The IR-4 Project
Providing Safe and Effective Pest Management Solutions for Specialty Crop Growers

Newsletter

Vol. 37 No. 3 July 2006

Straddling the Mason-Dixon

On June 21, 2006, forty-eight people from IR-4, EPA, and the USDA ARS/CSREES programs attended the IR-4/EPA/USDA Ornamental Horticulture Field Tour organized by IR-4. Affectionately dubbed Straddling the Mason-Dixon, the tour made stops on both sides of the Mason-Dixon line east of Thurmont, MD and in the Gettysburg region of PA.

Each stop on the tour was unique and educational. Many participants had no

idea there was an operation as magnificent as Catoctin Mtn Growers, Inc. in their own backyard of Detour, MD. General Manager, Henry Thorpe, guided participants through their 9+ acre greenhouse, informing them about all aspects of their operations and demonstrating hydraulic sprayers, foggers and moving boom methods of applying pest control products. University of MD Ornamental Horticulture Specialist, Stanton Gill, joined the tour and spoke about Integrated Pest Management (IPM) in the greenhouse industry.

While the tour focused on ornamentals, sweet cherries never tasted so fresh as those found at the second stop, Boyer Nurseries and Orchards near Biglerville, PA. Here participants learned about the application of pest management in a wholesale/retail nursery operation from fourth generation owner, Will Lower. In addition to its tree fruit operation, the business has grown to include a garden center with a wide selection of shrubs, evergreens, flowering plants, and trees including bare root fruit and ornamental trees from their nursery. These trees are shipped all over the US, (even Alaska). During lunch, Penn State Extension Specialist, Lynn Kime, spoke about the "Green Industry" in PA.

Discovering typical pests that attack landscape trees and plants and how to manage them became the focus of the third tour stop, at New Oxford High School in New Oxford, PA. The difference here was learning how to manage these pests in a public school system. Heritage Lawn and Landscape Care Owner, Tom Bechtel, and his partner explained the rules and regulations they must comply with in order to maintain healthy plants in and around school buildings. Because of these regulations, they need to plan their applications many months in advance and mostly work on Sunday. Demonstrations of lawn and tree/shrub pest control application equipment completed the activities at this stop.

Aerial pest management application is something many tour participants just took for granted. They won't now, since they had the opportunity to actually see a helicopter land on top of a truck, circle a target and deliver a spray application directly on that target. At Helicopter Applicators, Inc. in Gettysburg, PA, owner, Glen Martin, discussed the accuracy of GPS systems, licensing requirements, and piloting skills for this application technique, which brought an awareness that could only have been achieved through actual demonstration.

Many thanks go out to the tour hosts, who provided the substance for the tour. Without their help, IR-4 could not have brought this educational experience to our colleagues at the EPA.

(see photos on pg. 10)

Update

The IR-4 Biopesticide Program is following through on pest problems highlighted in previous tours. In the 2001 Beyond the Battlefield Tour, we visited PA fruit orchards devastated by Plum Pox Virus. IR-4 has begun prep-aring for registration of a transgenic plum pox resistant plum developed by USDA-Kearnysville. In the 2004 Beyond the Conven-tional Tour, we first learned of the bacterial disease *Clavibacter* in greenhouse tomatoes. A bacteriophage system for the control of *Clavibacter* has been developed and the IR-4 Biopesticide Program is constructing the regulatory package.

Inside this issue...

Celebrating a Field Research Center

— by Stephen Flanagan, Western Region Assistant Field Coordinator

Field Research Director Francis Carpenter addresses the group during the field tour portion of the Kearney Field day.

How do you celebrate the productive work of an IR-4 Field Research Center? How about a gathering of key university professors, state regulatory specialists, farm advisors and growers to your specialty crop research facility? Food residue GLP research trials may not be the most exhilarating science this side of the Pecos, but the field day attracted critical stakeholders and the University of California Associate Dean, Michael Parrella, who is also the IR-4 Administrative Advisor for the Western Region.

If you are David Ennes, Francis Carpenter and Laura Van der Staay from the University of California's Kearney Research and Education Center, you'll have a substantial amount of work, equipment and results to share with this group of IR-4 stakeholders. The Kearney Center, located in the heart of California's Fresno County, is ideal for IR-4 research because of its diverse mixture of specialty crops.

By the numbers, the Kearney Center conducts over 45 residue trials a year (out of a total of 116 in California this season) on everything from avocados and citrus to cantaloupes and zucchini. The recent field day highlighted the post-harvest technology laboratory used to support California's tree fruit industry and displayed field plots of tomatoes, peppers and carrots.

Although the Kearney IR-4 Center is located a three hour drive south of the University of California, Davis, it is an integral part of the Western Region's work in California. This field station along with four additional UC IR-4 Field Research Centers cover a geographical span of 600 miles north to south in the state. Regional Field Coordinator, Becky Sisco from UC Davis and Kearney Director, Fred Swanson, opened the field day with an overview of how the region and the Kearney station work together to meet specialty crop grower needs.

Fresno County Specialty Crops Advisor, Richard Molinar, posed a variety of specific regulatory questions about how crop tolerances relate to registrations, and CDPR's chief residue chemist Michael Papathakis also queried Becky Sisco about these regulatory nuances. This discussion was followed with lively questions from growers and pesticide enforcement officers about labeling language and insuring that specialty crops are included on regulatory labels.

Along with actually viewing the field research sites, the group received an IR-4 primer from Dr. Jerry Baron by teleconference from Rutgers University. Dr. Beth Grafton-Cardwell followed with a first hand report of how she swam the regulatory waves and received approval for an IR-4 project to control the invasive pest citrus leaf miner.

The early afternoon saw grower representatives providing their perspec-tives on the importance of the IR-4 program to their commodities. Lori Berger from the California Minor Crops Council reported on the usefulness of the Western Region's Priority Setting Tool (PST) which prioritizes IR-4 projects in advance of the Food Use Workshop. Ken Melban with the California Pepper Commission and IR-4 Commodity Liaison Committee member, and Gary Van Sickle from the California Tree Fruit Agreement shared their perspectives on supporting IR-4 efficacy and residue projects.

"I won't repeat what others have covered..." was Hank Giclas' opening comment. Hank went on to confirm the Western Growers Association's support of IR-4 with attempts to secure permanent Farm Bill level funding for IR-4. "The program is essential for our growers and we want to secure permanent IR-4 funding at the Farm Bill level and remove IR-4 from budget politics." This forward thinking support from a key IR-4 stake-holder (and Commodity Liaison Committee member) is a direct confirmation of how IR-4 is meeting the needs of our grower clientele.

So, take a sunny California afternoon, mix in a diverse group of specialty crop growers and Voila you've experienced the Kearney IR-4 Field Center Show Day. This meeting was a reflective moment in the midst of a busy field season going about the day to day business of IR-4 in the Western Region. This unique cooperation of growers, the University of California, regulators and dedicated researchers like the Kearney group, delivers new pest control products for specialty crop growers.

Participants view the Kearney Post Harvest research laboratory which supports residue trials for stone fruit, citrus and cherries.

New Greenhouse Food Use Workshop

— by Charlie Meister, IR-4 Southern Region Field Coordinator

The greenhouse food crops industry has grown rapidly in recent years with tomato production taking the lead. The rapidly growing greenhouse tomato industry has become an important part of the North American fresh tomato industry.

According to an Economic Research Service/USDA publication, *North American Greenhouse Tomatoes Emerge as a Major Market Force* [1], "Greenhouse tomatoes now represent an estimated 17 percent of total (sic) U.S. fresh tomato supply. Even though greenhouse tomatoes still constitute a minority share of the U.S. fresh tomato market, their influence is concentrated and growing in retail channels, ... Around 37 percent of all fresh tomatoes sold in U.S. retail stores are now greenhouse grown, compared with negligible amounts in the early 1990s."

Pest and disease pressure in the greenhouse can be severe and the availability of registered control products has not kept pace with industry needs. Few biopesticide products are registered and conventional control products are not available to control pest explosions. These problems were addressed in 2001 at an IR-4 meeting and at greenhouse conventions every year. And this year the USDA/IR-4 Food Use Workshop, which will be held in Indianapolis, IN, has been expanded to devote an entire day to Food Use Greenhouse issues.

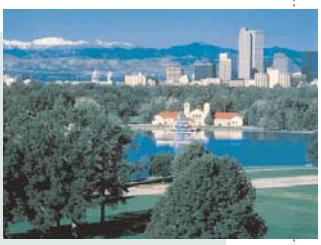
The Food Use Greenhouse Workshop will include presentations and discussions on the status of pest management for greenhouse grown food crops. It will focus on identification of pest problems, pest control voids and suggestions for potential solutions. Current pest control technologies including beneficial organisms and tools developed in the floriculture industry along with pest control regulation, pesticide resistance and efficacy problems will also be discussed. Like the Food Use

Workshop, pest management problems will be identified on specific greenhouse grown fruits and vegetables followed by a discussion on present control practices and potential solutions.

Don't forget to register for the workshop at ir4.rutgers.edu. The registration fee is $125 but goes up significantly to those who register after **August 11**.

[1] *written by Linda Calvin lcalvin@ers.usda.gov and Roberta Cook cook@primal.ucdavis.edu*

2006 Ornamental Horticulture Program Workshop



From October 10-12, 2006, come to the Mile High City at the foot of the Rocky Mountains - Denver, CO - for our 2006 Ornamental Horticulture Program Workshop. Hopefully, snowy weather will not be in the forecast for Denver, although the nearby Rocky Mountains will be wearing their wintry snow caps in October. Last year's successful meeting launched a 2006 research program with a record number of efficacy trials. This year we anticipate another successful round of discussions on high priority projects and the setting of priority rankings for products and crops.

The agenda is similar to last year with approximately 2/3 day devoted to each discipline.

- Pathology Session - October 10th from 8 am to 3 pm
- Entomology Session - October 10th from 3 pm to 6 pm and October 11th from 8 am to noon
- Horticulture Tour - October 11th from noon to 6 pm
- Weed Science Session - October 12th from 8 am to 3 pm

The deadline for registering for the Workshop is **September 15.** Also make sure you call the Holiday Inn City Center (800.448.2296; 303.573.1450) by September 15 to recieve a special discounted rate. Online registration at ir4.rutgers.edu is encouraged.

Cranes and Farmers to Benefit from Newly Approved Bird Repellent

— by Jeb Brazen & Ann Burke, International Crane Foundation

The International Crane Foundation (ICF) has been notified by the United States Environmental Protection Agency (EPA) that temporary approval has been given for the use of the non-lethal bird repellent, Avitec™. In 2006, this repellent can be used as a seed treatment by farmers in Wisconsin, Michigan, and Minnesota in areas where Sandhill Cranes have been damaging corn fields by eating corn seeds shortly after planting. This approval significantly advances ICF's goal to reduce conflicts arising between farmers and the increasing population of Sandhill Cranes in the Midwest.

Avitec™ has an active ingredient of 9,10 anthraquinone, a naturally occurring substance used by plants to repel birds. The use of Avitec™ represents a decade of effort by ICF and collaborators to prevent damage caused by cranes. Cranes eat newly planted corn seeds that occur in straight rows at predictable intervals. Planted kernels are most vulnerable for about two weeks after the corn seedlings emerge. Cranes detect Avitec™ at very low levels and avoid it. Though treated, planted kernels are not consumed by cranes and the birds continue to forage on waste grains and other foods in those same fields.

Corn seedling damage

Photos courtesy of the ICF

Sandhill Crane flock in field

This benefits the farmer because waste corn and many types of beetle larvae can later cause problems as the crop matures. Avitec™ is a pragmatic and ecologically sound solution to crane crop damage. Importantly, the deterrent does not preclude cranes from foraging in cultivated areas where they obtain significant caloric and nutritional supplements. By discovering, testing, and deploying an effective non-lethal seed treatment, agriculture and conservation have developed a win-win situation where people and wildlife co-exist more harmoniously.

This first agricultural application of 9,10 anthraquinone, approved within the United States as a bird repellent, is the result of a collaboration among a myriad of organizations and agencies. ICF has worked with the U.S. EPA; the University of Wisconsin-Madison; the Wisconsin Department of Agriculture, Trade and Consumer Protection; Michigan and Minnesota agriculture departments; Departments of Natural Resources for Michigan, Minnesota, and Wisconsin; four farming organizations in three states; the Department of Wildlife Services (USDA); many individual farmers; U.S. Senator Herb Kohl's Office; the IR-4 Project of Rutgers University; three local chapters of the Audubon Society; and Arkion, the manufacturer of Avitec™. Applications for longer term use of Avitec™ are being pursued for the 2007 planting season.

Growers in Wisconsin, Michigan, and Minnesota can reach Dr. Eileen Cullen (UW-Extension) for more information on the use of Avitec™ during the 2006 season at 608-261-1507.

The restoration of Wisconsin's Sandhill Crane population is a conservation success story. From the 1930's, the state's crane population was estimated at 26 nesting pairs. Over the last 23 years, the ICF-sponsored Annual Midwest Crane Count has documented a three-fold increase in the Wisconsin's crane population. To learn more, visit the ICF website: savingcranes.org.

Photo taken by Crane WU

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New Environmentally-friendly Fungicides for Blueberry

Researchers at the University of Georgia, with financial support from the IR-4 Project and Environmental Protection Agency (EPA), have recently tested use of phosphite fungicides for control of major leaf spot diseases of blueberry - with amazing success. Phil Brannen, extension fruit pathologist with UGA, conducted the on-farm research in Clinch and Bacon Counties in collaboration with local county agents Elvin Andrews and Danny Stanaland.

The IR-4 Project works with companies to register or expand registrations of fungicides for minor-use crops, of which blueberries are a part. Brannen states, "the IR-4 Project has been instrumental in this project by providing funding for efficacy data and label expansion. For example, as a result of supported testing, ProPhyt, one of the phosphite fungicides, recently expanded its label to include leaf spots of blueberry." The EPA is also interested in these materials, since they are relatively benign for the environment compared with other standard fungicides utilized in blueberry production.

Septoria and anthracnose leaf spots of blueberry, caused by *Septoria albopunctata* and *Colletotrichum gloeosporioides*, respectively, are prevalent.

Surveys in 2002 and 2003 indicated that these are the primary leaf spots of blueberry in Georgia. When left uncontrolled, these diseases can cause considerable defoliation by mid-fall. Recent small-plot research has shown a significant negative effect of these diseases on both flower bud initiation and yield the following spring. As many as five applications are required for adequate control of Septoria leaf spot, and even more sprays may be needed on cultivars susceptible to other leaf diseases that appear later in the fall, such as anthracnose and rust. Control has been largely limited to strobilurin products (Cabrio, Abound, or Pristine) or Aliette. More recently (2004), Bravo (chlorothalonil) products have been utilized through a 24C (state) label. Application costs for Aliette are high, and as a result, there is strong producer resistance to use this material. Chlorothalonil products can not be utilized when fruit are present, due to phytotoxicity issues, and chlorothalonil has potential issues relating to environment/health concerns - relative to other safer materials. As such, economical and safe rotation partners are needed for resistance management.

Phosphite materials have previously been reported to have efficacy and mode-of-action which is similar to that of Aliette, at a fraction of the cost, and they are very safe materials, both for the environment and the handler. During 2005, ProPhyt and Agri-Fos were compared to Aliette and a strobilurin product, Cabrio, at the two Georgia on-farm locations (Clinch and Bacon Counties). In addition, an alternation treatment of ProPhyt and Cabrio was also tested.

Four applications of the specified treatments were applied in June and July (2005). In both locations, all products provided near equivalent disease control; there was on average an 82% reduction in Septoria leaf spot and a 92% reduction in anthracnose leaf spot. Defoliation data was taken at the Bacon County site, and disease control resulted in 75% greater leaf retention, even in mid November. Leaf retention would result in substantial yield benefits in the following year.

This is exciting research-derived information, since it again supports the premise that the phosphite materials have equivalent activity to either Aliette, Cabrio or other conventional fungicides, at a fraction of the cost. From the standpoint of environmental friendliness, the phosphites are relatively benign, and they are safer than some chemicals such as chlorothalonil (Bravo), which is also utilized for resistance management with the strobilurins, a class of fungicides. In addition, the phosphites also provide suppression of some root rot diseases. Therefore, the products are ideal for the blueberry market, and producers are quickly adopting these materials for their blueberry integrated pest management programs. To learn more contact Phillip Brannen, Extension Plant Pathologist - Fruits, University of Georgia at pbrannen@uga.edu.

HQ is Moving..

IR-4 HQ Offices will be closed on or about August 4, 2006 for one week as we relocate to Princeton, NJ. HQ personnel will have limited access to emails, but plan on being fully operational on or about August 14. Visit the website ir4.rutgers.edu for updates on the move.

Feature

Some Pests Really Stink!

— by Van Starner, IR-4 Coordinator, Entomology and Pathology

Sometimes insects and mites become "pests" as a result of resistance, changes in pest management systems, or an accidental introduction of an exotic species. In other words, what was once not a pest, or rarely a pest, suddenly becomes a major crop limiting factor and an urgent unmet pest management need. Such has been the case recently with a group of sucking insects collectively known as stink bugs.

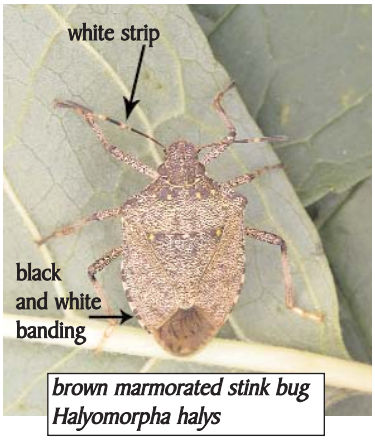
At last year's IR-4 Food Use Workshop (FUW), Dr. Peter Shearer, Rutgers University Department of Entomology, made a strong case for a national IR-4 efficacy project to evaluate a range of new chemistries for control of stink bugs. His plea was on behalf of various stakeholder groups that have indicated that stink bugs have, in recent years, become more problematic on apples, pears, strawberries and other specialty crops. Although there was significant interest at the FUW for a national IR-4 stink bug efficacy project to be supported in 2006, due to funding cuts, this project could not be initiated. However, the recognized need for better stink bug management options has resulted in focused research throughout the U.S.

Stink bugs have been emerging as a major pest complex of peaches in the mid-Atlantic region, and a group of state and USDA researchers in this area, led by Dr. Shearer, is organizing a multi-faceted research plan to develop an integrated stink bug pest management program that enables peach and other tree fruit growers to minimize crop damage caused by stink bug feeding on developing fruit.

Peach growers, probably more than growers of any other orchard crop, have experienced severe consequences of the Food Quality Protection Act of 1996. Implementation of this act has resulted in insecticide label changes that have eliminated some products from use on peaches while drastically changing how other products can be used. Pyrethroid insecticides that are quite effective for stink bug control are available and relatively cheap, but they are well-known for their potential to cause secondary pest outbreaks, and leading to rapid resistance development of many lepidopteran pests.
In eastern peach production, numerous stink bugs attack peaches, including green stink bugs (*Acrosternum* sp.) and several species in the genus *Euschistus*, but researchers are especially concerned over the recent establishment of the newly introduced brown marmorated stink bug (*Halyomorpha halys* [Stal]), which was introduced into the U.S. near Allentown, in east central PA., around 1996. This hemipteran breeds in extremely high numbers on many agronomic and horticultural crops, and has been observed causing severe damage to peaches. Researchers plan to develop accurate monitoring tools, evaluate effects of cultural practices and integrated management options on stink bug abundance and damage, determine efficacy of currently registered and promising new reduced-risk chemistries, and to transfer knowledge gained for grower implementation.

In the Southern Region, registrant funds were organized by IR-4 Regional Coordinator Dr. Charles Meister to support a proposal from University of Kentucky Entomologist Dr. Ric Bessin to examine the effectiveness of a range of registered and experimental insecticides against stink bugs. Dr. Bessin's work (on a research farm with a history of stink bug damage to sweet corn, apples, tomatoes and peppers) focused on the brown stink bug, *Euschistus servus*, a particularly difficult stink bug to control in peppers.

On the west-coast, stink bugs have been the focus of considerable research including 1) the consperse stink bug, *Euschistus conspersus* Uhler in WA State pome fruit (Krupke, Brannen and Jones at WSU in Wenatchee); and 2) with a complex of stink bug species in CA pistachios (daSilva, Daane and Bently at University of CA).



brown marmorated stink bug
Halyomorpha halys

In the midwest, Dr. Celeste Welty at Ohio State has researched stink bugs on tomatoes for years, especially control of the one-spotted stink bug, *Euschistus variolarius*, with new reduced risk chemistries.

These few excerpts from research across the U.S. demonstrate the breadth of stink bug problems and suggest that we will continue to hear about needs for stink bug management in a wide variety of specialty crops. In addition, the establishment and expanding range of the exotic brown marmorated stink bug in several parts of the U.S. will necessitate significant investment in research to satisfy stakeholder needs.

Contributors: Rutgers University - Dr. Peter Shearer, Dr. George Hamilton, and Anne Nielsen; IR-4 Project - Stephen Flanagan, Dr. Charles Meister; University of Kentucky Entomologist - Dr. Ric Bessin; USDA/ARS, Beltsville, MD - Dr. Jeffrey R. Aldrich and Dr. Ashot Khrimian; and Ohio State University - Dr. Celeste Welty.

Brown Marmorated Stink Bug Research at Rutgers

Adapted from a research summary provided by Anne L. Nielsen

Key among the criteria used by the Professors C.C. Compton & G.M. Markle Entomological Fund selection committee in the decision to present the 2006 award to Anne Nielsen were her research accomplishments with the brown marmorated stink bug, and the oral and poster presentations of her work at various regional and national entomological conferences. Below is a synopsis of Anne's work with this recently introduced insect.

The brown marmorated stink bug, *Halyomorpha halys* (Stal), an exotic stink bug native to Japan, China, Taiwan and Korea, was introduced into Allentown, PA, around 1996, most likely via shipping containers from Asia. The first confirmed *H. halys* specimen observed in NJ was caught in a blacklight trap in Hunterdon County in 1999. Like many other stink bug species, *H. halys* overwinters as an adult; however, unlike other stink bugs, *H. halys* frequently overwinters in large densities inside houses. In China and Japan, *H. halys* is a pest of numerous crops including soybeans and tree fruit, and many of the same host plants are also found in the U.S. Due to its high fecundity, aggregation behavior, wide host range, lack of natural enemies and current insecticide restrictions, it is predicted that *H. halys* will cause economic damage to various horticultural and agronomic crops in the U.S. The research conducted on *H. halys* at Rutgers Univ. focuses on understanding the biology, management, and population dynamics of this invasive species.

H. halys provides a unique opportunity to study the dispersal pattern by which invasive species may spread. While *H. halys* is still in the early stages of dispersing from the original site of introduction, blacklight traps and a public information campaign are being used to supplement field-collected data on its distribution and dispersal behavior. This will provide a better understanding of the population dynamics in both agricultural and ornamental systems, as well as the population distribution in suburban areas as it spreads to new locations. Data from blacklight traps indicates that on NJ farms, a large peak in first generation adult flight activity occurs in late July/early August, but developmental rate studies demonstrate that *H. halys* has the potential of two generations per year in southern NJ. Data are also being collected to determine if *H. halys* is impacting native pest species of stink bugs - competition with native species often occurs following the introduction of an exotic species. A website is also maintained (www.rce.rutgers.edu/stinkbug) where the public can learn about *H. halys* and report specimens. These reports have been useful for determining the relative range of the population in the mid-Atlantic states. *H. halys* is well established in most NJ counties, most of PA, northern DE, and a few counties in MD. Dispersal and establishment of new *H. halys* infestations appear to be following major interstate highways I-78, I-81 and I-95. Its range is gradually moving south and west as *H. halys* is now found in VA, WV, and OR.

Chemical management of *H. halys* is also being evaluated in the laboratory and the field. Various insecticides are being screened using a glass-vial assay to establish baseline toxicity data. Products tested thus far indicate that certain pyrethroids and neonicotinoids appear to be effective against adult *H. halys*. Field trials are being conducted to evaluate control and impacts on IPM programs. Rutgers Univ. is also conducting pheromone trapping studies to determine the attractiveness of various pheromones and trap designs used for monitoring adult *H. halys*. The *H. halys* aggregation pheromone has not been identified, but pheromones from two other stink bug species are very effective at attracting both male and female *H. halys*.

2006 Winner of the Professors C.C. Compton & G.M. Markle Entomological Fund — Anne L. Nielsen

The 2006 recipient of the Professors C.C. Compton & G.M. Markle Entomological Fund award is Anne L. Nielsen of the Rutgers Department of Entomology. Anne was selected from a group of seven entomology graduate students. In addition to a $600 gift and achievement certificate, Anne's name is affixed to a permanent plaque which resides in the entomology department.

The Fund recognizes outstanding achievements by NJ students in the field of entomology. Monies from the fund can also be utilized for other awards such as donations for purchase of books to further the advancement of entomological knowledge, and awards for NJ 4-H insect collections. Award criteria include research accomplishments (summary and/or actual publications), academic achievement, teaching achievement, papers and seminars presented, involvement in departmental affairs, and other independent entomological activities.

The Fund was established in 1977, by Professor George M. Markle, under the name of Dr. C. C. Compton, a professor at Rutgers University from 1963 until his retirement in 1977, and the first National Director of the IR-4 Project. In 2003 the name of the fund was changed to "Professors C.C. Compton & G.M. Markle Entomological Fund" to honor Professor Markle, after his 39 years of distinguished service to the IR-4 Project, Rutgers Cooperative Extension, and Rutgers University Department of Entomology. Contributions to the fund continue to be accepted (payable to the Rutgers University Foundation), and may be sent to the chair of the Selection Committee, Dr. Van Starner, at the IR-4 Project HQ.

Digging for Grubs at Cream Ridge

— by IR-4 Ornamental Horticulture Manager, Cristi Palmer

Despite dodging raindrops and lightning, a team of 17 started collecting grub data in April 2006, from an experiment designed to compare efficacy of various treatments against oriental beetle larvae in ornamental crops. This experiment was established three years ago by Dr. Jim Lashomb at the Rutgers Tree Fruit Research & Extension Center in Cream Ridge, NJ. The field where the arborvitae and holly were planted had formerly been planted with strawberries heavily infested with oriental beetle. In 2005, as part of the IR-4 Ornamental Horticulture Program, four products were drenched once either during summer (Aug 3) or fall (Nov 1) with 1 pint of diluted product per plant - Celero® (clothianadin), Discus™ (bifenthrin + imidacloprid), DPX-E2Y45 (rynaxypyr), and Flagship™ (thiamethoxam). This research was funded in part by a USDA-ARS grant to support this station as an IR-4 Research Center.

The grub digging team consisted of members from IR-4, Rutgers Department of Biology and Plant Pathology, and the Cream Ridge Experiment Station. Even the incoming IR-4 Executive Director, Jerry Baron, participated, along with Mike Bell, Ute Burke, Mark Cantarella, Valerie Fournier, Tom Frieberger, Joe Goffreda, Jim Lashomb, Nikoya Lightbourne, Sherrilynn Novack, Cristi Palmer, Doug Reichert, Anita Shearer, Caryl and Rich Winzenreid, Anna Voordeckers, and Jianxin Zhang. Over a full week this team dug and counted grubs on 480 three-five foot tall arborvitae (*Thuja* sp.) and 480 two foot tall holly (*Ilex* sp.).

The results from this experiment were interesting for two reasons. First, the applications in the fall did not tend to provide as good control as those applications made in the summer, confirming what is commonly known about managing grubs - younger grubs (in the first or second instars) are more sensitive to chemically-based treatments than older grubs (in the later instars).

Second, more grubs were found on arborvitae than on holly. The best treatment in this experiment for arborvitae was DPX-E2Y45 applied during the summer while the best treatment in holly was Discus™ applied either in the fall or summer.

Future research is planned to continue screening products for efficacy on oriental beetle at the Cream Ridge Station.

Average Number of Oriental Beetle Larvae (grubs) per Arborvitae or Holly plant

		Arborvitae 'Emerald Green'		Holly 'Blue Girl'	
Treatment @ Rate	Timing	Number of Grubs	Percent Control	Number of Grubs	Percent Control
Celero® (clothianadin) @ 0.5 oz per 100 gal	Fall	4.6 bc	27.0	1.7 bc	56.6
	Summer	2.6 bc	59.6	1.7 bc	44.4
Discus™ (bifenthrin + imidacloprid) @10 oz per 100 gal	Fall	5.0 bc	21.5	0.8 bc	79.9
	Summer	3.7 bc	41.8	0.7 bc	78.4
DPX-E2Y45 @ 0.8 fl oz per 100 gal	Fall	4.5 c	29.4	1.2 c	69.8
	Summer	2.2 c	65.9	0.8 c	74.3
Flagship™ (thiamethoxam) @ 0.4 oz per 100 gal	Fall	4.9 b	22.7	2.2 b	44.0
	Summer	4.2 b	33.9	0.9 b	71.0
Untreated	Fall	6.3 a	--	4.0 a	--
	Summer	6.3 a	--	3.0 a	--

Numbers followed by the same letter are not significantly different.

New USDA-ARS IR-4 National Program Leaders

— by USDA-ARS Field Research Director, Ben Fraelich

IR-4 welcomes Dr. Sally Schneider, currently an ARS scientist at the Water Management Research Unit, Parlier, California, who will become the new lead for the USDA-ARS IR-4 team. Assiting her will be Dr. Daniel Strickman. They will be replacing Nancy Ragsdale, who retired in October 2005.

Dr. Sally Schneider, currently an ARS scientist at the Water Management Research Unit, Parlier, California, will become the new lead for the IR-4 team. Assiting her will be Dr. Daniel Strickman.

Dr. Sally Schneider

Dr. Schneider received her B.S. and Ph.D. (in plant pathology) degrees from the University of California - Riverside. Sally has attained international recognition in the distinct areas of Methyl Bromide Alternatives, Site-specific Management (Precision Agriculture) for irrigated crops, and modeling tobacco production systems. She also was selected by NPS to participate in USDA's first Systems Engineering Training Program (SETP) resulting in M.S. degree level of knowledge of Systems Engineering. Sally has consistently and effectively used this expertise while serving on many study committees to design management systems for various national research programs. She has published numerous documents, many of which can be found on the USDA-ARS website at ars.usda.gov. Working with Dr. Schneider will be Dr. Daniel Strickman, National Program Leader for Veterinary, Medical, and Urban Entomology.

Dr. Daniel Strickman

Dr. Strickman received his B.A. degree from the University of California - Riverside and M.S. and Ph.D. degrees (both in entomology) from the University of Illinois. He served in the U.S. Military for 22 years eventually becoming a Colonel (Medical Service Corps, US Army and Biomedical Science Corps, US Air Force). His research in medical entomology has focused on integrated pest management, mosquito taxonomy, insect behavior, insecticide toxicology, and vector-borne diseases. He has written a total of 90 refereed journal and review articles (42 as senior author), authored six book chapters, and is the co-editor of one book. Both Sally and Dan are enthusiastic about the program, based on interests in specialty crops and toxicology.

Dr. Schneider will begin her duties as National Program Leader for Horticulture / Pathogens / Germplasm on July 23.

IR-4 Listserv

IR-4 has developed a listserv to send email communications of news and information to those in our directory. If you would like to receive these email notifications and have not yet received a welcome message, your name/email may not be included.

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

The IR-4 Newsletter Vol 37. No.3 July 2006

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Ornamental Horticulture Tour Photos












Ornamental Horticulture Survey

We are happy to announce that the IR-4 Annual Ornamental Horticulture Survey is now posted on the IR-4 website. This survey is geared for input from growers, landscape care professionals, extension personnel and anyone affiliated with ornamental horticulture. After the initial questions, about who they are and what they grow, participants can rank 13 potential needs as "highly important" down to, "not important". If survey participants rank any needs as "somewhat high important" or "high importance", they will be asked to provide more detailed information such as crops or target pests/pathogens/weeds. Please take the survey and encourage your growers and colleagues to participate as well. It will be available from now through August 30. The results of this survey will be the basis for our 2007 research priority discussions at the upcoming Workshop in October. If you would like a printed version that can be mailed or faxed back to us, please email Sherrilynn Novack (novack@aesop.rutgers.edu) or Cristi Palmer (palmer @aesop.rutgers.edu) with your request. The web link to the survey can be found at: ir4.rutgers.edu/ornamentalsurvey

Calendar of Events

August 16-17, 2006, 2006 NC Region IR-4 Meeting: Wooster, OH, Contact: Satoru Miyazaki 517.336.4611

September 11, 2006, 2006 Food Use Greenhouse Workshop: Indianapolis, IN, Contact: Cheryl Ferrazoli 732.932.9575 x 601

September 12-14, 2006, 2006 Food Use Workshop: Indianapolis, IN, Contact: Cheryl Ferrazoli 732.932.9575 x 601

October 10-12,2006, 2006 Ornamental Horticulture Workshop: Denver, CO, Contact: Cheryl Ferrazoli 732.932.9575 x 601

October 17-19, 2006 Southern Region Meeting: Ft. Lauderdale, FL,Contact: Robin Adkins 352.392.1978

October 24-25, 2006 ARS Liaison Meeting Corvallis, OR: Contact Paul Schwartz 301.504.8256

Clearances March '06- May'06

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 is not necessarily 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, regardless of whether a tolerance has been established for a chemical on that crop.

Product: Spinosad
Trade Names: Entrust, Spintor, Success
Crops: All Food Commodities (Tolerance for Bait Formulation only), Alfalfa, Banana, Non-grass animal feed, Peanut hay, Bulb vegetables, Grasses, Cereal grains (except rice), Mint
Federal Register: March 1, 2006

Product: Triflumizole
Trade Names: Procure, Terraguard
Crop: Filbert (hazelnut)
Federal Register: March 29, 2006

Product: Fenhexamid
Trade Name: Elevate
Crops: Ginseng, Pear
Federal Register: March 29, 2006

Product: Novaluron
Trade Names: Rimon, Pedestal
Crops: Head and stem Brassica vegetables
Federal Register: April 5, 2006

Product: Pendimethalin
Trade Name: Prowl
Crops: Carrot, Citrus fruit, Tree nuts, Mint
Federal Register: April 12, 2006

Product: Azoxystrobin
Trade Names: Abound, Quadris
Crops: Herbs, Spices, Safflower, Sunflower, Crambe, Flax, Mustard, Field mustard, Indian mustard, Rapeseed, Indian rapeseed
Federal Register: May 3, 2006

Product: Fomesafen
Trade Names: Reflex
Crops: Dry bean, Snap bean
Federal Register: May 3, 2006

Product: Flumioxazin
Trade Names: Broadstar, Payload, Sureguard, Valor
Crop: Strawberry
Federal Register: May 3, 2006

Mating Disruption Shows Promise

— Valerie Fournier, Postdoctoral Associate at Department of Entomology, Rutgers University

The oriental beetle *Anomala orientalis* (Coleoptera: Scarabaeidae) is a major pest of nursery stock and ornamental nurseries in the Northeastern United States. It is the most important white grub species in NJ, CT and RI, and its significance is rapidly increasing in the coastal regions of New England, as well as DE, PA, MD, NC, OH, SC, TN, VA and WV. Due to the implementation of the Food Quality Protection Act of 1996, ornamentals have lost several of their insecticide labels for curative white grub control, and heavily rely on prophylactic neonicotinoid imidacloprid (Discus™, Marathon®, Merit®) applications. Halofenozide (Mach2™), another prophylactic presently available, has shown to be ineffective against the oriental beetle. In Long Island (NY), imidacloprid has come under increasing restrictions due to its detections in groundwater.

Mating disruption is an environmentally safe alternative to pesticides in which pest-specific sex pheromone is used to confuse males and prevent them from finding the females. Previous studies have shown that this approach holds great promise for oriental beetle management in ornamental nurseries, blueberries, cranberries, and turfgrass.

At Rutgers University, Drs. Fournier, Lashomb, and Koppenhöfer are currently testing the efficacy of two innovative mating disruption technologies to manage oriental beetle in commercial nurseries: **1)** a granular, wax-based formulation of the sex pheromone from Suterra LLC (Bend, OR), a leading company in the area of sex pheromone; and **2)** a bubble dispenser made by ChemTica International (Costa Rica and distributed by AgBio Inc., Westminster, CO). These two methods of release should allow a longer period of persistence of the pheromone, which in turn should enable better control of the pest. This research is conducted in close collaboration with Jim Johnson, county agent at Rutgers Cooperative Extension of Cumberland County (NJ), and Dan Gilrein, extension entomologist at Cornell Cooperative Extension of Suffolk County (NY).

The IR-4 Project
Providing Safe and Effective Pest Management Solutions for Specialty Crop Growers

IR-4 Headquarters
Rutgers, The State University of New Jersey
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