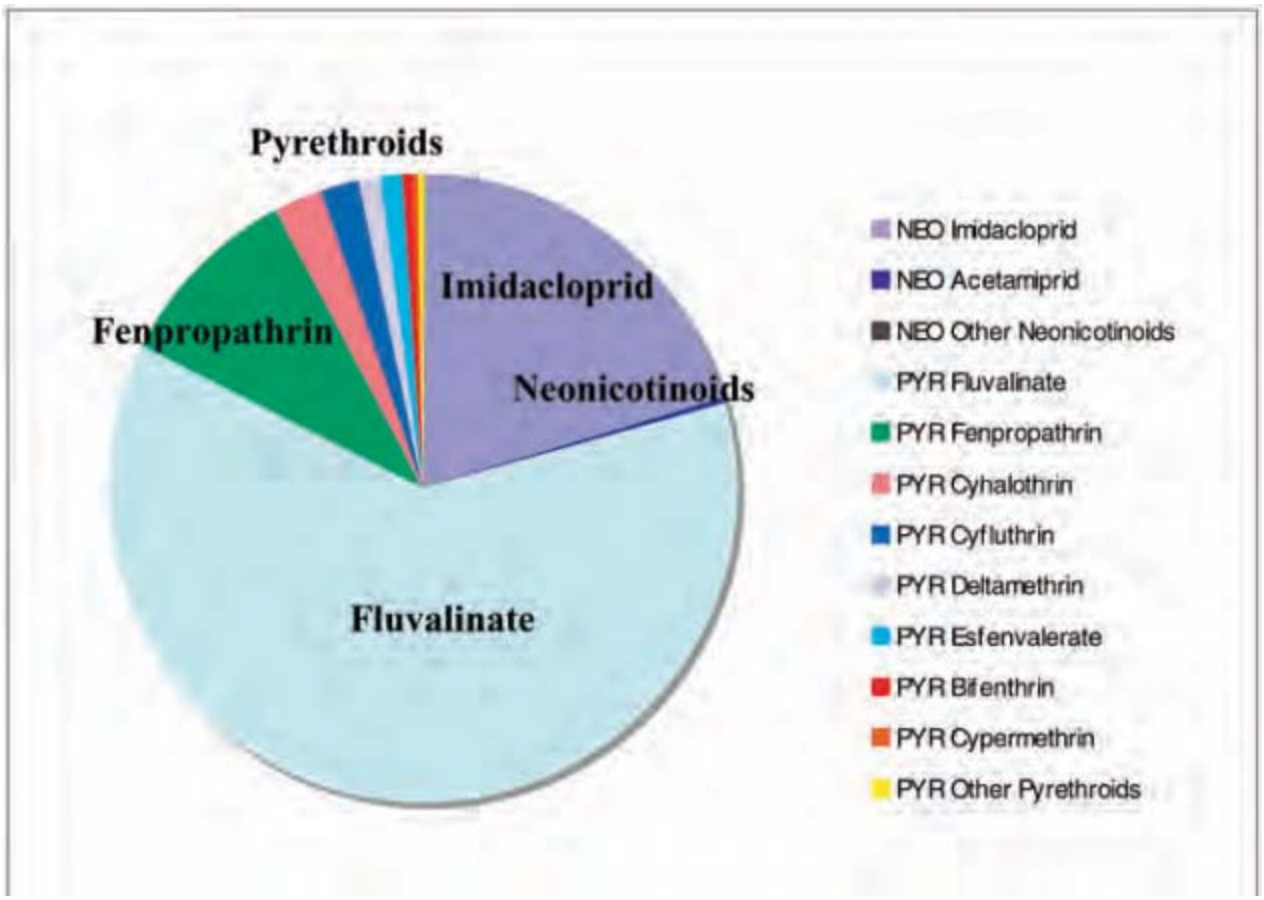

Figure 2. Relative hazard to honey bees of pyrethroids and neonicotinoids detected in 503 pollen samples estimated by (mean detection X frequency)/LD50.

The LOD has great bearing on the frequency of detections for a particular pesticide, with frequency increasing with decreasing LOD. If the most important factor for risk assessment is the mean residue level, this only slightly increases for an increase in LOD. For example, our 503 pollen samples had only 30 imidacloprid detections (mean of 6.7 ppb overall with non-detects scored 0 ppb). If our non-detects are scored as 0.1 ppb anticipated to be detected with a highly sensitive analysis, the mean ppb for the 503 samples would be < 6.8 ppb. Scoring non-detects at our LOD of 2 ppb would only increase the mean detection to < 8.6 ppb imidacloprid overall. These modest residue increases would not be significant for a consideration of the exposure of bees to imidacloprid.

What about pyrethroids as major bee toxicants?

Pyrethroids bioaccumulate in wax and bees due to their high fat solubility in contrast to neonicotinoids. In wax, 312 of 340 samples contained pyrethroids versus 2 with imidacloprid and 4 with thiacloprid, with the average pyrethroid residue content > 64,000 times higher than the total neonicotinoid. While fluvalinate prevailed (307 detections), many other detections of esfenvalerate (50), fenpropathrin (43), bifenthrin (37), cypermethrin (28), cyfluthrin (26), pyrethrins (16), cyhalothrin (13), deltamethrin (8) and permethrin (8) were found. A similar analysis for residues in 241 bee, brood and queen samples showed only 4 samples with neonicotinoids, two from bee kill incidences correlated with imidacloprid and thiamethoxam/clothianidin, respectively. The two other samples contained low amounts acetamiprid and thiamethoxam. Even with the higher neonicotinoid residues due to bee kills, a dozen pyrethroids distributed within 70% of our bee samples had a mean residue (non-detects = 0 ppb) of 357 ppb, 178 times greater than the 2 ppb for the neonicotinoids. Pyrethroid prevalence and persistence in the hive thus likely has more consequences for colony survival than the water-soluble neonicotinoids. The only other major insecticide detected in our hive samples with high toxicity was the organophosphate chlorpyrifos (LD50 = 122 ng/bee) in 42.6% of samples with an average detection of 36.3 ppb.

This OP degrades more rapidly and is less persistent than pyrethroids. However, higher residues of the less toxic neonicotinoids acetamiprid and thiacloprid (Iwasa et al., 2004) or of pyrethroids (Pilling and Jepson, 1993; Johnson et al., 2011) in pollens with even higher amounts of fungicides may have considerable impact on bee health via their synergistic combinations. Pyrethroids disable foraging of bees at levels of 9 ng permethrin per bee (90 ppb) Cox et al. 1984) and 2.5 ng deltamethrin per bee (vanDame et al. 1995), which is of a potency similar to that of imidacloprid.

The in-hive miticide fluvalinate is one of the most fat-soluble or lipophilic of pyrethroids, with a water solubility less than 12 ppb or 12 µg/liter (EPA-OPP 2005), and is functionally insoluble in water or sucrose solutions without added solvents, surfactants or other formulation aids. Many acute toxicity bioassay results have been reported for this pesticide, with LD50s ranging from 65.85 down to 0.2 µg/bee for honey bees (Atkins et al. 1981, EPA-OPP 2005). To our knowledge, this is the most variable LD50 result noted among pesticide bioassays on bees, and most likely indicates that some of these bioassays were conducted, particular those for oral toxicity, without this pyrethroid being truly in solution. This highly non-polar chemical can adsorb to plastic or even glass walls of solution containers or application vessels in lieu of sufficient solubilizer additions, leading to extraneous results.

Sub-Lethal impacts of pesticides; a new arena of research

If we acknowledge that multiple pesticide residues in bee collected pollen are “typical”, and consider the number of possible impacts of ingesting this pollen, first by nurse bees, then by brood and finally by the queen, it is not surprising that we have not yet determined all of the possible outcomes. Almost all studies to date have focused on the action of a single pesticide so that very few combinations have been studied. We feel that this is a major limitation to our current level of understanding of pesticide impacts on bees.

When bees are exposed to a toxic dose of pesticides, dead bees surrounding the hive entrance are an obvious result. What is not so obvious, are the consequences of lower doses of one or more pesticides that may be encountered while foraging, or from collected pollen and nectar brought back to the hive. It is these sub-lethal impacts that have become the focus of much of the current research on pesticides. Many studies have documented impacts of low levels of pesticide exposure that when ingested for longer periods of time result in more chronic impacts. Such actions have been reviewed for many beneficial insects as well as for pollinators (Desneux, et al, 2007). The impacts of such consequences have been many and varied and have led to the loss of many kinds of beneficial insects not just pollinators. One such example is the loss of important insect biocontrol agents in apple orchards, which has allowed the emergence of new pests in the absence of their natural enemies; all unintended outcomes of sublethal effects on different insects with different sensitivities (Agnelo et al, 2009). What are the parallel kinds of impacts on honey bees and other native pollinators? The answers are only beginning to emerge, but current research is finding some surprising results. For honey bees low levels of pesticides have been shown to reduce associative learning of individual bees in laboratory studies using the proboscis extension response (Decourtye et al, 2004), altering maze learning performance in free-flying bees (Decourtye, et al. 2010) and the loss of foraging efficiency in radio tagged bees, (Decourtye, et al. 2011). The precocious foraging of nurse bees from IGR insecticides is also documented (Thompson et al. 2007). These changes in learning and behavior can potentially alter normal colony level functions, yet colony-level impacts remain to be verified.

Figure 3. A honey bee gathering corn pollen, a common source of neonicotinoid residues in teh Midweestern Us.

Honey bee larvae reared in cells contaminated with the miticides fluvalenate or coumaphos show a reduced developmental rate and delayed adult emergence along with reduced adult longevity (Wu et al, 2011). These effects can have multiple consequences for the colony including increased developmental time for Varroa mites, reduced colony population dynamics and build up, as well as potential shifts in worker division of labor. Whether or not the pesticides associated with wax in the CART study (aboce) have similar impacts on larvae remains to be determined. Fungicides have long been known to synergize with some pesticides in laboratory toxicity bioassays (Iwasi et al, 2004). More recently, we have determined that combinations of formulated pesticides and fungicides fed to either adult worker bees or to larvae can have synergistic effects on mortality. What happens when 3 or 4 or 5 different pesticide mixtures are ingested by honey bee larvae or adults for substantial periods of time? Studies to determine some of these impacts have been completed and will be published later this year.

What can beekeepers do to decrease the potential pesticide exposure and/or respond to a pesticide incident?

Honey bees are supremely good at finding pollen and nectar sources in their environments. The average foraging range of a single colony is thought to be a 3.75 mile radius most of the time with trips up to 6.75 miles in times of great need (Figure 4). In a typical US setting this range includes 28,000+ acres with a lot of different plants, some of which are in bloom at any given time, and some of which may have been treated with pesticides. If the average colony can find the most nutritious nectar source within a two hour window, then the incoming flow of nectar and pollen is very dynamic indeed (Seeley, 1995). How much of this foraging range do you normally consider as the pollen and nectar sources for your colony? If this includes areas beyond your direct control, then this is an important dynamic for you to consider in your colony's potential health. Pesticide applications are made by many people for lots of reasons, but with these beyond your control, the typical colony is at the mercy of these events in their foraging environment most of the time.

In Adams county Pennsylvania in April, apples are in need of pollinators. Contiguous acres of apple orchards are all blooming, yet colonies placed in orchards with 5 acre blocks in full bloom collect anywhere from 2-70% of their total

pollen from these apples on any given day. The pesticide history in this orchard is thus not a very good predictor of the potential pollen pesticide residues that are likely to wind up in the colonies placed there for pollination. Thus, commercial beekeepers and local beekeepers alike may be surprised by the mixed sources of pollen in their colonies and the ranges from which they have been gathered. This has important implications for the pesticide residues to be found in any given colony at any given time. Having a landscape level appreciation for the foraging range of your colonies will help give you a realistic perspective on potential sources of pesticide contamination. Drive around your area and take a look at the possible places where pesticides may be used and talk to the people involved.

1. Communicate with individuals/facilities that are likely users of pesticides in your foraging area and encourage them not to spray insecticides or fungicides during bloom on any plants.
2. Encourage growers of bee pollinated crops to plant buffers of blooming plants for pollinators and home owners to “plant for pollinators”
3. Replace combs often to prevent pesticide build-up.
4. If you have a pesticide poisoning incident report it. Verified pesticide levels in your dead bees make this a much stronger incident report.

Pesticides with known toxicity to honey bees have a warning on the label that must be followed by anyone who applies the material. “ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops if bees are visiting the treatment area.” While these are explicit warnings, it is far too easy to ignore the presence of honey bees and especially native species of bees when spraying during bloom. The important point is that if pesticides are applied anytime during bloom, bees will be killed; even the shortest duration pesticides like pyrethroids are not disappearing overnight, so spraying late one day does not guarantee that bees will not receive a toxic dose the following days. Not following these restrictions constitutes not following the law, and bee kills resulting from such uses should be reported as a bee kill incident. To do this, each bee-keeper must be vigilant about the health of their colonies and if pesticide exposure and resulting bee kills are suspected, then an immediate response is best. Collect bees and keep them in a freezer until they can be sent for analysis. We have been able to support a beekeeper cost share program to help offset the high costs of pesticide analyses, so samples may be submitted to us by contacting Maryann Frazier at mfrazier@psu.edu (mailto:mfrazier@psu.edu) . Bee incidents should also be reported to your state department of agriculture or regulatory authority overseeing pesticide use in your state, as well as to the manufacturer of the pesticide involved. Along with contacting these agencies, we would also recommend that you make an incident report to the Environmental Protection Agency by visiting their website and completing the form as completely as you can. Without such reporting, the regulatory agencies have no information to indicate that anything is of concern about current pesticides or the manner in which they are being used or misused. The experiences of our migratory beekeepers indicates that pesticide misuse is a widespread occurrence and incident reporting is the best method of countering these actions.

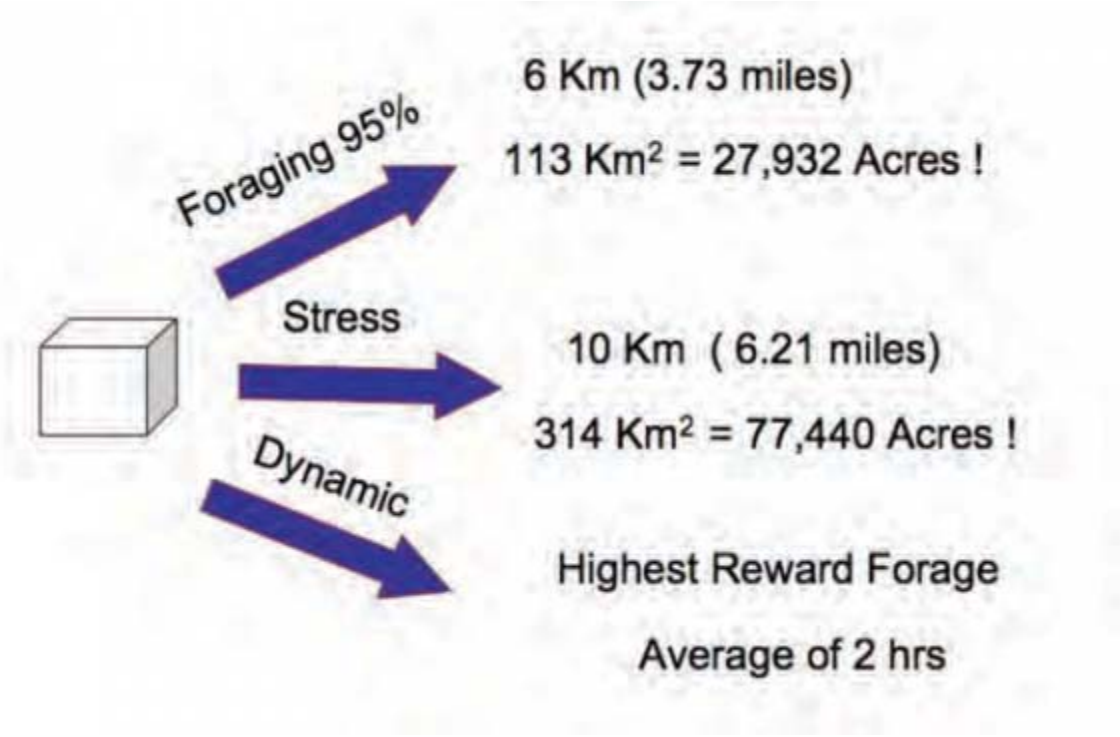

Figure 4. The dynamic foraging of a typical honey bee colony includes a range of 3.73 miles radius 95% of the time, with a range up to 6.21 miles in times of limited rsources, with teh amility to detect the maximum rewarding nectar within a two-hour period (Modified from Seeley, 1995).

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RI General Assembly Considers Legislation Establishing Lawn Care Notification Registry

The Rhode Island General Assembly is considering legislation requiring the Director of the Department of Environmental Management to create a pesticide notification registry for occupants of a dwelling who wish to be notified before commercial lawn care pesticide applications are performed. Under Senate Bill 2443 and House Bill 7802, applicators must notify residents of single family residences on the registry who reside on an abutting property with a boundary within 150 feet of the application site and owners and owners' agents for multiple family dwellings.

Owners or owners' agents of multiple family dwellings would be required to pass along the information to the tenants on the registry.

Click here to read the legislation.

Why Mario Batali Left Reality TV

Jennie Rothenberg Gritz
July/August 2012 ATLANTIC MAGAZINE

The Triumph of the Family Farm

Farming is in the midst of a startling renaissance—one that holds lessons for America's economic future.

By Chrystia Freeland


David Johnston

WE BURIED MY grandfather last spring. He had died in his sleep in his own bed at 95, so, as funerals go, it wasn't a grim occasion. But it was a historic one for our small rural community. My great-grandparents were early settlers, arriving in 1913 and farming the land throughout their lives. My grandfather continued that tradition, and now rests next to them on a hillside overlooking the family homestead.

If you're a part of the roughly 99 percent of the North American population that doesn't work on a farm, you might guess at what comes next—many a lament has been written about the passing of the good old days in rural areas, the family farm's decline, and the inevitable loss of the homestead. But in many respects, that narrative itself is obsolete. That's certainly true in my family's case: The Freeland farm is still being cultivated by my father. And it is bigger and more prosperous than ever.

My dad farms 3,200 acres of his own, and rents another 2,400—all told, a territory seven times the size of Central Park. Last year, he produced 3,900 tonnes (or metric tons) of wheat, 2,500 tonnes of canola, and 1,400 tonnes of barley. (That's enough to produce 13 million loaves of bread, 1.2 million liters of vegetable oil, and 40,000 barrels of beer.) His revenue last year was more than $2 million, and he admits to having made "a good profit," but won't reveal more than that. The farm has just three workers, my dad and his two hired men, who farm with him nine months of the year. For the two or three weeks of seeding and harvest, my dad usually hires a few friends to help out, too.

My father farms in northern Alberta, but his story is typical of large-scale family farmers across North America. Urbanites may picture farmers as hip heritage-pig breeders returning to the land, or a struggling rural underclass waging a doomed battle to hang on to their patrimony as agribusiness moves in. But these stereotypes are misleading. In 2010, of all the farms in the United States with at least $1 million in revenues, 88 percent were family farms, and they accounted for 79 percent of production. Large-scale farmers today are sophisticated businesspeople who use GPS equipment to guide their combines, biotechnology to boost their yields, and futures contracts to hedge their risk. They are also pretty rich.

"It definitely is not just your father," Jason Henderson, the vice president and branch executive of the Omaha branch of the Federal Reserve Bank of Kansas City, told me. Henderson is essentially the Fed's top analyst of the agricultural economy. "In the U.S. and Canada in 2010 and 2011," he said, "farm incomes have been booming. U.S. net farming incomes rose more than 20 percent in each of those years. Farmers are flush with cash."

Evidence of the boom is visible throughout the Farm Belt. "Tractor and combine sales have doubled, compared with 2003," Henderson told me. "Pivot-irrigation-system sales are up. I've been driving across Nebraska, Wisconsin, and Iowa, and I have not seen so many shiny new grain bins, ever."

Troy Houlder, my father's local farm-machinery dealer, told me that in the 22 years he's been in the business, "supply has never been this tight." The vehicles in highest demand, he said, are midrange-horsepower tractors, which run from $70,000 to $110,000. If a farmer walked into his store in early May wanting to buy that kind of tractor, "he's not getting one until probably November or December, even if he had a fistful of hundreds."

Big Money has noticed these trends, and is beginning to pile in. "We are seeing a tremendous uptick in allocations and interest in farmland," says Chris Erickson of HighQuest Partners, an agricultural consultancy and investor. Erickson told me that big institutional investors—pension funds, insurance companies—have recently been making investments in farmland ranging from "the several hundred millions to the billions." Erickson said this broad interest is new, and is driven by the fact that "the fundamentals are changing dramatically."

Jim Rogers, who co-founded the legendary hedge fund Quantum with George Soros, told me he believes farming is "one of the most exciting professions" in the world—and that the recent boom is likely to continue for a long time. "Throughout history, we've had long periods when the financial sectors were in charge," he said, "but we've also had long periods when the people who have produced real goods were in charge—the farmers, the miners … All of you people who got M.B.A.s made mistakes, because the City of London and Wall Street are not going to be great places to be in the next two or three decades. It's going to be the people who produce real goods."

The rural renaissance isn't just a curiosity: it's an important new chapter in the story of America's ability to thrive in the global economy, and in eras of disruptive technological change. As America struggles to adapt to a new wave of creative destruction that is shaking up the manufacturing and service sectors as profoundly as industrialization transformed the agrarian age, the resurgence of the family farm offers some lessons on how we might survive this wave of change, too.

AT THE HEART of the farm boom are the very same forces that are remaking the rest of the American

economy—technological revolution and global integration. When you think of technological revolution, you probably think of geeks in cool coastal spaces like the Google campus, or perhaps of math wizards on Wall Street. But one source of rural prosperity is the adoption of radical new technologies—and a consequent surge in productivity.

Henderson situates the change over the long sweep of history: "Prior to World War II, it took 100 hours of labor to produce 100 bushels of corn. Today, it takes less than two hours." According to Erik O'Donoghue and Robert Hoppe, two economists at the Department of Agriculture, in 2009 U.S. farm output was 170 percent above its level in 1948, having grown at a rate of 1.63 percent a year. Those figures understate the productivity revolution, because these increasing harvests have been delivered with fewer inputs, particularly less labor and less land.

Tom Vilsack, the agriculture secretary, told me that since 1980, agriculture has been "the second-most-productive aspect of our economy … I'm 61 years old, and in my lifetime, corn production has increased 400 percent, soybeans 1,000 percent, and wheat 100 percent."

Continuous technological improvements have resulted in a system of crop farming that someone who left the countryside 20 years ago would be hard-pressed to recognize, and certainly couldn't operate (I stopped helping my dad in the early 1990s, when I became a foreign correspondent, and I am no longer allowed to drive any of his three combines). The computer systems powering a "precision farmer's" seed drill and combine have been programmed with the exact parameters of all his fields and are synced up with one another. That means the seed drill knows what last year's harvest was from each inch of land, thanks to data recorded by the combine, and can seed and apply fertilizer accordingly.

The cabs of today's combines, the most sophisticated of farm machines, look like airplane cockpits, or the control rooms on factory floors. Monitors tell the farmer how many bushels to the acre his land is yielding even as he harvests his crop, give him a read on the moisture level, and tell him how much he is leaving behind on the field. Troy Houlder's flagship New Holland combine, the CR9090, which sells for $520,000, has a new feature called IntelliCruise, which automatically speeds up or slows down the machine depending on how heavy the crop is. (The CR9090 also features a so-called buddy seat, often occupied by a grandchild, and a small refrigerator, so its owner-operator's lunch stays cold.)

Fancy GPS systems and space-age tractors are what most excite the farmers I know and astound their city friends. But the most profound change is something an urban civilian driving through the Farm Belt wouldn't even notice. Ever since people first domesticated cereal crops in the Fertile Crescent 11,000 years ago, farming has followed a seemingly immutable pattern—plow your field, seed your field, harvest your field, repeat. But today, farmers can skip the plowing step.

This historic shift is known as the no-till revolution. No-till was a quirky, fringe idea in the 1970s. Today, it is practiced on one-third of U.S. cropland. It has been made more effective by the genetic engineering of seeds and the adoption of crop varieties with herbicide tolerance or a resistance to pests.

Farmers are rightly proud of their swift embrace of innovation. But the biggest reason rural bank accounts are swelling today isn't technology (nor is it government subsidies, though those have helped, and may no longer be justified). It is, rather, the growing global middle class. "The single most important factor in all of this is the changing diet in the emerging markets," Erickson told me. "If people there go from earning $2 a day to $3 a day, they aren't going to buy a Mercedes, but they are going to buy a piece of chicken or a piece of pork." That translates into surging prices for feed grains like corn, soybeans, wheat, and canola, and surging farm incomes around the world. In the early 1990s, China, for instance, was self-sufficient in soybean production; in 2010, it was the top importer of U.S. agricultural products.

This shift has made for unusual bedfellows. At a time when the mainstream U.S. political discourse has identified China as a relentless and predatory exporter—and a destroyer of American jobs—farmers are outliers. Farmers

"want China to expand," Henderson told me, "because that means a bigger or broader market" for their crops. Some of America's biggest supporters of open borders are down home on the farm.

AGRICULTURE, WHICH ONCE employed most of the population and now employs almost no one, is often held up as a grim harbinger of what awaits U.S. manufacturing (and beyond that, white-collar professions that can be partially outsourced or performed by computers). The United States today has more bus drivers than it has farmers. Technological advances have drastically shrunk the number of people required to no-till the land.

Yet today's agricultural renaissance also shows that there is some light at the end of the tunnel—or, if you will, a good harvest at the end of the furrow. Most encouragingly, the agricultural boom shows that globalization really is a two-way street, and not just for the geniuses at Apple and Goldman Sachs. The rising global middle class wants hamburgers—which is where farmers come in—but it also wants hundreds of other middle-class comforts, and as it grows richer, it will be able to afford more of them. Helping to fill these wants is where many of the rest of us should look for opportunity. And you don't have to work for a corporate behemoth or have a venture capitalist on your speed dial to take advantage of the changing world economy. One of the most surprising aspects of the farm story is that its heroes are self-employed entrepreneurs, albeit ones who own a lot of land.

Of course, that still leaves open the question of what to do about all those jobs being lost. One of the great, and largely forgotten, triumphs of American society and government has been how smoothly U.S. farmers and their communities negotiated the creative destruction of the early 20th century and emerged triumphant when it was over. Lawrence Katz, a Harvard professor who is probably America's most esteemed labor economist, has, together with his partner and fellow Harvard professor, Claudia Goldin, studied how they did it. The answer, Katz told me, was heavy investment in education: "Iowa, Nebraska, the Dakotas, California—these were the leaders in the high-school movement."

Katz said this big investment in education was a deliberate response to the rapid technological advances and productivity gains in both agriculture and manufacturing. Farmers could see that machines meant fewer hands would be needed on the land, while new jobs were being created in the cities. So they built schools to educate their children for those new roles. The strategy worked: high school made the children who stayed home better farmers and gave the rest the tools to leave. In fact, the Farm Belt's high-school movement was so successful that farm children who moved to the big cities soon became the bosses of the native-born urbanites. "They tended to be more educated than the city slickers and move to better jobs in the city than the locals," Katz said.

The challenge those Midwestern farm communities faced same 100 years ago was remarkably similar to the challenge much of America faces today—an economic transformation that is making the country richer and more productive, but that also means most of our children won't be able to do the same jobs we do. A high-school education was enough for the children of farmers in the early 20th century. Children today will need college, with an emphasis on quantitative and analytical skills, if they are to thrive.

But while today's problem would seem familiar to those early-20th-century farmers, today's response would not. "We did a better job in that period of preparing the next generation for their new context than we are doing today," Katz said. "These areas made the right level of investment in education. We have not even approached the equivalent today."

The farming towns of the past saw themselves as true communities, with a collective responsibility to ready their children for the future. That sensibility has broken down. "Areas that had a larger share of older citizens actually were *more* supportive of education, which is the opposite of today," Katz told me.

Today's wealthy farmers, and their prosperous city cousins, are the beneficiaries of a long-ago communal decision to invest in the future. We could learn from their great-grandparents.

Chrystia Freeland is the editor of Thomson Reuters Digital. Her book *Plutocrats* will be published in October.

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West Nile Virus vs. Pesticides: Sick Neighbors Face Off Over Mosquito Spraying

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Rosemary Bilchak and her husband, Gordon MacAlpine, were eating on their porch when they heard the engine of the pesticide fogger rev up next door.

They grabbed their food, went inside and closed the windows. "I was smart enough to grab my camera, too," said Bilchak.

As evidenced by her photos, the tiny droplets of pesticide that neighbor Jim Hopper was spraying on his Hotchkiss, Colo., yard -- out of the back of a pickup truck -- had drifted onto their property. This was not what the doctor had ordered: MacAlpine, who suffers from leukemia, was told by his oncologist to avoid exposure to pesticides.

"The fog was thick enough to obliterate a house just on the other side," Bilchak said of the incident in July 2010.

Shortly after retreating indoors, Bilchak and MacAlpine said they began having trouble breathing and felt what she described as a "clenching" in the chest. They spent the night at a friend's house.

Pesticides drift over Bilchak's property.

Hopper, a retired farmer, said that he too was acting on behalf of his family's health. He had targeted the spray at mosquitoes he believed may be carrying the West Nile virus. His elderly wife, Georgia, had contracted the disease in 2006, spent days in intensive care and still felt lingering effects. The frightening event sparked Hopper to act.

"My only purpose is to protect my family," he told his local television news. "We have grandkids here, we are raising an autistic granddaughter."

His granddaughter is also sensitive to light and prefers to be outside during the evening, when West Nile-carrying mosquitoes are most active.

The Delta County District Court judge ruled on July 5 that an environmental contaminant could, in fact, be considered a form of trespass. More specifically, the decision states that Hopper can still use pesticides in his yard, but cannot spray within 150 feet of his neighbor's property or when winds could cause the mist to drift in his neighbor's direction. Since the initial incident, Hopper has become licensed to spray the pesticide and has installed a wind sock and flag to gauge wind direction. He has also agreed

to send written notices to his neighbors before firing up his fogger.

"This is an extraordinary combination of competing interests," said Paul Jepson, professor and director of the Integrated Plant Protection Center at Oregon State University, after reviewing last week's judgement over the lawsuit filed by Bilchak and MacAlpine.

Hopper's fogger spits out very tiny droplets of an organophosphate insecticide, malathion, which some studies have shown can disrupt hormones, trigger asthma and cause cancer in humans.

The ultra-fine mister is designed to keep the particles suspended in the air, in order to increase the chances that flying mosquitoes make direct contact with the poison, explained Jepson. If the conditions aren't perfect, said Jepson, this so-called adulticiding can have "zero efficacy."

Hopper sprays pesticides out the back of his pickup truck.

In his ruling, the district court judge noted that the strategy had actually failed to protect Hopper's wife in 2006. "Ms. Hopper contracted West Nile virus when the Paonia Mosquito District was regularly spraying the Hopper property with an adulticide."

The airborne pesticide droplets are liable to drift. Under certain wind conditions, they can be carried as far as 1000 feet, according to the court decision.

Jepson said he is concerned that too much emphasis is put on high winds, when "zero wind can be just as much of a problem."

High temperatures and still inversion layers can also cause pesticides to drift great distances -- well beyond the 150-foot buffer ordered by the court. Jepson said a light breeze and cool temperatures are ideal for spraying.

Whatever weather conditions prevailed on that summer day in 2010, sampling conducted by the Colorado Department of Agriculture a couple days later found residual pesticides on Bilchak and MacAlpine's organic garden as well as on the far side of their house.

"We had more pesticide on our property than he did on his," said Bilchak.

West Nile, transmitted through the bite of a mosquito, usually triggers only mild flu-like symptoms. On rare occasions, it can prove deadly.

"It could be particularly deadly to those with compromised immune systems like my husband," Bilchak added. "And we're farmers, out there in the field where mosquitoes could be."

Instead of enlisting chemicals, the couple follows several steps to reduce their own risk of mosquito bites, including draining standing water, using a bacteria that kills mosquito larvae and wearing long-sleeved shirts and pants when outdoors.

“The best thing to do in this given unique circumstance would be for the neighbors to cooperate on integrating different pest management methods,” said Jepson. “Instead, we’ve got this toxic solution that impinges on one neighbor’s health and makes the other neighbor feel good because he thinks he’s doing something.”

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