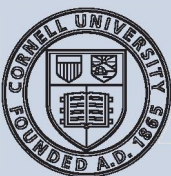


New York State

# **Integrated Pest Management** Program

## *The year in review*

2008—2009



Cornell University  
Cooperative Extension





## Director's Message

When the going gets tough, the tough get going. And have no doubt: IPMers are tough. Every day new economic woes make the news—but integrated pest management remains rooted in sound economics, helping people use least-toxic ways to deal with pests.

How does the New York State IPM Program stay tough? For starters, we have great partners—"we" includes the many Cornell University researchers and extension educators working alongside us. Examples abound: this year we began working with the New York State Department of Agriculture and Markets to create organic production guides. And we continued working with the Office of Parks, Recreation and Historic Preservation to test IPM and reduced-risk strategies on golf courses.

We stay tough by being versatile—garnering support from federal, state, and private funding sources. In 2008, our staff secured over one million dollars in outside grants—that's a 1:1 return on the investment that New York State makes in our community and agricultural IPM programs.

We stay tough through accountability—a hallmark of our program for over 20 years. If you want to get something done, come to us. We take a creative, thoughtful approach to solving pest management problems. We test it, report on it, and spread the word.

IPM helps growers, pest managers, and homeowners save money. Our emphasis on preventing pest problems and tackling them promptly and efficiently is a proven path to success. So page through this report. See what we've done. And then—let us know how we can continue to help.

Don Rutz, Director

## Our Partners



"In these times of economic uncertainty, the pest management strategies developed through the New York State Integrated Pest Management Program at Cornell provide our agricultural producers with a competitive edge for sustainability. By focusing on weather forecasting, scouting, economic thresholds, bio-control and production techniques, IPM's work remains relevant in combating new and emerging pest threats because it involves growers and is directed by their comments, observations and needs."

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



"Each year, we are seeing an increase in consumer awareness about the benefits of managing pest problems in their homes, gardens, workplaces and schools in an environmentally sound way. The need for Integrated Pest Management will continue to grow, and DEC is proud to partner with the NYS IPM Program to educate the public and help them find new ways to reduce pesticide use and achieve a healthy ecological balance in their surroundings."

Commissioner Pete Grannis, New York State Department of Environmental Conservation



# Highlights of 2008–2009

## What's the forecast?

What's the forecast? Climatologists tell us that climate change will be associated with extremes. In the Northeast, those extremes could mean higher humidity and heavier rains; perhaps more unpredictable killing frosts. We might see longer growing seasons, with nighttime temperatures warmer too.

Those warmer nights, downpours, and high humidity might be a mixed blessing. Some pests that now migrate north on summer storms could begin overwintering in the North. So we might see more dramatic infestations of pests like armyworm, corn earworm, and potato leafhopper. On the other hand, heavy rains hammer small insects, killing many.

What about plant diseases? If it's cool *and* damp earlier in the season, we could see more late blight, a bad-news disease (think *Irish potato famine*) requiring more fungicide to manage it. We could see more rust diseases too—on wheat and oats, for example. Some diseases could reach epidemic proportions. Yet some forage crops could resist pathogens better because they'll produce more lignin, the woody stuff in their stems.

What about crops? That extra lignin would mean less protein for livestock—and less protein for insects too, meaning pests will feed longer to get the nutrients they need. And some plants will make more sugar in their leaves and stems—attracting certain pests in greater numbers. Some scenarios might balance out: higher CO<sub>2</sub> prompts more pathogen spore production, but also ups a plant's ability to react quickly to infection.

Complex stuff, climate change—a whole new world. Meaning that IPM becomes more important than ever, since the best way to stay on top of the *if's* and *how's* when you're in the field is through careful, timely monitoring.

Project leaders: C. Petzoldt and A. Seaman



Mild temperatures, high humidity, and plenty of rain provide the right setup for diseases like late blight.

## Bee happy, bee healthy

Healthy honey bees make happy farmers, happy gardeners—and happy beekeepers. But keeping bees happy and healthy has never been harder. Varroa mites can decimate a hive. Ditto for recent high levels of honey bee mortality, often called colony collapse disorder—a hot item in the media. Beekeepers are looking for answers and so are we.

We're testing "small cell foundations"—the preformed honeycombs bees rear their larvae in—which could put a crimp on the varroa mites' lifestyle. Working with Cornell researchers, we're tuned in to regional research on the *why's* and *wherefore's* of heightened mortality. Most important, we're helping provide research-based knowledge on the best in bee care via fact sheets, how-to classes for apprentice beekeepers, and state and regional beekeepers' conferences.

Project leaders: P. Kozak and N. Calderone



Deadly varroa mites hitchhike on the backs of bees.

## Tag and Tag Lite

We can't say enough good things about hands-on, farmer-to-farmer learning, proven to increase adoption of new concepts and tactics. It's worked for hundreds of years. Even so, we can improve on it—through teamwork. Our *Tactical Agriculture* program—TAg for short—enrolls neighboring growers in teams of learners who meet at each other's farms. Need to know how to deal with soybean aphids? The guys on your team might have dealt with them just last year. Need to learn how to scout? There's nothing like having a sweep net in your hands.

Besides, TAg is tuned into local conditions. When you consider the variability of New York's landscapes, soils, and weather patterns, you see that timely, *locally adapted* pest management information is what you need, when you need it. This year, NYS IPM and Cornell extension educators drew from our successes with TAg in field crops to focus on soybean growers, whose acreage continues to increase in the Northeast. Farmers from 16 farms in Niagara, Oneida, and Yates counties learned how to make better judgment calls about pests and ways to prevent or manage them.



Looking. Learning. Hands-on. Farmer to farmer. What better way to deal with pests?

But TAg is time-intensive, so we brought the spirit of TAg into a series of one-off evening field meetings. (Think of it as TAg Lite.) A field became a classroom for the night for 110 farmers in seven counties. The curriculum? How to evaluate crop growth and development. How to monitor diseases, weeds, and insects. What the emerging threats to soybean production are and how to get ready. How to use economic thresholds in deciding if and when to spray. Which recordkeeping forms to use and how to benefit from them. And confidence. Feedback showed most participants reported a 20 percent jump in how confident they felt about coping with new pests and tactics.

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

## Train the trainer

When you have a proven IPM-training approach like TAg, you naturally want to share it. Our Train the Trainer workshops helped extension educators from around New York plus New Jersey, Maine, and Connecticut maximize the advantages of sound educational design for adult learners. Results? Nearly 75 percent say they'll create TAg modules—outlines anyone can use to facilitate the here-and-now, hands-on experience TAg is known for. Nearly 82 percent said they plan to create a TAg program for growers in their area; the remainder said *maybe*. Not one said *no*.

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





Craig Currier



Andy Wilson and Dave Catalano



Kathie Wegman

## Meet the Bethpage crew, Excellence in IPM Award winners:

"They've been our eyes on the ground for eight years," says a Cornell turf specialist of *Andy Wilson, Kathie Wegman, Craig Currier, Dave Catalano, and their coworkers at Bethpage State Park*. "Our reduced-risk golf course project at the park is one of a handful from a real-world setting. It's been a monumental project both in scope and impact, requiring enormous in-kind support and expertise."

## Learn with your hands as well as your head

Greenhouse growers tell us they want help with biocontrol, insect and disease ID (some of these pests are really tiny), and how to grow vigorous plants that shrug off pests. So we offered our *IPM in Depth* workshop to fill the gap. After all, how many growers knew that thrips populations skyrocket when they eat pollen from impatiens flowers? Indeed, females lay 5½ times as many eggs when they feast on impatiens. And our most novel topic? How *electrical conductivity* in the soil relates to plant nutrition and how to measure it—which ties directly to how healthy your plants are and how well they withstand pests.

*IPM in Depth* piggybacked on Cornell's ever-popular Floriculture Field Day, providing extra value for growers arriving on campus the afternoon before. Results? Nearly 70 percent planned to adopt new ways of dealing with thrips, more than half planned to change their disease management strategy, and nearly 85 percent planned to test for conductivity and use other methods for measuring soil fertility.

Project leaders: E. Lamb, B. Eshenaur, and G. Couch



Scope it out: accurate pest ID saves hassles, headaches—and pesticide bills.



This aptly named hunter fly snatched a fungus gnat as it zipped by, then settled down on a leaf to eat.

## A bug-eat-bug world

Can you put critters that kill other critters to work in dealing with greenhouse pests? Well, sure. But good biocontrol involves complex tactics and on-your-feet thinking; takes adapting to each situation as it comes. There's a learning curve involved.

We took our biocontrol road show to greenhouse growers around the state: six workshops in six counties that pulled in 153 attendees. With lots of resources but no set agenda, the discussions went where growers wanted them to, addressing what was happening *right then* in their greenhouses.

What do growers want? Evaluations told us they want onsite help and hands-on training. What do we want? To create and help maintain grower-to-grower biocontrol mentoring networks around the state. Case in point: thrips were high on the list of pests that growers want to tackle. We might not have recommended tackling them right off the bat, but there's your mentoring effect. Growers can tap each other's insight and experience, making it easier and more productive for everyone. Our evaluations told us that 84 percent of growers said they'd be happy to help.

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

## Conference call? Call me when it's over!

But hey, this one's a big deal with broad implications. Meeting Cornell University's high standards for extension outreach is all-important. Extension educators are Cornell's front line, bringing timely, quality information to that ever-changing landscape called *farming*. Our weekly conference call brings seasoned experts and newbies together, each one with their eyes on the ground, sharing information grounded in years of observation and experience. What does the group learn from each other? *Armyworms surging through corn. Alfalfa weevil overstaying their welcome. No leafhoppers worth mentioning—this year.* In other words, super-sized servings at the smorgasbord of cooperative problem-solving. Talk about *effective* and *on-the-cheap*: these 21 educators are in touch with thousands of growers. Their observations provide an enormous *multiplier effect* when posted (along with grower observations from TAg and TAg Lite) in our *View From the Field* weekly IPM pest report.

Project leaders: J. K. Waldron and R. Hahn



Carol Glenister

## Meet Carol Glenister, Excellence in IPM Award winner

"Carol goes the extra mile—many extra miles—in doing groundbreaking research to help greenhouse growers," says a nursery manager of *Carol Glenister, entrepreneur and entomologist*, whose IPM Labs produces millions of beneficial insects, mites, and nematodes each week. "It's a huge benefit to the industry." Glenister is a past president and current board member of the Association of Natural Bio-Control Producers, which promotes industry-wide standards for ethics and excellence.





## Organic farmers use IPM

For a range of reasons including competitive prices, going organic is sparking more and more interest among New York's vegetable, fruit, dairy, and field crop farmers. But how best to manage nutrients or deal with weeds, insects, and diseases? IPM has many solutions to offer.

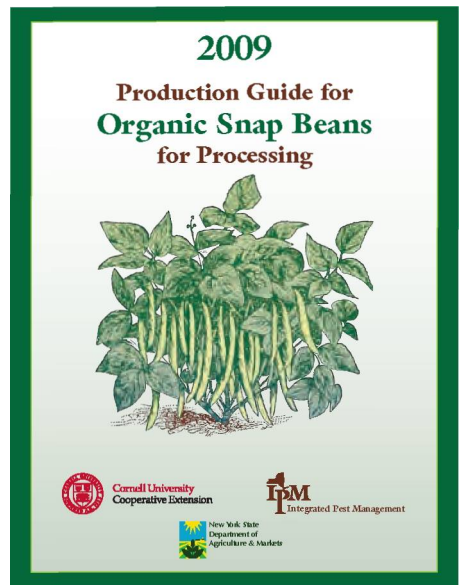
Cornell has lots of useful information for organic farmers—after all, IPM is fundamental to any sound, thoughtful pest management system. But the material is dispersed among a range of publications, many not specific to organic production—or is simply embodied in the experience of successful organic farmers or researchers.

Now our organic production guides are bringing this information together. Partnering with the New York State Department of Agriculture and Markets on this special project allowed Cornell researchers and Cooperative Extension educators to begin with guides for snap beans, carrots, peas, and squash, since these crops are in high demand from a New York organic food processor. These guides provide organic farmers with one-stop shopping for the tactics and know-how that help them build the systems they need for success.

A side benefit: we get to see where the gaps are, pointing the way to research needed in the future. Nine more guides, including livestock and several fruits, will follow in the coming year.

And since sometimes the guide you need is the guy in the field or the front of the room, we've provided workshops and in-field demos hosted by organic cooperatives, the Northeast Organic Farming Association, Cornell Cooperative Extension, and others.

Project leaders: A. Seaman, M. Kirkwyland, E. Thomas, and C. Petzoldt



Hot off the presses: the ultimate "here's how" compendium for organic snap bean growers.



# Community IPM

A<sup>+</sup>

Doing high-level IPM isn't easy. This year we helped two more New York school districts through the exacting process that earned them IPM STAR certification.

Now New York leads the nation in the number of STAR school districts. Seven certified districts or day cares collectively serving a million-plus children in more than 1,300 buildings have been honored for steeply reduced pesticide use. Next on the docket—helping the remaining 693 districts practice sound IPM.

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



## Bugs in your bed?

Bed bugs might not be commonplace *yet*, but they become more common every year throughout the U.S. In New York City alone, calls and complaints have soared from 540 in 2004 to 10,211 in 2008. More and more people are calling about how to deal with notoriously difficult-to-control infestations and what precautions to take when they travel. Because bed bugs were under the radar in the U.S. for more than 40 years, people know little about their biology and how to manage them—even what they look like. We're stepping into the breach to ramp up public awareness of this pest.

Perhaps the most time-consuming part for Cornell Cooperative Extension educators is the increasing stream of phone calls from worried or frantic householders. And not everyone on the receiving end has the expertise to help. So we wrote a comprehensive guide that leads educators through taking bed bug calls and posted bed bug FAQs on our website. Both stress what *not* to do, since mistakes such as using the wrong sprays could just spread bed bugs around. One grateful FAQs reader gushed, "You should write *Bed Bugs for Dummies!*" (Now there's an idea.) Whether you're a business traveler, a college student who just heard that a dorm has bed bugs, or a staffer at a homeless shelter, there's help at hand. A wallet-sized bed bug traveler card and college dorm card (find them online) help you scout for bed bugs, while our guidelines and flyers for shelters and group homes reached new audiences among social workers and medical service providers.

Project leaders: A. Taisey and J. Gangloff-Kaufman



*Good night, sleep tight ...* Inspection, key to keeping bed bugs in check, is taught here in a workshop for college facilities workers, corrections officers, Cornell Cooperative Extension educators, and pest management professionals.



# Focus



## Great greens

We can't emphasize enough how important long-term, real-world research is. You don't get truly useful results until you've tested your work over time, keeping what works and incorporating promising new practices and products.

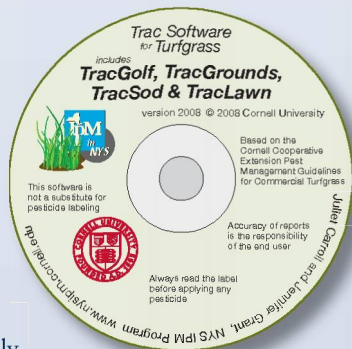
For eight years running, Cornell researchers have fine-tuned a suite of IPM practices with our partner, Long Island's Bethpage State Park, home of the 2009 U.S. Open. We've shown that golf courses *can* combine aesthetics, low environmental impact from pesticides and fertilizer—and great play. We've cut environmental impact up to 96 percent over conventional practices—and on a public course. Such courses are notorious for heavy traffic and tight budgets, yet surveys consistently show high golfer satisfaction with IPM-managed greens at Bethpage. Now we've expanded those practices to two more courses at Bethpage. And we're helping assess practices at all golf courses in New York's state parks, as well as producing a reduced-risk management manual for golf courses in northern climates.

Project leaders: J. Grant and F. Rossi

## Trac your turf

Our Trac recordkeeping software has helped hundreds of farmers around New York make—and track—careful, timely decisions about pesticide use. Now these easy-to-use spreadsheets, incorporating detailed data on more than 100 pesticides, are available as *TracGolf*, *TracLawns*, *TracGrounds*, and *TracSod*. It's easy to customize Trac menus to store names of fields, equipment, products used, and acreage of sites or clients. Trac saves time while improving accuracy, helping managers do better IPM. Using Trac, managers can also analyze the cost of their pest management strategies and save money. Finally, Trac outputs mandatory pesticide applicator reports. *Trac Software for Turfgrass* is now in the hands of all 1,500 members of the NYS Turfgrass Association.

Project leaders: J. Grant, J. Carroll, and D. Marvin

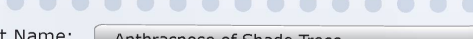


# What's Bugging You?

Our *What's Bugging You?* webpages help you think through pest problems at home, from ants to woodchucks. It's basic IPM: once you've identified the problem, we help you deal with it. Do you know what's bugging you? Check it out.

[www.nysipm.cornell.edu/whats\\_bugging\\_you](http://www.nysipm.cornell.edu/whats_bugging_you)

Scores of landscape trees and shrubs host hundreds of insect and disease pests. Now our *Interactive Plant Manager*, a concise, comprehensive online diagnostic and management tool, helps landscapers and home gardeners identify problems—the *when to look* and *what to look for* that's critical to knowing how to prevent problems. Search by pest name, plant name, signs, or symptoms—each hooks you up with our easy-to-read fact sheets including range maps, photos of pests and the damage they cause, and life-cycle charts that help you time least-toxic controls.



Pest Name: Anthracnose of Shade Trees

Plant Name: Dogwood

Search



[www.nysipm.cornell.edu/aes\\_ornamental.asp](http://www.nysipm.cornell.edu/aes_ornamental.asp)

IPM reduces pest complaints and pesticide use by 71 – 93 percent nationwide in schools and public buildings with no long-term cost increase. Now IPM partners around the country are calling for widespread use of IPM problem-solving tactics in the nation's schools by 2015. It's an ambitious goal and a lot to accomplish with limited resources.

But we bring years of real-world experience, working with many of New York's 699 school districts and hundreds of private schools, to the table. We're helping chair a regional committee aimed at fostering awareness of problems *and* ready solutions that reduce both problem pests and pesticide exposure.

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

These few ounces of prevention—the juice in that yellow-jacket trap at the top of the pole—are worth more than a pound of cure. Put traps out early and away from where you picnic or play.





## Playing catch-up

Codling moth worms, found in less than a quarter of rejected truckloads of apples at food processors in 2002, were the main culprit in 2007 rejects. One worm found during inspection can reduce the value of the whole load by 59 percent if it's diverted to juice. By 2008, this pest had gnawed its way through a collective half-million dollars worth of New York apples.

Growers want to work with mating disruption, such as *pheromone* lures that trick male moths so they can't find females. But the cost, \$100 per acre, is daunting. Cornell's job—to keep demonstrating, on a bigger scale each year, how mating disruption works *and* to provide consistent support over time. Payback comes the third year, when the number of sprays needed drops dramatically from six per season to two. Factor in cleaner fruit with fewer sprays, and mating disruption starts looking good.

Project leader: D. Breth

## For PETE's sake

*The only thing worse than finding a worm in your apple ... for apple growers, worse means getting your whole load downgraded over just one worm. But IPM dramatically improves quality—and your odds.*



Codling moth damage



Codling moth larva inside an apple

What's the best way to give growers a heads-up on hatches of the codling moths that signal worms are on their way? Cornell researchers tested PETE, a forecasting model developed in Michigan, to see how it predicted codling moths under New York's conditions. PETE did fine with low populations, but not in orchards with lots of codling moths. Plus when we have mild fall weather, pests like codling moth just don't quit, hatching a third "suicide generation" that won't overwinter but still damages apples—which PETE didn't predict. So while PETE is a valuable part of the IPM predictive package, our results underscored the merit of our trap network, which allowed researchers to alert growers to these surprise late flights.

Project leader: D. Breth

## High-performing spuds

With IPM, culture and *culture* go hand in hand. First is the culture you expect when you hit that fancy restaurant before a concert. Second is what farmers and gardeners call *culture*—giving plants what they need, whether rich soil, water, or the right amount of sun or shade.

Case in point: spuds. Once a top potato-growing state, over the past 20 years acreage planted to spuds in New York has declined more than a third. Yet people are increasingly eager to buy locally. How to get traction? Test New York potatoes for culinary prowess and pest resistance. Then get up-and-coming chefs to love our spuds. Here's how:

- Iron Chef contests between competing high-school culinary arts classes help teach future chefs how to factor in IPM when they decide which produce to buy
- Talks at restaurant association conferences delighted attendees with door prizes of—yes, fabulous New York potatoes
- Organic variety trials, with results on pest resistance of 16 varieties shared with growers throughout New York
- *Culinary Use* and *Cultural Use* guides help growers market their spuds by culinary use and choose insect and disease resistant varieties, while providing plenty of other cultural information to grow better crops

Project leader: J. Mishanec

This year, 130 high-school culinary arts students learned how IPM helps grow better, healthier food. “It’s great to have someone who walks the walk and talks the talk in the classroom,” said instructor Paul Rother.



Roberta Wiernik

## Meet Roberta Wiernik, Excellence in IPM Award winner

“Roberta brought experts from medicine, public health, horticulture, and pest management to the table,” says an IPM educator of *Roberta Wiernik, chair of the Westchester County Pest Management Committee*, which tracks pesticide records from county agencies, approves exemptions, and provides workshops for county employees. “Roberta is indispensable in keeping Westchester County on track with its pesticide phase-out law.”





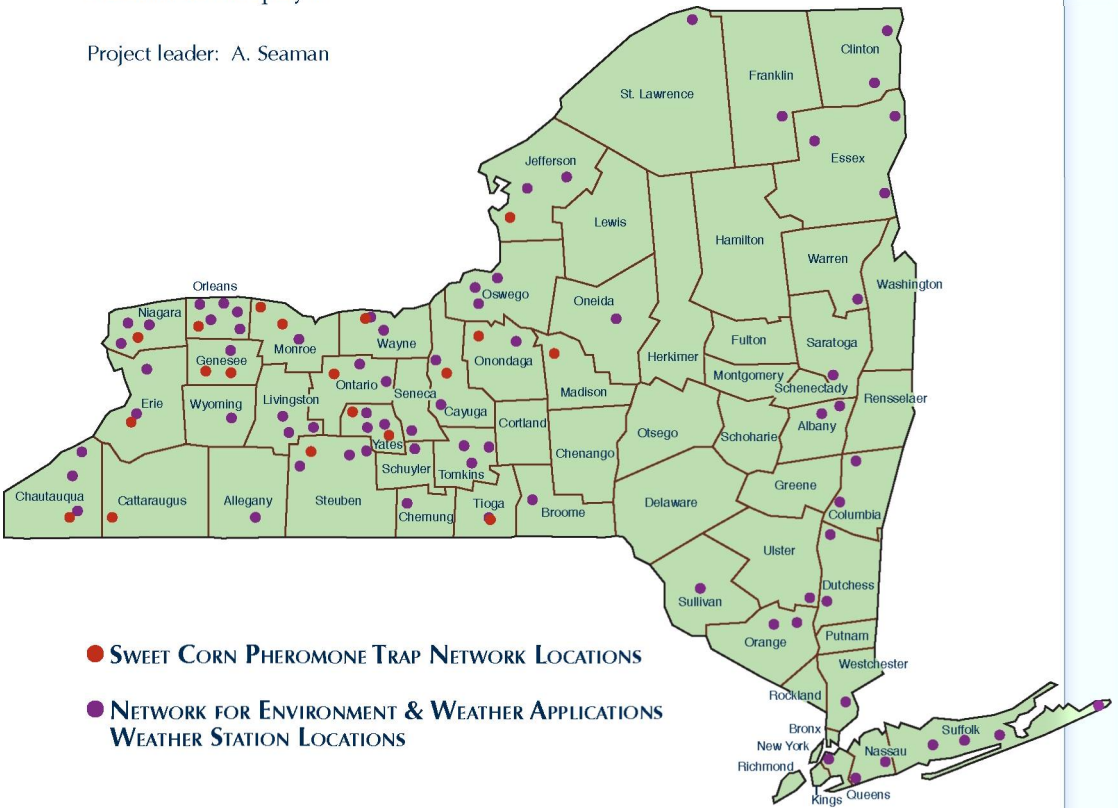
## Back by popular demand!

We've expanded our sweet corn trap network, eleven years old this season, which tells growers on 43,000 acres in 16 counties when the top pests are in their neighborhood. And local information is critical. Our traps in Kirkville saw the highest catches of European corn borers, spiking to 120 per trap by mid-June, while Leroy had barely any. Corn earworm flights were light—till mid-September, when they peaked in Batavia and Hamlin. Fall armyworms were conspicuous by their absence, though King Ferry and Penn Yan had outbreaks in late September. Given the low tolerance consumers have for both wormy corn *and* sprays, our consistent, reliable, year in and out trap network numbers help take the guesswork out of making decisions about sprays.



We've got you covered with critical trap catch numbers and weather readouts that make it possible to track and predict pests, wherever you farm. If you live near a dot, you live near data.

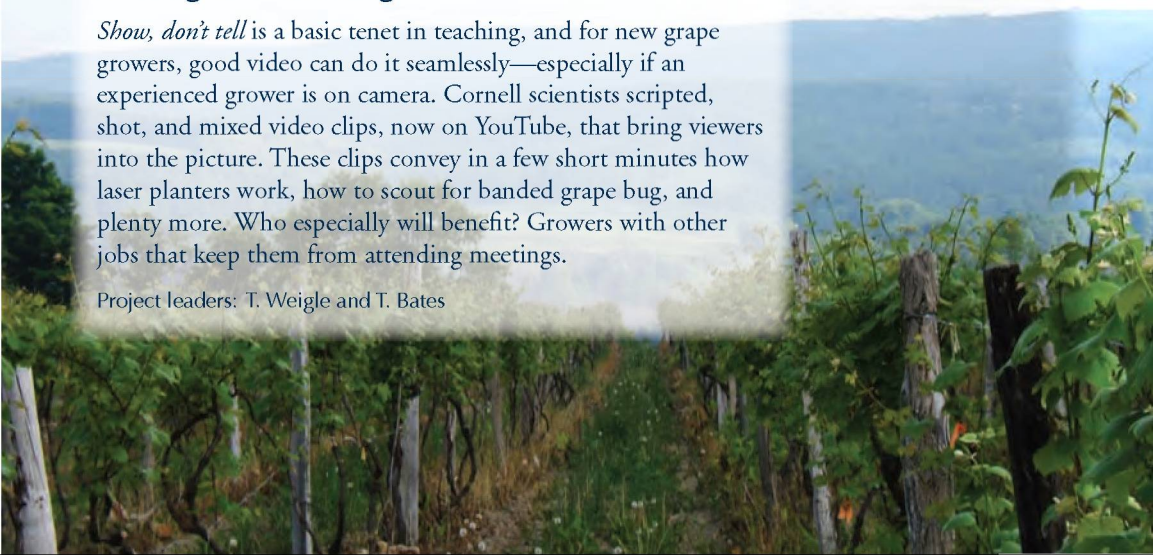
Project leader: A. Seaman



## Seeing is believing

*Show, don't tell* is a basic tenet in teaching, and for new grape growers, good video can do it seamlessly—especially if an experienced grower is on camera. Cornell scientists scripted, shot, and mixed video clips, now on YouTube, that bring viewers into the picture. These clips convey in a few short minutes how laser planters work, how to scout for banded grape bug, and plenty more. Who especially will benefit? Growers with other jobs that keep them from attending meetings.

Project leaders: T. Weigle and T. Bates



# 2008 Projects

Please see [www.nysipm.cornell.edu/grantspgm/projects/proj08](http://www.nysipm.cornell.edu/grantspgm/projects/proj08) 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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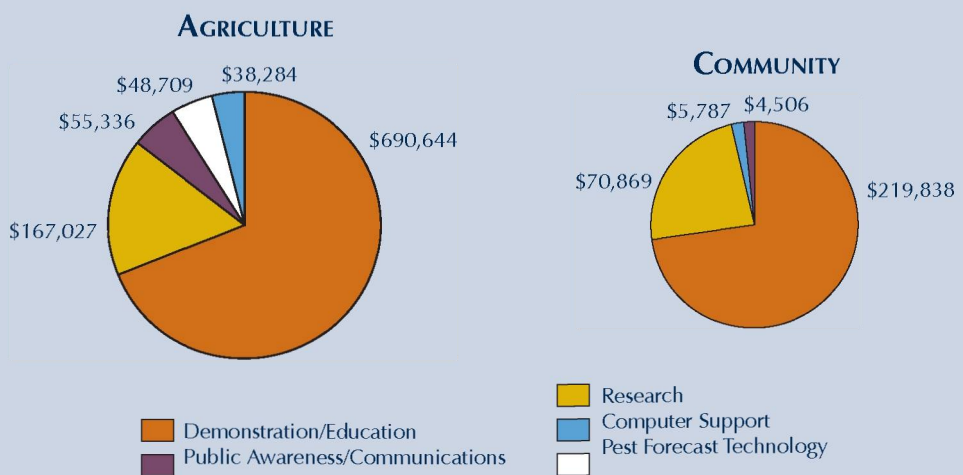
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# Distribution of funds for the NYS IPM Program, 2008—2009





Making a pitch for IPM, Cornell's turf team takes their classic field day training on the road. Turf managers in western NY came to the University of Rochester's baseball diamond, Tower's Field, to learn the best strategies for pitching no-hitters to weeds and grubs.

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