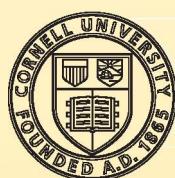


New York State
Integrated Pest Management
Program

The year in review

2009 – 2010



Cornell University
Cooperative Extension





Director's Message

This past year the New York State Integrated Pest Management (NYS IPM) Program faced an unprecedented budget crisis. All of our staff were given termination notices, and the New York State budget was several months late—leaving our fate unknown. Yet in the midst of all this doom and gloom, I was astounded by the dedication of our staff and the outpouring of support and appreciation from around the state, and beyond. Time and time again, your letters, emails and phone calls pointed out critical facts such as:

- IPM saves me money
- IPM is good for public health and the environment
- I want my kids in an IPM-managed school

State funding for the NYS IPM Program in this new budget year is about a third of our state allocation in recent years. Combined with federal USDA IPM funds, we will be able to provide only half of the IPM programming that we did in 2009. Obviously this has significant impacts on our staffing and therefore our ability to help you adapt and adopt IPM to your farms, homes, schools and parks.

As the leaner NYS IPM Program emerges, we will continue to work with you to prioritize ways of simultaneously protecting our crops, citizens, land and water. We will aggressively seek new partnerships, efficiencies and funding sources. And perhaps most importantly, we will strive to maintain the quality programming you have come to expect.

Thank you.

Don Rutz, Director
New York State IPM Program

Our Partners



“Whether a farm is large or small, organic or conventional, IPM has provided our producers with effective pest management strategies that enhance their competitiveness and profitability. This past year, we partnered with the NYS IPM Program in developing research-based production guides to help aid in the transition from conventional to organic farming. These guides were quite popular among farmers and we look forward to working with IPM in the future to continue to offer problem-solving solutions to whatever production challenges our industry faces in the future.”

Commissioner Patrick Hooker, New York State Department of Agriculture and Markets



“Integrated Pest Management is a valuable tool in providing safe and effective pest management for all of us who live or work in New York. DEC is a proud partner with the NYS IPM Program to provide important and accessible information to assist communities in finding solutions that use sound science and the latest technologies to protect property and crops from pest damage.”

Commissioner Pete Grannis, New York State Department of Environmental Conservation

Highlights of 2009–2010

A Blast From the Past

Late blight took New York by storm this year—an apt (if shopworn) metaphor, given that weather is a major factor in promoting its spread. Moderate temperatures, plenty of rain—the summer of '09 was made to order for late blight. Growers and gardeners who'd forgotten high-school history lessons on the Irish potato famine were reminded when nearly every county in New York reported severe outbreaks.

Late blight strikes like a bolt out of the blue, taking down tomato and potato fields seemingly overnight. Late blight spores speed off on the wind, sometimes infecting crops miles away, which in turn send spores speeding off to ... well, you get the idea. Traced largely to infected transplants shipped to garden centers all over the Northeast, late blight took gardeners by surprise—but thanks to IPM's late blight network, most growers knew it was coming. And New York's Ag & Markets has moved aggressively to inspect transplants, including out-of-state shipments.

Cornell researchers keyed into the problem early, sending all-points alerts to Extension educators via IPM's late blight email listserv. Most years all the weekly late blight update says is "not found." But in 2009 reports poured in, and hits on the IPM website's late blight fact sheet spiked from 2,200 in June to 29,000 in July. Growers who saw it coming could save their crops, though the ground was so wet many couldn't get equipment into their fields. Most home gardeners lost all their tomatoes and potatoes.

We began the network back in '93, when a new strain of the fungus that causes late blight invaded North America. But the network was never put to the test quite like in 2009. Our two-tiered approach protected the confidentiality of growers who reported blight to Cornell researchers, Cooperative Extension educators, or crop consultants—who in turn reached out via weekly updates to Master Gardeners and growers outside Extension's regional vegetable programs.

Of course, in a good year—a year when late blight slumbers because dry weather inhibits its spread—our network is equally valuable. No blight? Growers can cut back on the fungicide, saving money and keeping tons of pesticides out of the environment.

Project leader: A. Seaman



Late blight spores look like grayish-white fuzz on infected tomato stems.

NEWA Shines Again

NEWA, our pest-forecasting network, doesn't take rain days. If anything, rain is its *raison d'être*—its "reason to be." Rain, humidity, temperature, wind speed and direction, drought, time of year—all work in concert to promote or inhibit plant diseases and insect pests. Our forecasting stations run year-round. Why? Knowing how cold it gets in winter makes a big difference in whether you're likely to get Stewart's wilt on sweet corn, while grape, apple, and peach growers want to know if the temperatures were cold enough to damage flower buds.

NEWA's umbrella got bigger this year. Now growers in one locality alone—Appleton, NY—host 4 stations, and with new links to airport weather stations we now have data streaming in from 140 stations around New York and the Northeast. Zeroing in on where it's raining—and more importantly where it's not—can keep growers off their spray rigs since diseases like black rot need water to cause trouble. At the same time, information from NEWA helps predict other pests coming down the pike. Since *prevention* is paramount in IPM—it could almost be our middle name—growing the network is critical to grower success.

NEWA, aka the Network for Environment and Weather Applications: <http://newa.cornell.edu>.

Project leaders: J. Carroll, C. TenEyck, C. Petzoldt, T. Weigle and J. Gibbons

When Berries Get the Blues

There's no cure in a bottle for blueberry canker diseases. The best way to combat them is through (1) keeping plants healthy and (2) pruning the right way at the right time. Cornell scientists went into 33 blueberry farms in 12 counties in New York, looking for three types of canker—including one found only recently in western New York.

Phomopsis canker, present on 11 farms, posed a big problem on 3 farms, with as many as 50 percent of the plants infected. Though a well-managed blueberry planting can remain productive for 25 years or more, cankers destroy fruiting wood, and can put a planting out of commission if not treated. Nor are cankers the only diseases that threaten growers' bank accounts. The researchers kept watch for other important diseases as well. 2009's wet growing season favored mummy berry. Found on nearly half the farms, mummy berry damaged up to 70 percent of berries. Not only that, but they found symptoms of ringspot viruses—including one confirmed for the first time on blueberries in New York. Take-home lesson? Keeping plants healthy takes careful, applied, ongoing research.

Project leaders: J. Carroll, M. Fuchs and K. Cox

Blueberry shoot with canker.
New York is 10th in the nation
in blueberry production.



Buy-In on Biocontrol

When a 2000 survey told us only 13 percent of greenhouse growers were using biocontrol, we knew we had a big gap to fill. So each year we refine our biocontrol workshops based on grower feedback—which shifts year-to-year as growers gain traction in the art and craft of biocontrol. This year we brought eight of the most commonly available beneficial predators and parasites to our workshops. But “commonly available” doesn’t equal “commonly used.”

Case in point: an overlooked natural enemy called *Atheta coriaria*, a type of rove beetle. This nifty predator has a great resume: Small, but always hungry. It tackles shore flies, fungus gnats, moth flies, root mealybug crawlers, aphids, spider mites, thrips, and midges (pretty much anything it can find in the soil) and easily knocks off 10 to 20 prey each day.

Sound like somebody you’d like to know if you were a greenhouse grower? Yet even growers who employ beneficials such as *Encarsia* and nematodes have only an eight percent adoption rate with *Atheta*.

Our workshops, held in seven greenhouses around New York, introduced 190 growers to these hardworking beneficials—and to each other. With hand lenses and microscopes at the ready, they learned what these tiny critters look like, how to tell if they are alive on arrival (very important), how to apply them to their crops, how to determine if they’re working, and which other growers have “been there, done that” with any particular predator—people you can call when you need advice.

Project leaders: E. Lamb, K. D. Hall and B. Eshenaur



Greenhouse growers looking for evidence of beneficial insects.

Take-Home Meetings with a Take-Home Message

“Land-grant central” for New York is Cornell University in Ithaca. It has the tools of the trade on hand for teaching greenhouse growers the *how-to’s* and *wherefores* of pest identification and soil testing so critical to preventing and coping with pest problems. But what about the growers who can’t make it to on-campus training sessions?

Simple. Our IPM experts load up their car with dissecting microscopes (one with a camera attached), vials, alkalinity meters, Petri dishes, forceps, Parafilm, dissecting needles, pH meters, a chemistry set—oh, and don’t forget the bugs—and take the tools to the growers. Workshops are held in retail greenhouses where people can see the real-world implications of what they’ve learned.

Results? The 57 growers who came to our IPM trainings in Binghamton, Ithaca, and Rochester now know why—for example—understanding the alkalinity of their potting mixes is a big deal in dealing with plant pathogens. These growers can now identify all the thrips you can throw at them and show you what nematode damage looks like. And 90 percent (not bad, *not bad*) want to learn more.

Project leaders: E. Lamb and B. Eshenaur

Feedback from growers attending the trainings: “Great program. I have learned a lot. Love the lab work.”



Killer Cankers

On cherry trees, bacterial canker is a born killer. It enters anyplace you nick or scrape the bark—and through pruning wounds. But you can’t grow big juicy sweet cherries if you don’t prune. Meanwhile, the bacteria develop resistance to antibacterial copper sprays, and copper could build up in soils.

IPM scientists tested low-risk phosphite on whole blocks of infected cherry trees—to little or no effect. We also lab-tested 15 other chemical treatments on cherry trees to see how well the treatments prevented infection or eradicated it; only 2 of those 15 showed promise. But our simplest strategy—leaving six inch-long pruning stubs rather than cutting branches flush with the trunk or main branch—was the most promising. Though cankers progressed considerably further down stubs pruned in March, April and May than down stubs pruned in late July, none made it into trunks or scaffold limbs.



Six inch pruning stubs left on cherry trees slow the progress of bacterial canker.

Project leaders: J. Carroll, T. Robinson, T. Burr, S. Hoying and K. Cox

Week In, Week Out

Strolling through farm fields checking out arrivals of new pests—a weevil scooting around in the alfalfa, spider mites on the soybeans ... sounds like a fine way to spend a few hours a week, no? Yes—but critically important too for Cornell researchers and Extension educators. Because busy farmers rely on those observations.

Just this past year we charted and discussed 77 disease and insect pest topics in our *Field Crops Weekly Pest Report*. But unless growers are experts in plant pathology, they're unlikely to know their frogeye leaf spot or cercospora leaf blight, from their glume blotch or straw breaker. And these are just four of the 52 plant diseases and 24 insect pests our cooperators turned up in their weekly field treks. We also addressed 23 additional issues related to weeds, beneficial insects, or livestock, and even three from that useful category “other.”

But the weekly pest reports do more. We include pictures of pests at the lifecycle stage they’re in now ... and a “clipboard checklist” reminding readers of preventive and diagnostic steps specific to the season. “GDDs”—short for growing degree days—use temperature data to rack up the hours of warmth, giving growers an estimate of which bugs to look for, and when. Topping off the report is an in-depth look at a timely IPM topic, often clarifying a puzzling issue.

Who gets the report? It goes out weekly to Extension educators and crop consultants statewide; they pull out the material relevant to their region and clientele that week, and take it from there. The ultimate beneficiaries? Thousands of farmers on millions of acres of cropland around New York State.

See for yourself: <http://nysipm.cornell.edu/fieldcrops/tag/pestrpt/>

Project leaders: K. Wise and J. K. Waldron

An average of 37% of the wheat spikes in this spring wheat field showed symptoms of fusarium head blight. You can see the prematurely ‘bleached’ spikes against the background of green ‘healthy’ spikes.



Community



Lots of feet have lots of impact ... sports traffic wipes out grass, leaving fields bare and ripe for weed invasion—both are unsafe playing surfaces.



When Parks Take a Pounding

Community parks and athletic fields in highly populated areas promote economic, environmental, and social well-being. Yet the pounding feet of thousands of people eager to play take a toll on turf. The trick—keep turf healthy and know how to prevent pest problems or catch them early, when least-toxic tactics have their best chance of protecting this valuable resource, saving time and money.

But you have to know what to look for. For George Kuntz, all it took was one day attending a training session organized by Extension educators at the tail end of winter attended by 30 groundskeepers representing 16 municipalities and 4 private contractors. Here's how he put it:

"The Athletic Field Program is great for newcomers and a great refresher for experienced people. We designed our field maintenance program around things we learned there. Please bring it back!"

Project leader: R. Harper



Busy Little Buggers

Sixty years ago, they were commonplace in homes and hotels. Now bed bugs are back—and a citizenry that forgot them, or grew up without them, is worried. To put it mildly.

Our research and outreach has expanded yearly. So have bed bugs. The need for education—for bulletins, talks, task forces; for whatever it takes—is overwhelming.

Who's most vulnerable? For starters, apartment dwellers and the elderly who live alone. Hotels and college dorms are feeling the pain: bed bugs hitchhike easily on luggage.

What are we doing? Taking a leading role in New York City's Bed Bug Advisory Council, to develop a plan that will help the city and its residents reverse the trend. But the Big Apple is hardly alone—*Anytown, USA* is a bed bug destination. The City's plan will provide a template for towns and cities throughout New York.

Meanwhile, our training workshops reached 529 people this year. We're counting on those trainees to inform hundreds of others—the "each one teach one" effect. And we're part of a national dialog, through our IPM contacts around the nation and via the EPA, networking with researchers everywhere—to devise new strategies and share them widely.

Project leader: J. Gangloff-Kaufmann

Opposite: IPM lesson #1: Identify the problem. Groundskeepers, teachers, students—they're all learning to identify which plants are the bullies—or weeds—in school lawns and playing fields.

IPM Focus

Home Turf

Our 10 years of groundbreaking research at famed Bethpage State Park's Golf Course facility—rare among public courses in hosting the U.S. Open (twice)—has brought a huge return on value, especially because our IPM methods can cut the environmental impact of pesticides by as much as 93 percent. But after a decade of research—is there a need to continue? Yes, because the world doesn't stand still. Because tactics, products, and pests are ever changing. Because to fulfill the New York State Park's vision of least-toxic care of all its properties, we need to keep ground crews abreast of what's headed their way.

Now our partnership with New York State Parks, and the training manual we produced—means they can confidently apply the lowest-risk strategies for all 29 State Park golf courses, adapting our methods to their home turf.

Project leaders: J. Grant, F. Rossi and R. Portmess

Lesson Plan

Here's your science lesson for today: kids are at greater risk from pesticide use than grown-ups. Why? If you checked the answer "their small size and fast growth makes them more vulnerable," you got it. Cutting back on pesticides is critical in schools. In fact, New York just made it a mandate—no more pesticides on school playgrounds, lawns, and athletic fields. The kicker, of course, is that you also need to protect kids from pests.

Yet how to reduce pesticides across thousands of schools serving millions of students ... there's a learning curve involved. Cafeterias. Furnace rooms. Playgrounds. Locker rooms. Bus garages. Think of it. Each setting has its own problem set. How many staff need training? Let's keep the math simple and just say—lots.

Protecting kids is a big deal for us, so when we were tapped to take part in a USDA-funded nationwide planning team charged with developing a framework for getting IPM into the nation's hundreds of thousands of schools by 2015, of course we said *yes*. But it ups the ante exponentially. The Northeast team we're part of began, sensibly, by making a plan—rather like a syllabus that guides teachers through weekly and monthly expectations. It's complicated because our mission is complicated. But now we know the opportunities and priorities for research, extension, and education needed to bring IPM to schools nationwide. And, being good neighbors, we've begun demos in Northeast states that lack school IPM teams.

Project leaders: L. Braband, J. Gangloff-Kaufmann and J. Grant

Reducing chemical use
on golf course turf:
Redefining IPM

NYS IPM Publication No. 617



Community IPM Focus



Succeed With Seed

Weeds and bare spots—a double-whammy for heavily pounded playfields and well-used parks. Overseeding with lots of grass seed has always been the best way to discourage opportunistic weeds that try to overtake bare soil. It not only makes turf more weed free and healthier, but safer for kids too. How? By quickly filling in those empty gaps, athletes are given the best footing, making falls less likely. Now that herbicides (and other pesticides) are banned on New York's school and daycare center playgrounds and lawns, overseeding is increasingly important.

Homeowners can use this low-cost cure too, especially when the culprits are crabgrass and other annual weeds. How? Download this brochure: <http://ccerensselaer.org/Horticulture-Program/Lawn-Fact-Sheets.aspx> (and get an inexpensive spreader if your lawn is large or the bare spots are plentiful). Follow steps 1 through 5 ... then sit back and watch the grass grow.

Project leader: D. Chinery

You Can Run but You Can't Hide

Mile-a-minute weed (call it MaM) is the kudzu of the north, sprawling in a green blanket that smothers meadows, roadsides—even trees. Backward-bending prickles on leaves and stems help MaM cling as it goes, growing at a clip of—believe it or not—six inches a day. Pretty, blueberry-like fruit attracts birds that spread seeds far and wide.

The lower Hudson Valley is ground zero for this aggressive weed in New York. How to cope? We helped Cooperative Extension educators in Dutchess and Orange counties blanket their communities—their libraries, farm stands, post offices, garden centers, riding stables, and more—with thousands of cards and posters bearing MaM mug shots (those triangular leaves are unmistakable) to help keep it at bay with how-to info such as: *Don't let it go to seed*. Though the MaM plant dies with the first frost, even the -30° temps in New York's Adirondack Mountains won't kill the seeds. There are hints that someday a tiny weevil that feeds only on this weed could provide good control. But right now the alternatives are weeding, mowing, steam spraying; even goats. Whatever it takes. Because as people in the lower Hudson will tell you—this is one you don't want in your back yard.

Project leaders: R. Baglia and S. Mallozzi



Mile-a-Minute weed smothers forest seedlings, thereby threatening forest regeneration. Seeds may survive up to six years in soil.

Conspiracy Theory

New York's beekeepers are still hurting from high levels of honey bee mortality—more commonly known as “colony collapse disorder.” Who’s the culprit? Or maybe the question is—who’s in on the deal?

Researchers around the country are examining a host of interrelated factors that might contribute to the disorder, including *Nosema ceranae*, a sneaky little fungal disease that’s been in North America for 10 years, maybe more. By itself it doesn’t seem to have much of an impact. But now scientists suspect that when paired with a couple of viruses, it’s a different story.

Here in New York, we’ve sampled hives around the state to get at the dynamics of *Nosema*: that is how its abundance and distribution changes from one season to the next. Because if this is a conspiracy, we need evidence to prove the claim.

Project leaders: P. Kozak and N. Calderone



The value of honey bee pollination in the U.S. is \$15-20 billion annually. Colony collapse disorder has caused up to 30% hive loss in severe years.

What You Don't Know Can't Hurt You

Cool days, plenty of rain—the summer of ‘09 was made to order for soybean aphid.

New York’s farmers like growing soybeans because they don’t have many pests here; in 2009 they planted about 250,000 acres and harvested 1.8 million bushels. Yet since 2000 a new pest, the soybean aphid, has spread rapidly throughout all of North America. Most years it’s not a big problem; aphids sip away at plant juices and it usually takes a bunch of them feeding at vulnerable plant growth stages before yields begin to suffer from reduced pod set and seed size. The combo of hot summer days and hungry predators like lady beetles usually keeps aphid populations in check, or as the experts say ... below threshold.

2009 was different. Cool temperatures and high humidity favored the aphids’ life cycle. Apparently it slowed down predators too. Aphids spiked. Cornell and industry “sentinel scouts,”—part of a statewide monitoring program—found as many as 1,000 aphids on a single plant. Meanwhile the IPM Tactical Agriculture (TAg) Program, which turns farm fields into classrooms for hands-on learning, had their TAg teams out scouting too. The threshold—or call to action—is 250 aphids per plant, whether using conventional or organic tactics. Each report on aphid numbers got funneled into IPM’s *Weekly Field Crop Pest Report*, an email that goes to every soybean point person at Cooperative Extension and many industry consultants—and through them, to growers statewide. Every 2009 TAg team member reported aphid counts over threshold. Early detection enabled them to treat fields early and protect yields. That alone saved yields worth nearly \$700,000. That old saw, *what you don't know ... dead wrong*.

Project leaders: J. K. Waldron and K. Wise



Soybean aphid – the new kid on the block.

Lay the Groundwork

A healthy crop—better able to shrug off pests without spraying—begins with a healthy soil, which is why sustainable farming calls for close attention to building better soils. One of the best ways is through cover cropping—planting, then plowing in crops chosen because they're so good at boosting soil nutrients and microbial life. Although good guides to cover-cropping exist, applying that information to cover crop selection for your own field can be daunting. New York's growers asked for highly focused, locally targeted info.

Cornell's Soil Health Test and their Cover Crop Decision Tool will help growers decide which cover crop is best suited for a given field's soil. Whether the problem traces to poor drainage, low microbial activity, disease build-up, or low organic matter, this decision tool will point to the best choice in cover crops.

Now it's time to put the Test to the test. Cornell scientists and Extension educators laid the groundwork—prepping 12 growers in New York and linking with similar cadres of growers in three other states to do on-farm, split-field trials. Growers chose fields having problems with, say, root rot or poor tilth—or fields that just aren't producing to their potential. Next on the agenda: field trials, spanning two years. For growers nervous about pulling a field out of production to cover crop for a year, this data will highlight the heightened productivity they'll see as a result.

Explore the site: <http://tinyurl.com/nycctool>

Project leaders: T. Bjorkman and J. Mishanec



Knowing which cover crop to grow is tricky. Cornell soil health resources can help growers choose the best cover crop to address specific soil problems on their farm.

2009 Projects

Please see www.nysipm.cornell.edu/grantspgm/projects/proj09 for reports on these projects. All projects were partially or fully funded by the New York State IPM Program. We leveraged additional funds from outside sources.

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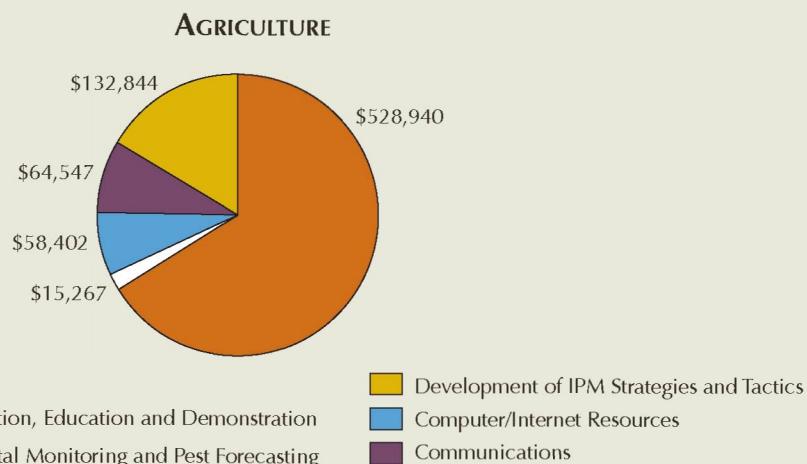
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Integrated Pest Management has provided a sense of food security for us—knowing food is grown with the least amount of pesticides. We owe a big thanks to the Integrated Pest Management specialists who work with growers to monitor pest activity and determine when and how much to spray."

Noah Sheetz, Executive Chef, New York State Executive Mansion

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