

John Ahrens, Recipient of IR-4's First SOAR Award

— by Cristi Palmer, IR-4 Ornamental Horticulture Manager



IR-4 HQ is pleased to announce the creation of a new award to honor individuals who support IR-4 and our mission to

provide growers with registrations of new and expanded pest management tools.

So what constitutes a SOAR award recipient? Awardees will have provided SERVICE towards this mission by participating on IR-4 committees, advisory panels, or similar activities, perform excellent OUTREACH that help educate others about IR-4's importance to growers, ALTRUISM by donating time and effort toward IR-4's mission, and contribution of outstanding RESEARCH which aides in expanding product labels and increasing understanding of product use.

A limited number of SOAR

awards will be given annually. No award will be given if there are no eligible nominees during a particular year. Awardees can be anyone associated with the IR-4 Project except active PMC members and active full-time IR-4 personnel.

Nominations for the SOAR award can be made by peers or IR-4 personnel. Nominations must be made on the SOAR Award Nomination Form and be accompanied by a minimum of 2 letters of support from individuals other than the nominator. Deadline for submission will be May 1st each year. The SOAR award will be presented at a suitable venue.

Dr. John Ahrens is the first person to receive the IR-4 SOAR award. He was presented the award on January 5, 2011 at the Northeast Weed Science Society Meeting in Baltimore, MD.

John was nominated for the

award by his peers for his accomplishments and contributions to the IR-4 program. Dr. J. Ray Frank submitted "Since the inception of the IR-4 Ornamental Program, Dr. Ahrens has continued to

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2010 IR-4 Awards

Service Awards

In 2010, the Northeast region (NER), North Central Region (NCR) and USDA-ARS selected IR-4 service award recipients.

Northeast Region

The NER chose 3 recipients in 2010. Sarah Lincoln was selected to receive the **NER Technical Service Award**. Sarah worked as an administrative assistant to Edith Lurvey and Wlodek Borejsza-Wysocki. She was given the award for her outstanding contributions to the Northeast Region Field and Laboratory Programs by assisting in the organization and review of GLP data and reports. Sarah has since moved on to another position within Cornell.

Another **NER Technical Service Award** was presented to **Barbara Abbott** for her outstanding contributions to the Lower Eastern Shore Research and Extension Center, the IR-4 Field Research Center, the NER, and the National Program. She was honored for her excellent handling of GLP trials.

Barb is a college professor who, in her spare time, works as a research assistant at the University of Maryland. She enjoys spending her summers assisting Marylee Ross with GLP studies and has a unique appreciation for GLPs. She even

penned an article titled, "GLPs They're Everywhere" in the Vol.39 No. 3, IR-4 Newsletter.

Along with Barb and Sarah, the NER also presented a **NER Meritorious Service Award** to **Tom Freiburger**. Tom is both an Ornamental Horticulture the IR-4 Field Research Director at Rutgers Fruit and Ornamental Research Center in Cream Ridge, NJ.

Tom has been an important contributor to IR-4 since 2003, when he initiated a new research program to contribute efficacy and crop safety data to the Ornamental Horticulture Program. In order to begin working with ornamentals, he had to build the infrastructure (shade and hoop houses) and make the important industry contacts. Although started under the NER, USDA/ARS has funded the ornamental research program at Cream Ridge for several years.

Tom also became Field Research Director for GLP residue trials in 2009. The fruit research previously conducted at the Rutgers Agricultural Research and Extension Center in Upper Deerfield was transferred to Cream Ridge at that time. Without much lead-time or previous GLP training, Tom has done an amazing job of conducting GLP residue work. Even in his first year and despite the steep learning curve associated with GLP, his work was equal to that of seasoned researchers. His Field Data

Books (FDB) are submitted in a timely manner. In fact, in 2010 he actually submitted the first FDB long before anyone else.

North Central Region

The NCR handed out **Technical and Meritorious Service Awards** at the NCR annual meeting in Brookings, SD in late August, 2010.

Doug Doohan, Professor in the Department of Horticulture & Crop Science at The Ohio State University (OSU), was presented the **NCR Meritorious Service Award**.

As State Liaison for Ohio, Doug developed a cohesive state-wide approach to nominating projects for the IR-4 Food Use Workshop. He has also worked with other states to identify and promote the most critically important new uses, and ensure that food use projects are conducted using the most appropriate application rates and timings. Doug has also been very active in product performance research and has been instrumental in identifying technologies to address some of the most pressing weed management issues facing produce farmers in the Midwest.

Doug received the award in recognition of his service to the IR-4 Project in the NCR, which allows fruit and vegetable growers in the Buckeye state to remain competitive.

The NCR also presented a **Technical Service Award** to **Luke**

Case. Luke is Research Associate with the Department of Horticulture and Crop Science at OSU and has been working with IR-4 since 2004. He has conducted over 175 trials, developed numerous abstracts and presentations on data from these trials and has been an avid supporter of IR-4 through outreach to the nursery industry through his presentations at conferences, extension talks and trade shows.

Luke received the award in recognition of his dedication and support of the IR-4 program and the landscape and nursery industry in Ohio and the NCR.

USDA-ARS Awards

ARS presented the **IR-4 USDA-ARS Meritorious Service Award** to **Edward Beste**, a retired University of Maryland Weed Scientist who has worked with the ARS program since 1979.

Ed was funded by ARS through a Cooperative Agreement and contributed to about 100 food trials from 1979 to 1993 in cooperation with Ray Frank. He also worked with ARS to develop data to register pesticides on ornamentals and contributed data for about 650 trials in cooperation with Ray Frank. This cooperative effort is still ongoing and is funded by a cooperative agreement with the University of Maryland.

Ed is a highly respected and widely recognized weed scientist for his many contributions to the vegetable and ornamental industries.

Ed received this award in recognition of his outstanding contributions to the IR-4 Project's Food Use and Ornamental Horticulture Research Programs.

ARS also presented an **IR-4 USDA-ARS Outstanding Cooperator Award** to **John Harvey**.

John joined the USDA-ARS IR-4 program in 2007 and has proved to be an outstanding Field Research Director. He has contributed to 36 GLP trials and 76 ornamental trials. John has worked on nearly any type of commodity including mint oil, tree fruits such as apple, cherry and pear, and grass and hay crops. With the exception of mint, these crops have not been worked on by other ARS Field Research Directors.

John received this award in recognition of his outstanding work as an IR-4 USDA-ARS Field Research Director.

Special Recognition Awards

There were a number of cases this year when IR-4 handed out Special Recognition Awards. These awards are handed out to acknowledge the efforts of those who have given above and beyond and who deserve recognition and appreciation

for their efforts.

This year **Appreciation Awards** were presented to those in the NER Laboratory who worked to finish studies even under the most stressful of circumstances. Those receiving this special appreciation award included: **Susan Brightman, Roxanne Fish, George Helfman, Michele Humiston and Allan Roloson.**

Two other recognition awards were presented to **Emy Pfeil** and **Jau Yoh** for their respective efforts in overseeing the Beltsville Laboratory transition as it closed and the Southern Laboratory transition to a new Director.

In early 2011, recognition awards were also presented to retirees **Jane DeCann** and **Barbara Anderson.**

Jane DeCann retired in December 2010. She came to NYSAES on November 10, 1976, when she was hired by John Martini to wash dishes in the Feed and Fertilizer Laboratory.

In 1978, she was upgraded to a Lab Assistant III to perform assays on regulatory feed, fertilizer and lime samples under contract with NYS Department of Ag & Markets.

In 1991, Jane was upgraded to a Lab Technician IV and became the Sample Control Officer/Archivist for the IR-4 NE Regional Lab. She states,

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Invasion of the Stink Bug

Rutgers Researchers Race to Help Growers Deal with Possible Plague — by Fredda Sacharow

Reprinted with permission from Rutgers Today originally published 12/23/2010.

Most people get bills or greeting cards in the mail. Rutgers researcher George Hamilton gets stink bugs.



George Hamilton, chair of RU Department of Entomology, examines stink bugs in his laboratory.
Courtesy of George Hamilton

They arrive in small orange pill boxes or clear plastic baggies, five or six of them a day from as near as South Jersey and as far as Oregon, in response to word the professor of entomology has put out in search of lab samples.

And as Hamilton studies the pesky, flying critters in his laboratory in Blake Hall on the Cook/Douglass Campus, he's sure of one thing: If you have not already encountered one of these distinctive pests, you will. Soon.

"It's a good hitchhiker that's in

23 states already, and could go to all 50 states eventually," says Hamilton, chair of the Department of Entomology at Rutgers and one of a group of scientists at the university seeking a way to control the invasive species before it becomes a plague of biblical proportions.

The brown marmorated (marbled) stink bug, native to Asia — particularly Japan, China, and Korea — has already inflicted immeasurable damage on its adopted homeland as it eats its way through such diverse crops as peaches, apples, pears, peppers, tomatoes, corn, and grapes.

"We can't put a dollar value on it yet, but some growers are reporting up to a 70 percent loss," Hamilton says.

Shield-shaped and long-legged, the insects arrived in the United States in 1998; the first was discovered in Allentown, Pennsylvania. The bugs seek refuge indoors in late September or October and hibernate until warmer temperatures arrive in the spring, eating nothing while in their dormant stage.

The bugs have a life span of close to two years, and, unlike

other species, are known to wreak their agricultural havoc at every growth stage. They don't confine their damage to one type of produce or two, but spread it among a wide variety of hosts.

"No other pest we know of has that broad a range of what it will feed on," says Dean Polk.

Polk is coordinator of Rutgers' fruit Integrated Pest Management program, an initiative of the New Jersey Agricultural Experiment Station (NJAES) Cooperative Extension which helps fruit growers reduce dependence on harsh pesticides.

The program encourages growers to use soft pesticide alternatives, beneficial insects, and biological control, as well as natural remedies such as disrupting the bugs' mating patterns.

"I've been working with fruit crops for over 30 years and I've never seen anything that has the potential to impact the industry like this does," Polk says. "This could throw growers out of business."

Earlier this year, for example, a farmer in Gloucester County was forced to discard 90 per-



The brown marmorated stink bug (*Halyomorpha halys*), a winged invader from Asia that is eating crops and infesting U.S. homes, is spreading and is expected to continue to do so. Adult (top) and fifth-instar nymph (bottom).

Photo by Stephen Ausmus.

cent of his nectarines because of a stink-bug infestation.

The insect has piercing, sucking mouth parts like those of a mosquito. Once it injects its needle-like mouth into a young piece of fruit and sucks out the tissue, the fruit continues to grow around the now-dead area, leaving sunken patches and brown spots. The end result: peaches, apples and berries that are unsuitable for the market.

“This is a game-changer,” Polk says. “If we get growers who have 10, 20, 30 or more percent damage next year, it’s not sustainable. When we sampled during this last season, our average rate of damage was 54 percent. And we’re not as bad as Eastern Pennsylvania and Western Maryland.” Because of the potential magnitude of the destruction, almost every agriculture-related expert and agency in the Mid-Atlantic region is focusing on reining in the invader known scientifically as *Halyomorpha halys* before it

establishes an even stronger presence.

Count among them Keith Dorschner, entomology program manager for IR-4 at Rutgers, a federally funded national program designed to ensure that growers of specialty crops have access to the latest and safest pest-control methods.

“These are particularly thorny pests to get a handle on, because they are so widely present in the landscape,” Dorschner says. “If you spray a crop and kill all of them, new ones move in. You have to have materials with good residual control, and we’re hoping to identify some of those products as soon as possible.”

He and Hamilton point out that while all insects have natural enemies – other insects, diseases, parasites – those that have migrated often leave such enemies behind in their homeland, giving them a competitive advantage when it comes to survival.

Hamilton encourages growers to monitor crops closely, and to keep abreast of the latest research. He also hopes they will keep him informed through an interactive web site (NJAES.rutgers.edu/stinkbug) that allows farmers and homeowners to report infestations of the insect.

In 2008, Hamilton received about 2,800 notifications through the site, a number that grew to 3,200 in 2009 and to 3,500 in 2010 – about 10,000 in all since the site went live in 2004.

As for homeowners who encounter the species on bedroom walls or kitchen sinks, the Rutgers scientist advises a low-tech approach.

In his own North Brunswick home, where he has encountered more of the stink bugs this year than all other years combined, Hamilton walks around with a cup of soapy water. A small tap or even a movement near the bug causes it to drop straight down – and to its death.

Other methods for dealing with the bugs include placing screens over windows and vents, using non-toxic repellants, caulking cracks in windows and the frames of doors, and turning a vacuum nozzle on them. 🌱

Awards *continued from pg.3*

"It was a great fit for me as I love checking in samples, filling out paperwork (lots and lots of paperwork), tracking samples and communicating with HQ and cooperators all over the US."

Jane will be returning to work (part time) in early 2011 to close out the Lab and finish the NER's part in the IR-4 Global Study on Tomatoes.

She says her plans for retirement are "to remodel our home and visit our children and grandchildren any time I want!"

Barbara Anderson, the NER Quality Assurance Coordinator, also retired in December 2010. Barb joined Cornell in 1975 as a Technical Aide fresh out of Cayuga County Community College.


She became a chemical analyst in 1979 and performed assays on regulatory feed, fertilizers and limes sampled under the Laboratory's contract with the NYS Department of Agriculture and Markets. In this role, which she held until 1994, she calculated and reported results of analyses and maintained the necessary records required to meet the guidelines for Good Laboratory Practices.

The next two years, Barb supervised the Feed, Fertilizer and Lime Control Laboratory. And in 1996, Barb became the Laboratory Quality Assurance Officer.

It seemed a natural fit that in 2001, a person with as much GLP experience as Barbara Anderson would join the ranks of IR-4. From 2001 until 2010, Barbara Anderson was the IR-4 NER Quality Assurance Coordinator. In this role, Barbara monitored lab and field studies in progress, conducted GLP compliance evaluations (field and lab facility inspections), audited raw data, assured management that protocols and SOPS were followed and trained personnel during GLP compliance audits and inspections.

What a mighty task, and Barbara has done a terrific job. Barbara will also return part-time for a brief period in 2011.

However, when asked about her plans for retirement, Barbara states, "I plan to enjoy my home and do a lot of gardening. Also we'd like to be able to cruise around in our Corvettes and see the sights."

IR-4 wishes both women all the best in their retirement! 

A Word of Thanks

IR-4 again would like to say thank you to the men and women who worked so hard at the Northeast Laboratory to make sure the final studies were completed with highest quality of workmanship as the laboratory closed its doors for good.

It takes fortitude of character to complete this type of work under such challenging circumstances. The entire IR-4 community recognize and commend your effort!

THANK YOU!

IR-4 Welcomes...

The IR-4 Western Region welcomed the arrival of Quality Assurance Officer **Sherita Normington** to the UC Davis QA office in late 2010.

Sherita is no stranger to quality assurance since she worked at Morse Labs in Sacramento, California for twenty-three years. For nineteen years Sherita focused on analytical quality assurance. With Sherita's capable help, the Western Region will be catching up on ASRs and making further progress in all QA tasks with the arrival of our newest professional member.

The Southern Region welcomes Louisiana State Liaison, **Don Ferrin**.

Don is an Assistant Professor and Extension Specialist in the Department of Plant Pathology and Crop Physiology at Louisiana State University.

His area of responsibility is 100% extension, where he has statewide responsibility for plant pathology educational programs for all horticultural crops (i.e., turf, ornamentals, fruits, vegetables, and sweet potatoes).

IR-4 is pleased to welcome both Sherita and Don! 🌱

Save the dates...

Joint SOR/NCR Regional GLP Training
Feb. 22-23, 2011
Gainesville, FL

2011 Food Use Workshop
Sept 13-14, 2011
Raleigh, NC

Ornamental Horticulture Workshop
October 5-6, 2011
Sacramento, CA

2011 National Research Planning Meeting
October 25-26
IR-4 HQ, Princeton, NJ

IR-4 National Education Conference
Feb 29-Mar 1, 2012
San Antonio, TX



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In January 2011, Dr. Robin Bellinder, IR-4 Researcher and Cornell Professor, was honored with the Northeastern Weed Science Society's (NEWSS) Fellow Award, which is one of the highest honors the society presents. The NEWSS Award Program states that Robin was given the award, "[because she] directs a very productive research program aimed at providing fruit and vegetable growers with economically and environmentally sound weed management guidelines. A key goal of her applied research has been to integrate weed management strategies that minimize herbicide use. Notable among these efforts has been research on innovative cultivation equipment. She has also been a leader in the use of interseeded cover crops and cover crop mulches for weed suppression. Other contributions include considerable efforts in use of reduced conservation tillage systems for several vegetable crops, efforts to provide growers with information on dose-response adjusted herbicide recommendations to minimize herbicide application, and the use of natural products as herbicides."

Robin earned her B.S. at Michigan State University in 1979, her M.S. in 1982 and her Ph.D. in 1984 both from Virginia Tech. Robin splits her time between research and extension. While her extension work has generated data for numerous weed management programs and label support,

her research has also produced 59 peer reviewed journal articles, numerous extension publications and five book chapters. IR-4 Associate Director, Dan Kunkel commented on Robin's publications, "It is not so much the great number of publications she has that is most impressive, but the broad diversity of work, as indicated in the topics of these publications, which range from basic to applied research; and from conventional weed control methods to reduced input, and even weed control methods for organic production."

Robin's extension activities include providing extension educators and growers with the most recent information regarding weed control in vegetable crops. She includes information in both chemical and non-chemical control strategies. She also has taken responsibility for conducting applied research in strawberries, apples and grapes and other small fruit as needs arise.

Robin gives many talks to diverse audiences annually and participates in 3-5 field days a year at Cornell. Every year she holds a Weed Science Field Day on Cornell's research farm in Freeville, NY. Farmers from all over New York State attend the event and learn about new

Focus on a Researcher

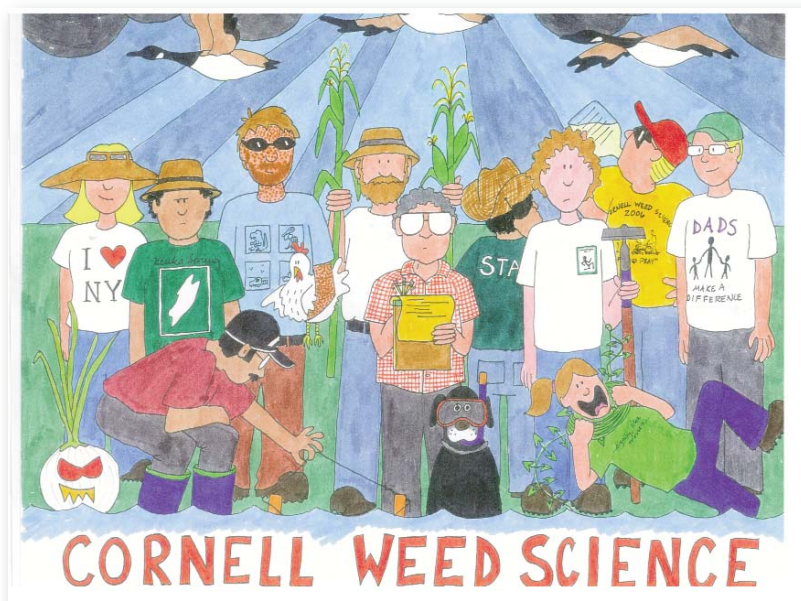


weed management systems, specifically new herbicides in many vegetable crops. This an important part of Cornell extension program and it includes vegetable crops, and small fruits.

Additionally, Robin teaches and advises graduate and undergraduate students. As a former grad student of Robin, IR-4's Dan Kunkel also discussed how Robin guided him through an excellent program of applied vegetable weed control research as well as worked with him on his thesis project with herbicide safeners on corn. He states, "Her profound dedication to the profession set a good example for me and others as we began our profession. She challenged us to set a high bar for every task we undertook, and I can say without restraint that I was more than well prepared for my career after completing my program with her."

Robin participates in diverse international consulting activities. One USDA-funded Soil Management CRSP project focused on ameliorating

her: Robin Bellinder



The picture was drawn depicting Robin's crew in 2006 by Emily Benning, one of Robin's summer field assistants that summer.

declining yields in the rice-wheat production areas of the Indo-Gangetic Plain (encompassing most of northern and eastern India). She has also conducted workshops on backpack sprayer technology in India and Nepal. Robin has had the opportunity to take sabbatical and study leaves to many countries in the far east and Central and South America.

Her rich international experience may be one reason the Department of Horticulture at Cornell attracts students throughout the world. IR-4 Herbicide Program Manager, Marija Arsenovic was a colleague of Robin's for seven years. She recalls that Robin had graduate students from China, Latin America, India, and Europe working together with her US students. Marija remembers the great opportunity they all had conducting

field and greenhouse weed control projects, while learning about diverse cultures, different ways of thinking and doing things, and sharing wonderful food.

While conducting on-farm research projects with Robin at Cornell, Marija learned a great deal about New York State agriculture by interacting with numerous vegetable and fruit growers. Robin and Marija no longer work side by side but stay in touch discussing Robin's herbicide research that she conducts for IR-4's residue, efficacy and crop safety programs.

Robin has been an active participant and supporter of the IR-4 program for over 20 years. She is a cornerstone of IR-4 research. Her first recorded residue trial was in 1988. Since then, she has contributed

up to 20 residue trials a year for a total of roughly 282 studies with approximately 300 completed trials, representing 52 crops and 105 chemistries. Due to the volume of trials, Robin was designated as the Field Research Director of an IR-4 Field Research Center in the late 90s, one of the first in the Northeast. Robin also performs IR-4 funded crop safety studies and invariably provides considerably more data than required, as she will generally screen other products with potential at the same time. She also generously shares solid data from her own research.

With the H. C. Thompson Research Farm and Lansing Orchards so close to the NER offices in Geneva, she has hosted a couple of regional training sessions and site visits from other IR-4 personnel. Robin ably represents the weed management needs for the Northeast at the IR-4 Food Use Workshop, giving reasoned guidance on project selection. According to IR-4 Northeast Region Field Coordinator, Edith Lurvey. "She really gets that the IR-4 program is a logical extension of her own research and extension work to provide her growers with the best possible weed management tools."

Both Dan and Marija also keep close personal contact with Robin and agree, it's easy to do once you meet and get to know this IR-4 researcher. 🌱

Controlling Adult Mosquitoes with Pesticides (Part II): Toxicant Efficacy & Effectiveness

Controlling adult mosquitoes with pesticides is a standard activity for public health programs in many areas where mosquito-borne pathogenic diseases are common, or where the abundance of adult mosquitoes causes a substantial nuisance.



Very large-scale aerial application of mosquito adulticide. Photo courtesy of Armed Forces Pest Management Board.



Hand-held thermal fogging for adult mosquitoes (courtesy Manatee County, FL, MAD)

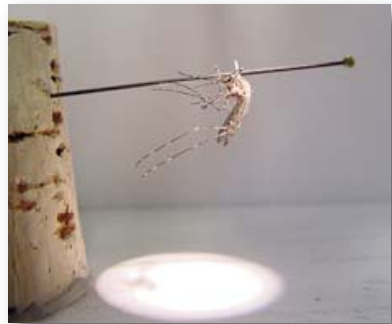
Since this is often performed with public funds, and because the use of pesticides poses some risks, it is important to understand how the effects of these programs are evaluated.

This article continues a series which started with a review of how chemicals are used to help control mosquitoes and mosquito-borne diseases, and which continued with an introduction to some programs that develop mosquitocides and other public health pesticides, including the IR-4 Project. In this segment, we use the linked concepts of pesticide efficacy and effectiveness to explore the benefits of killing adult mosquitoes with aerosol pesticides, and how these benefits are measured. Other chemical interventions, including indoor residual sprays, repellent use, barrier sprays, and attractant-baited traps will be discussed in a later article in the series.

The ultimate goal of any mosquito control program is to protect public health and comfort, and killing adult mosquitoes is a common means towards that end, because dead mosquitoes, obviously, cannot bite.

Many materials are toxic to

adult mosquitoes (“toxicants”), and those that are registered for area-wide mosquito control are generally called adulticides. Mosquito eradication (killing all the mosquitoes in an area for an extended period of time) has never been demonstrated, using adulticides alone or in combination with any other tool. Therefore, the key to eval-



Dead adult mosquito - no longer a threat! Courtesy AFPMB.

uating the benefits of adulticide use is determining whether the reduction in mosquito population that can be achieved is enough to significantly reduce disease risk and/or nuisance



Screening for adulticide efficacy in the lab. Courtesy of Sierra Research.

value. In other words, if mosquito numbers are reduced but not enough to protect public health, then adulticide use may not be worth the cost and risk. Insecticides are sold and used because they kill insects, and “efficacy” is used to characterize the toxicity of pesticides to the target pests. Generally, laboratory studies are conducted to determine the doses required to kill 50% and 95% of mosquito populations for a range of species. Pesticide labels are written and risk assessments conducted for application rates that should generally result in 95% mortality under good conditions; this rate has traditionally been considered ideal both for achieving good control and for minimizing the risk of resistance. Field efficacy tests are used to verify the extent to which lab results can be achieved with real-world application equipment, and to determine if adequate control is locally possible given the mosquito fauna and specific weather conditions in an area. Additionally, field efficacy monitoring is critical to catch control failures, which may result from old or poorly stored



Mosquito bioassay cage to field test adulticide efficacy. Courtesy AFPMB.

pesticide, poor spray equipment calibration or other problems with application methods, or the development of pesticide resistance in local mosquito populations.

There are two primary ways to judge how well adulticides kill mosquitoes in the field – by subjecting caged mosquitoes to the spray drift and observing the mortality, and by estimating the local mosquito population before and after the pesticide application. It seems obvious that measuring the reduction in mosquito populations in the treatment area would be the best way to determine the effects of spraying that area with adulticides, but this is surprisingly difficult to do with any precision. Adult mosquito populations are typically estimated by sampling the populations with baited traps, and the fraction of local mosquitoes that are captured in these traps is highly sensitive to wind and other environmental variables. In other words, big changes in trap counts are common from night to night even when there is no spray activity and populations are relatively steady. Thus, estimating adulticide efficacy from trap data requires many traps, both in the spray zone and in an untreated control zone, at considerable cost. Therefore, proxy methods are used to estimate adult mosquito abundance, such as public complaint calls, and caged mosquitoes are frequently

placed in the spray zone to ensure that spraying has the intended effect. Reviews of many studies have shown that a 90% mortality in caged mosquitoes and a 50-80% reduction in local adult mosquito population can generally be expected with modern adulticides and spray equipment, good weather, and relatively open habitat. However, the rate can be considerably lower in less favorable conditions.

All of the methods and studies described so far generate entomological data, such as adult mosquito abundance, but if our ultimate concern is human health and well-being, these data are not enough to allow evaluation of the epidemiological effectiveness of mosquito control. We really want to know how much specific mosquito control practices protect public health, and there are two general ways to approach this question. First, we can conduct direct studies comparing disease rates or other measures in areas with and without mosquito control; while relatively uncommon, these studies have consistently shown significant benefits of mosquito control during major outbreaks of mosquito-borne diseases (see, for example, Carney et al, 2008).

However, studies with epidemiological outcomes, and in particular, controlled prospec-

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Air Force C-123 cargo plane applying malathion over Dallas during 1966 outbreak of St. Louis Encephalitis (courtesy AFPMB).



PHP Part II

continued from pg. 11

tive studies, are rare because of their expense. In addition, even high quality retrospective studies are relatively uncommon because of the difficulty of identifying sites that are similar in all other relevant variables but that differ in the extent of mosquito control that is performed. Finally, there could also be ethical challenges in denying mosquito control to a community during a disease outbreak solely to conduct this research. For all these reasons, most studies supporting the use of adulticides have used indirect methods that relate entomological outcomes to health outcomes.

Methods that link entomological efficacy to epidemiological effectiveness of mosquito and other vector-control programs have traditionally been more practical than theoretically driven. Simply put, many scientists and public health workers have observed that once the population of mosquitoes or other vectors is driven below some threshold, disease trans-

mission drops substantially or human activities are again undertaken without undue nuisance. In addition, numerical models have been created that help define the relationships between vector population and age structure and vector-borne disease, especially for malaria. Developing reliable models for other disease systems seems to be a fruitful area for research in coming years. A key finding of these models has been theoretical support for the common observation that even short-term reductions in adult mosquito populations can have major impacts on human disease, if the adulticide kills older adult mosquitoes that are more likely to be infected with pathogens. Thus, even if mosquito populations rebound quickly after adulticide use, the new mosquitoes are young and generally uninfected and, hence, should pose lower risk to people than those that were killed. Thus, both empirical data and models help us understand how and to what extent mosquito adulticides protect public health. 🌱

For Further Reading:

EPA Product Performance Test Guidelines OPPTS 810.3400: Mosquito, Black Fly, and Biting Midge (Sand Fly) Treatments (March 1998)

[www.epa.gov/opptsfrs/publications/OPPTS_Harmonized/810_Product_Performance_Test_Guidelines/Series/810-3400.pdf]

CDC (2003). "Epidemic/Epizootic West Nile Virus in the United States: Guidelines for Surveillance, Prevention, and Control." 77pp. www.cdc.gov/ncidod/dvbid/westnile/resources/wnv-guidelines-aug-2003.pdf

Carney, Ryan M., et al. (2008) "Efficacy of Aerial Spraying of Mosquito Adulticide in Reducing Incidence of West Nile Virus, California, 2005." *Emerging Infectious Diseases* www.cdc.gov/eid, 14(5): 747-754.

Fritz, Bradley, et al. (2010) "Filtration Effects due to Bioassay Cage Design and Screen Type." *J American Mosquito Control Association* 26(4):411-421.

Mount, Gary, et al. (1996). AA Review of Ultralow-Volume Aerial Sprays of Insecticide for Mosquito Control. *J American Mosquito Control Association* 12(4): 601-618.

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Winter Reflections

—by Cristi Palmer, IR-4 Ornamental Horticulture Manager

Wintertime is often a time to reflect on the past and to plan for the future. At IR-4, we know our research priorities for 2011 and are creating our research plans, so let us take some time to reflect on what we've accomplished over the last couple of years. In most of the articles in this series we've focused our attention on flowering crops, those that most people see, admire, and use to brighten up someone's day or to add interest to a landscape that otherwise would be a sea of green. So let's reflect on what the IR-4 Program has accomplished with the backbone structure of our landscapes – woody ornamentals.

US growers produce hundreds, if not thousands, of different woody ornamental species. While IR-4 hasn't worked with as many as growers do, almost 400 woody ornamental crops have been included in the research program since its



beginning. Over the past few years, IR-4 has explored new products for efficacy against scale, mealybugs, *Phytophthora*, and bacterial diseases. We've also screened a number of herbicides for crop safety with over-the-top applications.

Our mission is to facilitate registrations by providing the manufacturers research results to aid them in writing or updating product labels. There have been a number of recent registration successes for woody ornamental crops: for disease management, Adorn (flupicolide), Endorse (polyoxin d), Insignia (pyraclostrobin), Pageant (boscalid + pyraclostrobin), Palladium (cyprodinil + fludioxonil), Segway (cyazofamid), Stature SC (dimethomorph), and Subdue MAXX (mefenoxam); for insect management – Celero (thiamethoxam), Kontos (spirotetramat), Safari (dinotefuran), and Sanmite (pyridaben); for weed management – Broadstar (flumioxazin), Freehand (pendimethalin + dimethenamid-p), Pennant Magnum (s-metolachlor), Sureguard (flumioxazin), and Tower (dimethenamid-p).

While each of these



new or expanded labels will aid woody ornamental growers, one recent introduction has created the most benefit in terms of labor savings – Tower. This new herbicide can be used over-the-top on many woody ornamental species and is a good rotational partner for Gallery to reduce resistance development in weeds. Prior to the Tower registration, Gallery was the only EPA-approved broad-leaved weed herbicide available with over the top applications for container crops. Approximately 80% of the crops on the current Tower label stemmed from IR-4 testing.

Photos by
Cristi
Palmer

All in all, not bad to reflect upon: 17 new or expanded registrations since 2007 for woody ornamental horticulture growers. 🌱

Mention of a specific product does not constitute a recommendation for use. As always, consult product labels prior to application and follow all label directions.

Some Quick Facts About An Interesting, Somewhat New to the U.S. Specialty Crop: Sesame



Now that sesame varieties have been developed that can be mechanically harvested, sesame has returned to the United States as a viable, alternative crop. Other sesame production is highly labor intensive and, therefore, restricted to less developed countries.

- Sesame is a row crop grown as a rotation crop for cotton, corn, wheat and peanuts in Texas, Oklahoma and Kansas. In 2009 and 2010 planted acres exceeded 70,000.
- It is a lower risk crop and input costs are lower compared with crops with which sesame is rotated.
- The sesame plant conditions the soil and reduces cotton root rot and root knot nematodes, thus lowering the pest risk and increasing the yields on subsequent cotton crops.
- Sesame is also a program crop on which farmers can earn an adequate to good return without dependence on program payments.
- It is drought tolerant, requiring 1/4 the water for corn, 1/3 the water for sorghum and 1/2 the water for cotton. Approximately 90 percent of sesame in the United States is grown on dryland without irrigation and 10 percent has supplemental irrigation.
- It uses common farming practices, including no-till practices, and standard farming and grain handling equipment.
- Sesame does not compete with other U.S. oilseed crops or vegetable oils, as it is a staple in “ethnic cuisines” requiring specific flavors.
- Farmers are able to contract to sell their entire crop at harvest at a price agreed upon. There is an opportunity to replace \$100 million of U.S. imports and to participate in a “new” \$1 billion export market. China has moved from the major exporter to the major importer.
- A twenty percent share of today’s traded world market would equate to approximately 750,000 acres of U.S. sesame production.

These quick facts have been provided by the American Sesame Growers Association. A full length article about sesame and IR-4’s involvement will be coming soon. To learn more, contact ASGA, Executive Director, Fritz Schwartz at 410.329.5077 or visit their website at www.sesamegrowers.org/contactus.htm.

IR-4 Successes

Sept. - Dec. 2010

The trade names listed below are provided as a means to identify the chemical for which a tolerance has been established. A trade name listed here may not be the name of the product on which the new food use(s) will be registered. Only labeled products may be used on a food crop. Be sure to obtain current information about usage regulations and examine a current product label before applying any chemical.

Federal Register: September 1, 2010

Bifenazate

Trade Name: Acramite

Crops: Avocado, Sugar apple, Atemoya, Biriba, Cherimoya, Custard apple, Ilama, Soursop, Low growing berry subgroup 13-07G, Small vine climbing fruit except fuzzy kiwifruit subgroup 13-07F

PR#: 08269, 08927, 10085

Federal Register: September 1, 2010

Spiromesifen

Trade Name: Oberon

Crops: Dry pea, Mint

PR#: 09369, 09753

Federal Register: September 17, 2010

S-metolachlor

Trade Name: Dual Magnum

Crops: Root vegetable except sugar beet subgroup 1B (except carrot), Carrot, Bulb onion subgroup 3-07A, Green onion subgroup 3-07B, Brassica leafy greens subgroup 5B, Melon subgroup 9A, Caneberry subgroup 13-07A, Bushberry subgroup 13-07B, Cucumber, Okra, Sesame seed, Sweet sorghum, Turnip greens

PR#: 08981, 01216, 12255, 06577, 09354, 06178, 06181, 06655, 02617, 03497, 04994, 02626, 06657, 09726, 06516, 03840, 02578

Federal Register: November 17, 2010

Acequinocyl

Trade Name: Kanemite

Crops: Fruiting vegetable group 10, Okra, Edible podded bean, Hop

PR#: 08858, 08605, 08356, 09275, 08673, 09370

Federal Register: December 22, 2010

Flutolanil

Trade Name: Moncut

Crops: Brassica leafy vegetable group 5, Turnip greens

PR#: 08760, 08840, 08841, 09263, 10227

CORRECTION

The following two entries were incorrectly included as successes in the Fall 2010 Newsletter:

Federal Register:

June 8, 2010

Thiacloprid

Trade Name: Calypso

Crop: Stone fruit group 12

PR#: 07811, 07812, 08038

Federal Register:

June 23, 2010

Novaluron

Trade Name: Rimon

Crop: Sweet corn

PR#: 09838

These were **NOT FINAL RULES** but were Notices of Filing to indicate that EPA has received petitions from IR-4 to establish tolerances for these uses. The IR-4 Project regrets the error and any confusion this may have caused.

SOAR

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provide valuable data, which has been used to develop many national ornamental herbicide registrations. He has supported the IR-4 Ornamental Program continuously despite his formal retirement 18 years ago." Dr. Paul Schwartz wrote "John is an outstanding cooperater and is a highly respected ornamental researcher who continues to be productive in his retirement years." And Dr. Todd Mervosh penned "John was always very generous in sharing his time and expertise; he introduced me to many nurserymen and other growers, especially those who were cooperative in allowing us to conduct research in

their plantings. He also involved me right away in IR-4 projects, and together we have completed many IR-4 ornamental experiments, and continue to do so."

It is with great honor and respect for John's contributions to IR-4 and ornamental horticulture growers, that IR-4 HQ bestows the first SOAR Award to Dr. John Ahrens. 🌱

Mailing List

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Join the IR-4 Listserv

IR-4 has developed a listserv to send monthly email communications of news and information. We report on deliverables and successes, work in progress and future research planning. In these monthly reports we also report on news from QA, crop grouping, international activities, outreach and communications and upcoming events.

To sign up for the IR-4 listserv, send an email to Sherrilynn Novack at novack@aesop.rutgers.edu and request your name and email be added to the list.



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