The POWER of NATURE

Integrated Pest Management Helps Great Lakes Farms Protect Their Crops, the Environment and the Food Supply

American Farmland Trust

Dear Friends of Healthy Farms and Healthy Food,


Dr. Ann Sorensen

At American Farmland Trust, we've been privileged to work with some of the nation's top researchers, institutions, crop consultants and farmers on developing Integrated Pest Management (IPM) techniques that protect the environment and our food supply.

In 1998, the U.S. Environmental Protection Agency (EPA) established the Strategic Agricultural Initiative (SAI) program to help farmers adopt IPM tactics and measure the impact of those changes on the environment and human health. The program offered grants to help farmers, researchers, food processors and other agricultural professionals reduce pesticide use and increase the adoption of IPM practices. Due in part to budgetary constraints, EPA is now phasing out this program.

American Farmland Trust currently manages the SAI grants in EPA Region 5, spanning six states in the upper Midwest. This brochure offers a glimpse of the program's many success stories in the Great Lakes region—but similar achievements are taking place all over the country. At a time when consumers are increasingly concerned about pesticide residues on fruits and vegetables, these successful efforts to move away from riskier pesticides are good news indeed. For decades, public funding for IPM research and education has generated major economic, environmental and health benefits for all of us. Depending on the crop, anywhere from 25 percent to more than 90 percent of the nation's farmers now use at least some tactics developed in IPM programs. The U.S. Department of Agriculture (USDA) has provided the bulk of funds used for research and implementation (almost $13 million a year).

Given shrinking state and federal budgets, we are asking everyone concerned about our farms, food and environment to express support for IPM programs. As of June 28, 2012, the U.S. House and Senate Appropriations Committees' proposals for IPM funding were very close, suggesting that the 2013 budget will likely match or nearly match 2012 amounts—but the fight to keep IPM programs alive will be an on-going effort. To find out how you can help, go to www.ipmvoice.org. Thank you.

Dr. Ann Sorensen
Director of Research
American Farmland Trust

Every day, our nation's farmers deal with blights, insects, worms, weeds and fungi that can wipe out entire seasons of vegetables, fruits and other crops—endangering farmers' livelihoods.

It can be a major challenge for farmers to deal with such threats while avoiding damage to the environment.

To address this challenge, American Farmland Trust has partnered with the EPA since 1996 to help farmers find natural ways of managing pressure from insects, weeds and plant diseases. The transition away from risky pesticides toward biologically based alternatives is the hallmark of IPM. IPM is a science-based, environmentally responsible and economically practical means for helping farmers protect their plants, water and soil while staying vigilant to prevent, reduce and control pest attacks.

Across the country, IPM tactics—from new methods of scouting for insects or interrupting their life cycles to computerized models for predicting disease outbreaks and infestations—are helping farmers reduce their reliance on chemicals at a time when consumers increasingly are demanding a safer environment and healthier food. But finding IPM techniques that work requires ingenuity, research and farmers willing to experiment in the field.

In the following profiles of IPM projects in the Great Lakes region, we present just a few of the many success stories taking place around the country as farmers and scientists work hand-in-hand to protect the environment and grow safe and abundant food.

With a Little Help from My Friends

WISCONSIN'S ECO-FRUIT PROGRAM CONNECTS GROWERS WITH OTHER GROWERS TO FIND IPM SOLUTIONS.

"My kids used to have a joke about me standing and looking out the window, wondering what was going to hit next," laughs fruit grower Tom Griffith, who along with his wife Gretchen operates Door Creek Orchard in Cottage Grove, Wisconsin.

It's an incredibly picturesque farm with fruit trees planted next to rolling fields and acres of woodlands, wetland and restored prairie. A small farm store sells yarn and mutton chops from the Griffith's sheep in addition to pick-your-own berries that attract customers from the nearby cities of Madison and Milwaukee.

All kidding aside, Griffith—a former high school biology teacher—speaks to the myriad difficulties of fruit growing, where a new pest infestation, fruit disease or disastrous weather event is often just around the corner.

But a program called Eco-Fruit, a partnership between University of Wisconsin-Madison and the Wisconsin Apple Growers Association, is helping growers stave off potential problems to their crops while protecting human health and the environment.

Known as Eco-Apple when it started in 2003, the program matches growers with IPM coaches, connects growers to each other and offers weekly conference calls during the growing season where orchardists and IPM experts share information about pest activity, disease prevalence and possible solutions.

Blossoming apple trees at Door Creek Orchard in Cottage Grove, Wisconsin

An IPM monitoring device tracks weather conditions at Door Creek Orchard (left). Apple grower Tom Griffith checks a trap for green fruitworm (right).

"There are so many facets of the program that I benefit from," says Griffith. "It just gives me another set of eyes. Gretchen and I are the chief cooks and bottle washers here. We can't always scout for pests when we need to. It's very hard for a small grower who's doing everything already to get all of the IPM work done. And a lot of people are also working off the farm too."

Farmers who participate in Eco-Fruit agree to use IPM practices instead of spraying pesticides based on a traditional calendar schedule. Instead, they spray on a more limited basis depending on the weather, data about pest and disease levels and other factors. Although trained coaches advise growers on IPM strategies, growers are an integral part of the process, advising each other through local networks.

"When I went to IPM, the biggest change was throwing away calendar spraying and learning there are a lot of different ways to do things," says Griffith, who first learned about IPM 25 years ago while attending fruit school in Michigan.

"I started trapping," he explains. "I became more aware of what I needed to watch out for. I quit using some of the materials that caused some of the problems. When Eco-Apple came along, I think it's gotten me re-energized to get back into some of the details. It's been good to hear what growers around the state are doing."

The more the growers network with each other, the more they're willing to listen to other growers and try new things.

— ECO-FRUIT IPM COACH JOHN AUE

In the first five years of the program—started in part with a grant from the EPA's Strategic Agriculture Initiative—participating growers reduced their pesticide risk by 58 percent and increased their reliance on IPM strategies by 33 percent.

Jim Lindemann, a Dane County apple grower in one of Eco-Fruit networks, is now studying to become an IPM coach. "The real fundamental thing is developing a set of resources," he says. "If there's one skill that's a prerequisite for being a good orchardist, it's knowing where to look for help. There are answers out there—somebody has dealt with the problem before."

The Eco-Fruit program has since spread to other states, with the free weekly conference calls open to any interested growers—both organic and non-organic—in the Upper Midwest. "The money from AFT and EPA made it possible for us to build the collaborations necessary to work with growers. We've been able to leverage the funding we've had," says Michelle Miller, IPM program manager with the University of Wisconsin-Madison Center for Integrated Agricultural Systems (CIAS).

"That initial bit of funding has had a huge impact," adds Regina Hirsch, CIAS outreach specialist.

For Craig Schultz, an apple grower near Chippewa Falls in Northwestern Wisconsin, the program's individualized, grower-to-grower approach helps farmers apply the IPM knowledge they gain to their own orchards in a less top-down or heavy-handed way. "The program's been a great help to me," he says. "Apple growers are a very independent group of people. Many have had their orchards for generations. Getting them to change can be a difficult nut to crack."

"That's the legacy of this," adds John Aue, one of the program's IPM coaches. "The more the growers network with each other, the more they're willing to listen to other growers and try new things. There's been more learning since this project largely because of growers talking to each other."

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— WISCONSIN APPLE GROWER JIM LINDEMANN

Members of the Eco-Fruit network at Door Creek Orchard

IPM Is Good for Farmers, the Environment and Our Food

Integrated Pest Management has been proven to positively impact the environment and human health. For farmers, there are additional rewards from IPM practices, including the potential for increased crop yields, decreased soil erosion and greater profits.

Other benefits of IPM include:

- **Protected wildlife, beneficial insects and endangered species**
- **Healthier farm and food products**
- **Increased protection of the environment, including soil, water and air quality**
- **Safer working conditions for agricultural workers and their families**

When EPA's Strategic Agriculture Initiative—which provided funding for the projects profiled in this report—ended in September of 2011, Assistant Administrator Stephen A. Owens reaffirmed the agency's commitment to IPM, stating:

> **In 1998, our Office of Pesticide Programs launched the Strategic Agricultural Initiative (SAI) as a pilot project to help growers transition away from high-risk pesticides and adjust to the then-new requirements of the 1996 Food Quality Protection Act (FQPA)....Now, after a dozen years, the SAI has largely achieved its original mission of assisting growers to adjust to the 14-year-old FQPA, and it is time for our IPM efforts to move in a new direction....With ongoing programmatic support, IPM will continue to be an important tool for American agriculture....As we move forward... we will continue to promote IPM and sustainable pest management practices in agriculture, albeit in different ways than before. We intend to work to identify more flexible, less stove-piped approaches to meet local agricultural needs for pest management assistance.**

Glossary of IPM

Beneficial Insects
In agriculture, beneficial insects are species that perform valued services like pollination and pest control. In contrast, insects that hinder crop production are classified as pests. One IPM strategy involves promoting beneficial insects by supporting their living conditions.

Biodiversity
Increasing the biodiversity in an agricultural system by encouraging many different species of plants, animals and insects to co-exist is an IPM tactic. Biodiversity can help to minimize pest outbreaks by reducing the risk that any one species will become a major pest problem.

Biopesticides
Biopesticides are natural occurring substances—such as animals, plants, fungi, bacteria, viruses and certain minerals—that control pests through non-toxic means. By contrast, conventional pesticides are generally synthetic materials that directly kill or inactivate a pest.

Food Quality Protection Act (FQPA) of 1996
The most comprehensive overhaul of the nation's pesticide and food safety laws in decades, FQPA fundamentally changed the way pesticides are regulated. The act created a single, health-based safety standard for pesticide residues in food and the environment.

Functional Ecology
Functional ecology measures the diversity of insects, mites and soil microbes—along with assessing overall tree stress levels—to evaluate the condition and health of an orchard system.

Integrated Pest Management (IPM)
IPM is an effective and environmentally sensitive approach to pest management that relies on comprehensive information about pest life cycles along with control methods that manage pests with the least possible hazard to food, human health and the environment.

Mating disruption
Mating disruption is an IPM technique that involves releasing synthetically produced insect pheromones in large amounts to confuse males and limit their ability to locate females. The technique is often supplemented with intensive monitoring of pest populations and limited spraying.

Monitoring/Scouting
Pest monitoring is a cornerstone of IPM, allowing growers to identify pests and determine if enough are present in an area to warrant a costly treatment. This helps to remove the possibility that pesticides will be used when they are not really needed.

Nematodes
It's estimated there are about a million species of nematodes, roundworms found in nearly every ecosystem from marine environments to soils. In agriculture, nematodes can be both beneficial and detrimental to plant health.

Organophosphates
This class of chemicals affects the nervous system by disrupting the enzyme that regulates acetylcholine, a neurotransmitter. Organophosphates are the basis of many insecticides. The EPA has banned most residential uses of organophosphates and placed restrictions on their agricultural use.

Pheromones
Pheromones are a class of chemicals that insects and other animals release to communicate with other members of the same species. In IPM, pheromones can be used to trap insect species for monitoring purposes; to mass trap and remove them from the breeding population; or to "confuse" and thus disrupt the mating capacity of certain insect populations.

Strategic Agricultural Initiative (SAI) program
SAI was a partnership between EPA and the agricultural community that provided grants to help agricultural producers adopt IPM practices and transition away from certain pesticides. From 2003 to 2006, SAI helped to implement IPM strategies on over 1.2 million acres of farmland, reducing higher-risk pesticides on those acres by 30 percent.

Trapping
In IPM, the monitoring of pests must begin before the pests become a problem. Insect traps checked at regular intervals allow growers to monitor and control pest populations before they get out of control. Traps can help detect influxes of pest species from one geographic area to another.

Weather Monitoring
Weather factors—such as rainfall, dew and daily temperatures—play a critical role in plant disease and insect development. In IPM, weather monitoring involves recording and analyzing weather data and using models to help producers make informed decisions about pest management.

All of the projects in this brochure were funded through assistance agreements between American Farmland Trust and the U.S. Environmental Protection Agency.

While there have never been any 'silver bullets' in crop protection, the Food Quality Protection Act forced growers to consider alternatives to those pesticides that would no longer be available and to take a more comprehensive view of their pest and disease management efforts as well. Our work with American Farmland Trust over the past 10 years enabled growers to participate firsthand in research that might otherwise have never been demonstrated. Moreover, growers put pest and disease management innovations into practice and reduced their environmental impact at the same time.

— SETH DIBBLEE, REGION 5 STRATEGIC AGRICULTURE INITIATIVE COORDINATOR

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