



Director's Notes

A lot can happen in two months. Since our last newsletter, several new and exciting ventures have popped up. Here are some teasers:

First, extension program specialists from nearly every southern state joined IPM Institute Director Tom Green and SRIPMC staff in Atlanta on May 24-25 for a collaboration meeting about school IPM (see story on page 2). We had an enthusiastic response from our initial invitation, and the energy continued through the end of the meeting. As a result, participants formed an official school IPM work group—the first such group for our Center.

Another exciting initiative that we are looking forward to is the new "Friends of Southern IPM" awards program (see page 4). As part of our new four-year grant from USDA/CSREES for the regional center, this program will recognize up to eight members of the IPM community who have made notable contributions to IPM in our region. Our Advisory Council will fi-

nalize details of the program during its meeting on July 9 and 10.

We are pleased to announce the recipients of our Enhancement Grants (see page 6). This year, we have 8 awards for Part I and 8 awards for Part II. We are still in the process of finalizing contracts and budgets.

You'll also notice something different about this issue—an editorial. North Central IPM Center co-director Mike Gray showed us the column he wrote for their newsletter, *The Connection*. In it, he raises some questions about a traditional IPM technique that most would tout as positive. His article was so interesting that we are now thinking of incorporating an editorial into our own newsletter. Look for a statement on page 3 that will invite you to contribute. We're looking for thought-provoking ideas that might generate interesting discussion.

-Jim VanKirk

Mark Your Calendar!

The next Advisory Council is scheduled for Monday and Tuesday, July 9-10.

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Protecting Children's Health: School IPM Collaboration Begins Regional Effort

Texas law requires schools to have an integrated pest management policy. Just next door, Louisiana schools have no such requirement. Despite the state differences, their extension program specialists want the same thing—for schools to use low risk but effective measures when fighting pests. During a meeting in Atlanta at the end of May, several extension program specialists in the southern region met together to talk about the future of school IPM.



Tom Green and Janet Hurley (Texas A&M University)

At that meeting, fourteen of the region's experts in school IPM gathered to share ideas and resources. While some had web sites and training materials to offer, others had stories and experiences to impart. Each person had hit roadblocks to school IPM implementation, but each also had at least one success story to tell.

Impetus for the meeting came from the Advisory Council in December 2006, after IPM Institute Director Tom Green raised the question about whether the Institute's IPM STAR program could be adopted region-wide. Many of the state IPM coordinators responded with another question: was the region ready for the demand from schools?

The IPM Center staff didn't have to do much more than propose a conference call to generate an outpouring of enthusiasm from program specialists who wanted to be part of a collaborative

school IPM effort. The initial call not only revealed the variations among programs, but also highlighted some of the similarities. In some cases, the demand for training exceeded the number of school IPM staff available. In other instances, extension specialists added school IPM to other duties but often had to choose between their agricultural responsibilities and the often tenuous task of challenging practices assumed by school administrators to be the best options for their students and staff.

In both cases, school IPM specialists sought after the goal of reducing pesticide use in schools and on school grounds and using less risky techniques to control pests. These techniques include trapping with hidden baits and creating an unwelcome environment for pests by sealing openings and reducing available food and water.

A small group formed as a result of the conference call to plan a face-to-face meeting at the Atlanta Hilton on May 24-25 among school IPM experts, some EPA representatives, the IPM Institute and IPM Center staff. Within only a few



From L to R: John Hopkins (University of Arkansas), Gretchen Pettis (University of Georgia), Fudd Graham (Auburn University), and Dale Pollet (Louisiana State University)

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School IPM Effort (continued from page 2)



Paul Guillebeau and Gretchen Pettis (both University of Georgia) talk about next steps after the meeting.

days, e-mails began flowing with agenda ideas and homework assignments.

Besides learning about other school IPM programs, participants said that the most beneficial part of the meeting was their discussion of research, extension and management priorities for school IPM, focusing on the southern region in particular but also incorporating priorities developed for the national school IPM PMSP that will be finalized later this year.

“This group appears to be committed to furthering school IPM information, so I hope that we follow through on our goals and keep committed,” said Janet Hurley, Texas A&M extension program specialist.

The second day culminated in the formation of a formal school IPM workgroup, with a chairman,

Fudd Graham (Auburn University) and secretary, Janet Hurley. Discussions about collaborating on grant proposals and suggestions for another meeting next year proved that the school IPM collaboration meeting had been a success.

“The discussions made us realize that we can achieve more and faster by pooling our ideas and resources as a region; each of us does not have to re-invent the wheel,” said Godfrey Nalyanya, head of North Carolina State University’s School IPM program. “It is easier to communicate and collaborate with colleagues in the region after that meeting. I look forward to working with the School IPM team and future meetings.”

While not all were present at the Atlanta meeting, the following people are part of the school IPM collaboration:

John D. Hopkins, University of Arkansas
 Fudd Graham, Auburn University
 Vicky Bertagnolli, Auburn University
 Faith Oi, University of Florida
 Rebecca Baldwin, University of Florida
 Janet Hurley, Texas A & M University
 Gretchen V. Pettis, University of Georgia
 Paul Guillebeau, University of Georgia
 Mary Grodner, Louisiana State University
 Dale Pollet, Louisiana State University
 Godfrey Nalyanya, NC State University
 Karen Vail, University of Tennessee
 William W. Witt, University of Kentucky
 Charlie Meister, IR-4
 Dini Miller, Virginia Tech
 Jim Criswell, Oklahoma State University
 Tom Royer, Oklahoma State University
 Leslie Godfrey, Clemson University
 Blake Layton, Mississippi State University
 Sherry Glick, EPA PSEP
 Dawn H. Gouge, University of Arizona

On page 4 you’ll find an article written by one of our colleagues from the North Central Region about crop production and IPM. What do you think? We’re looking for articles that state your opinion about current trends in agriculture, urban pest management methods, etc. If you’d like to contribute, please contact Rosemary at rhallberg@sripmc.org.

Friends of Southern IPM Awards Program in the Works

IPM can have such profound impacts on health, the environment and the economy, yet often it seems as if efforts take place quietly, with little fanfare for the researchers and extension personnel behind those efforts.

During the next four years, the Southern Region IPM Center will administer the "Friends of IPM" awards program, recognizing up to eight individuals (or organizations) who have made notable contributions to IPM in our region.

While our Advisory Council will finalize the specific details of the program, here is a brief look at what to expect:

Individuals from the following groups are eligible to receive an award:

- o IPM user (e.g., farmer, park manager, etc.);
- o IPM consultant;
- o Researcher;
- o Extension Specialist;
- o Graduate Student;
- o Municipality.

Following a call for nominations, anyone can nominate a person for an award. A panel will determine award winners based on the nominations.

Awardees will receive:

- o Local recognition: SRIPMC staff or appropriate local officials will present awards at opportune local venues of interest to the award winner.
- o A plaque or other similar award.
- o Travel expenses of up to \$1,000 to attend an appropriate professional meeting of their choosing and make a presentation related to IPM.
- o SRIPMC will highlight award winners (and perhaps nominees) on our web site, in our newsletters, and with press releases.

Maximizing Crop Production Inputs Does Not Equate to Integrated Pest Management

by Mike Gray, Director, North Central IPM Center

These are quickly changing times across the Corn Belt of the United States, manifested by the following significant changes, among others:

- Surging interest and investment in biofuels
- Favorable commodity prices
- Significant increase in continuous corn acres
- Escalating demand for triple-stack corn hybrids, even in areas where corn rootworms typically do not present a persistent economic threat
- Use of insecticidal seed treatments (the neonicotinoids clothianidin and thiamethoxam) on every kernel of Bt seed
- Increasing interest in the use of fungicides on corn
- Concern over inadequate deployment or non-

deployment of non-Bt corn refuges

- Increasing reliance on a restricted spectrum of herbicides in corn and soybeans
- Larger farms
- Fewer farmers and more absentee landowners

Against this backdrop of factors, and many associated ones, the principles of integrated pest management (IPM) in the corn and soybean agroecosystem are increasingly being ignored. Of particular concern is the lack of integration of pest management tactics and the overreliance on single-tactic approaches without any scouting input. Some of the very costly and negative consequences associated with pesticide misuse and overuse are being forgotten. What are some examples?

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Maximizing Crop Production (continued)

- Insecticide resistance
- Secondary pest resurgence
- Harmful effects against nontarget insects and other organisms
- Potentially harmful pesticide residues on food products
- Pesticide movement into our natural resources, such as ground and surface water

In a recent review article, several scientists described the many potential sublethal effects of pesticides on beneficial arthropods. (The citation for this article is Desneux, N., A. Decourtye, and J-M. Delpuech. 2007. The sublethal effects of pesticides on beneficial arthropods. *Annual Review of Entomology* 52: 81-106.) The authors described sublethal effects as "inducing no apparent mortality in the experimental population." Most of the scientific research on sublethal effects of pesticides has focused on two primary groups of arthropods, natural enemies and pollinators. Following are some examples of sublethal effects on arthropods the authors described in their review of the literature:

- atypical development
- reduced adult longevity
- immunology (may increase or decrease)
- reduced fecundity (biotic potential)
- alteration of the sex ratio within a population
- alteration of normal mobility patterns
- alteration of navigation or orientation abilities
- disruption of normal feeding behavior characteristics
- interference with typical oviposition (egg-laying) behavior
- interference with learning (of special importance with pollinators such as honey bees)

Even though no apparent mortality of natural enemies may be observed following an application of an insecticide, there may be numerous sublethal effects that have broader nontarget community impacts within a corn or soybean field. There still is much we have not learned with respect to the use of pesticides.

Pesticides will continue to play a vital role in IPM programs; however, greater care should be taken in using these inputs based on scouting and economic thresholds. There are many examples in the present agricultural climate in which the IPM paradigm has been put on the shelf.

Perhaps more than any recent entomological issue, the honey bee Colony Collapse Disorder (CCD) has captured the interest and attention of entomologists worldwide. The cause or causes of this disorder have not been determined. CCD has been reported in 27 states, but it has not been confirmed in Illinois at this time. In a 2005 journal article, some French scientists hypothesized that the decline in European honey bee populations since the mid-1990s was related to the use of



Photo: Dewey Lee, UGA, Bugwood.org

systemic insecticides in field crops (specifically imidacloprid, a nicotinoid insecticide). (The citation for this article is Bonmatin, J.M., P.A. Marchand, R. Charvet, I. Moineau, E.R. Bengsch, and M.E. Colin. 2005. Quantification of imidacloprid uptake in maize crops. *Journal of Agricultural and Food Chemistry* 53: 5336-5341.)

Since 2004, the use of imidacloprid seed treatment on corn seed has been suspended in France. Even though the use of neonicotinoids (clothianidin and thiamethoxam) has soared across Illinois, due in part to the increasing demand for Bt seed, no honey bee colony collapses have been confirmed here. Investigators will continue to explore many possibilities (honey bee diseases, environmental factors, other pesticides) that may be linked to CCD.

Will we return to a more reasoned application of IPM tactics across the Corn Belt? Experience tells us that this may happen; however, let's hope that a movement back in the direction of IPM is not crisis driven.

This article was previously published in the May 2007 edition of the Connection, and in the May 18, 2007 edition of the Bulletin, authored by Mike Gray and Kevin Steffey, University of Illinois.

2007 IPM Enhancement Grants Awarded

For the second year in a row, the Southern Region IPM Center IPM Enhancement Grants Program was split into two parts. Part I includes the state contact and IPM documents (crop profiles, pest management strategic plans, IPM priorities and, for the first time, IPM elements) projects. Part II includes seed and capstone projects. Separate Requests for Applications (RFAs) for Parts I and II were released on February 12, 2007 with a submission deadline of April 5, 2007. Nine proposals (with 13 separate projects) requesting \$303,723 and 12 proposals (with 12 projects) requesting \$251,668 were submitted for funding.

The grant review panel for Part I met on June 1, and the panel for Part II met on May 30, 2007. Both evaluated the proposals and made recommendations for funding to Center staff. For Part I, 8 proposals (12 projects) totaling approximately \$272,000 were approved for funding. Eight proposals totaling approximately \$175,000 were approved for funding under Part II. A list of projects (and project directors) selected for funding for 2007 is provided below.

PART I:

State Contact Projects:

- Alabama State Contact Project for Supporting the Communications Network of the Southern Region IPM Center (Henry Y. Fadamiro)
- Establishment of a Kentucky State Contact for the Southern Region IPM Center (Patricia Lucas)
- Oklahoma State Contact Southern Region IPM Center (Jim Criswell and Charles Luper)

IPM Documents Projects:

- Development of a Pest Management Strategic Plan for Leafy Brassica Greens for South Carolina and Georgia (Powell Smith and Anthony Keinath)

State Contacts and IPM Documents Projects:

- Southern Region IPM Network for Florida, Puerto Rico and the Virgin Islands and related IPM Documents (Mark Mossler and Fred Fisel)
- Tennessee Pest Management Information Network - State Contact Project and IPM Documents (Darrell Hensley and James Patrick Parkman)
- Texas State Contact Project for SRIPMC and IPM Documents (Don Renchie and Mark Matocha)
- Virginia Pest Management Information Network - State Contact Project (SCP) and IPM Documents (Michael Weaver)

PART II:

IPM Seed Projects:

- Optimizing Buckwheat Use for Weed Management in Sustainable Cropping Systems (Carlene Chase)
- Detection and quantification insect repellents in bovine milk (Wes Watson, MaryAnne Drake and Steve Washburn)
- Determining Distribution of a Cyst Nematode on Corn in the Midsouth (Darrell Hensley)
- Management of Yellowmargined Leaf Beetle (*Microtheca ochroloma*) in Organic and Low-Input Vegetable Production Systems (Henry Fadamiro)

IPM Capstone Projects:

- Expansion of the "Elementary Insects" Extension Program within Urban Areas of Texas (Kim Schofield and Molly Keck)
- Management of Bacterial Spot of Pepper Through On-Farm Evaluation of Resistant Commercial Genotypes (Ken Pernezny)
- Protecting Children's Environmental Health: Verification, Continued Adoption, Sharing Resources and Extension to Public (Faith Oi and Rebecca Baldwin)
- wikiIPM: A Rich Internet Application to Support IPM Education and Training (Keith Douce, David Morehead and Amanda Hodges)

Multi-Agency Research Team Develops New Pheromone Lure for Dogwood Borer

A combination of three chemicals just might be the recipe for successful control of the dogwood borer on the east coast through mating disruption, based on the findings of a collaborative team of researchers from Virginia Tech, the United States Department of Agriculture (USDA) and North Carolina State University.



A pest that originally attacked ornamental trees, the dogwood borer has become very damaging to apple trees. A heavy infestation can leave a ring of barkless

flesh around the base of the tree trunk, causing death in the worst circumstances. Because the symptoms—girdling of the trunk and rotting bark near the base of the tree—resembled a disease of apple, growers often misdiagnosed apple trees infested with dogwood borer larvae as being diseased. Virginia Tech plant pathologist Keith Yoder recognized this common misdiagnosis.

So when new Virginia Tech entomologist Chris Bergh learned about Yoder's findings, he decided to explore it. In collaboration with USDA researchers Tracy Leskey and Aijun Zhang, and North Carolina State University entomologist James Walgenbach, Bergh began his research with one main question; why were commercial pheromone lures for dogwood borer not consistently effective at attracting the pest to traps?

"We compared several commercial lures, and found that although one particular lure was more effective than the others, it still didn't appear to accurately reflect the population size," Bergh said.

The answer lay in the chemical composition of the pheromone lure. After months of tests, Zhang discovered three pheromone components that, when combined in the proper ratio, attracted more dogwood borers than even the most effective commercial pheromone lure—(Z,Z)-3,13-octadecadienyl acetate (ODDA); (E,Z)-2,13-

ODDA; and (Z,E)-3,13-ODDA. After tests at several sites in Virginia, West Virginia and North Carolina, the newly developed lures consistently caught significantly more male dogwood borers than any of the commercial products.

"We had higher trap captures than anyone had seen before," said Bergh.

The project goal was to create a pheromone that, when used as a lure in traps, could accurately and reliably monitor the presence and abundance of dogwood borer. In addition, since sex pheromones are presently used in control tactics designed to manage other pest species of moths, the team has investigated two such approaches for dogwood borer. One tactic, called mass trapping, seeks to remove large numbers of males from the population by capturing them in traps baited with pheromone lures. The other approach, called mating disruption, relies on deploying the pheromone in slow-release formulations within the crop, disrupting the ability of males to find females. Ultimately, both tactics endeavor to reduce mating and the ability of females to lay fertilized eggs on the plant.

After recognizing that the commercial lures lacked the exact ingredients of the dogwood borer sex pheromone, the team discovered another problem: one of the chemicals produced a by-product during synthesis that actually repelled dogwood borers from the lure. This by-product was typically present in commercial lures,



Dogwood borer larvae on an apple burr knot

helping the team understand why current trap captures were lower than the team knew they should be. To create a fool-proof lure, they would have to find a way to synthesize the chemical without producing the contaminating by-product.

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Pheromone Lure (continued from p. 7)

And they still had another question: why were the pests attracted to apple trees? Tests concluded that dogwood borers were much more abundant in apple orchards than in any other habitat, including managed urban landscapes and native woodlands. Further examination pointed to the apple rootstock.

“Apple orchards planted on size-controlling rootstocks tend to develop burr knots,” said Bergh. “The female dogwood borer deposits her eggs on the burr knot tissue. The larvae consume the tissue and then move outward.”

Bergh said that the burr knot tissue appears to make apple trees a “preferred host” for dogwood borer. The team is still exploring reasons why, including studies comparing the odors associated with apple burr knots and other hosts, such as flowering dogwood, that attract female dogwood borer.

Currently, the chemical Lorsban® is the only effective control for dogwood borer, but is due for EPA review in 2009. The research team ultimately hopes to use the improved pheromone as an alternative management tool for dogwood borer. USDA and Virginia Tech have patented the pheromone blend, and the research team has attracted the attention of a manufacturing company that has expressed interest in formulating the improved pheromone lure for commercial production. As the team continues to perfect the synthesis and purity of their new pheromone, they are focusing on developing it for use as a mating disruptant to control the dogwood borer, although they still have work to do.

“In terms of the application of this, we are still in the research and development phase,” said Bergh. “But we are getting there at a rapid rate.”

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Upcoming Events

September/October: State Contacts Meeting

October 3-4: National IPM Centers Coordinating Committee



The Advisory Council meets Monday and Tuesday, July 9-10, from 1 PM to noon.

The Steering Committee meets Tuesday, July 10, at 1 PM.