

SERA-003 2010 Meeting Minutes (Submitted by Paul Smith)

March 26, 2012

Memphis, TN Cook Convention Center

In attendance: Carlos Bogran, Norm Leppla, Blake Lawton, Clayton Hollier, Tom Melton, Jim van Kirk, Rosemary Hallberg, Patty Lucas, Scott Stewart, Henry Fadamiro, Charles Allen, Tom Royer, Paul Smith, Doris Sande, Geoff Zehnder

Call to order by Carlos Bogran.

Registration fees are yet to be determined based on the afternoon break. Fees will be assessed if necessary.—Registration fee deemed unnecessary.

Statement to be made to NIFA concerning the consolidation of IPM funding line? Open to discussion. Clayton Hollier supports a collective statement from SERA. Carlos offers support for consolidation of the funding line. Other arguments for support state that small programs with small funding lines are vulnerable to being cut. Consolidation may help protect those funds for IPM development and implementation. This includes adding IR-4 to the program in order to increase the size of the overall program. Tom Royer discusses the intertwining of IPM programs IR-4 and NPDN. Our IPM activities are combined at an operational level with these programs already. Norm Leppla suggests that we need to add a description of what we do to illustrate this fact. Clayton Hollier suggests that we need to offer suggestions on guidelines for determining how IPM funds are distributed through a consolidated funding line. Currently 406 and AFRI are the only place where integrated projects (research, extension) can be funded.

Carlos calls for a decision on what is going to be in our SERA statement going forward to this issue. Carlos offers up a draft document from Tom Melton (admin. Liaison). Document will be e-mailed (add to minutes). Statement is due by April 2nd.

Issues- Title of the funding line, issues of indirects, inclusion of IR-4,

Recommendation for language that may allow for a gradation of indirect costs over a period of time to allow for an adjustment and attempt to negotiate a finalized rates somewhere around 22 percent. Perhaps a generalized statement saying that indirects need to be addressed in an effort to protect IPM extension programs. Statement that there are benefits, but care needs to be taken to ensure that it doesn't go too far to the point of crippling programs. Statement needs to speak to indirect costs specifically. Impacts of indirect costs to IPM programs need to be minimized. Marty Draper suggests that funding caps may be raised in order to address the effect of indirect costs on programs.

Marty says to think of this as a blank slate. If the new crop protection line comes about, would EIPM program continue to exist? What would we like to see if we could rebuild from scratch. 406 allows for extension and a suggestion to maintain extension programs is necessary. Couch language to ensure that we protect our program FUNCTIONS rather than saying we need to protect specific programs. Bob

Noweirski suggests that we make the connections between IPM and IR-4 and NPDN and highlights the interactions of the functions of the various programs. Describe the functions and their interactions and also define who the stakeholders are and how the functions of these programs is positively impacting the constituents of the politicians. It is also necessary to address issues of infrastructure. Extension needs to be clearly defined and represented in the evaluation criteria and by the evaluation panels. We may need to develop our pots of money to ensure that the spectrum of research and extension activities is covered. We do need to ensure that the pots of money are carved up in such a way as to ensure that the various functions are protected. This needs to be coupled with the evaluation criteria and with selection of the review panels.

Charles Allen suggests formation of a subcommittee to draft a statement from SERA-3 to address the topics discussed on this issue. Sub-committee to consist of Charles Allen, Carlos Bogran, Scott Stewart, Tom Royer. Jim Van Kirk will be consulted after the initial drafting of the document. Sub-committee will compile a 5 minute statement to be presented at the NIFA listening session. Paul Smith will present this statement at the listening session.

IR-4 issue: IR-4 is against being consolidated into the crop protection line and are fighting against their identity. By clearly defining needed functions, we may be able to defuse this issue and bring the IR-4 group to our table. More direct discussion needs to take place with the IR4 group in an effort to increase cooperation among the different groups to be impacted by the consolidation of the various IPM funding lines.

SERA-003 renewal due July 1: Need to update the current existing document and distribute to the group for review. Tom Royer will take the lead with the support of the other officers (Paul S. and incoming secretary). Nominations will be made following lunch.

Lunch Break

Jim van Kirk update on IPM Centers: Steve Toth is still recovering from stroke with aphasia. He is coming in to work a few times a week. Evaluation specialist has officially started. Her role is becoming more defined. She is working on expanding and highlighting success stories. Ames Herbert in Virginia is developing a new evaluation program and Doris is participating in that venture.

Southern Region IPM is utilizing their funding this year as it is the drop dead year (FY 2010-2011). FY 2012 money will start to be used later this year one the previous funds are spent. Regulatory Information Network is being funded. That network is not competitive this year but is being done in partnership with the center. They have also agreed to update out of date crop profiles. Henry Fadamiro is heading a small farms working group funded through the center. The working group is having a meeting in June at Clemson and will address issues with 1890's, Puerto Rico, other small farm issues... This meeting will be a get-to-know one another and to set priorities for the group.

FY2013- RFA is currently out and the proposal has not been compiled or submitted yet. If awarded, it is expected that funding levels should be around what was available before this year's reduction. Will continue with the small farms working group. Will be rethinking the enhancement grants program.

May focus more on the startup aspect. Input through informal channels is asked for and suggested. Some discretionary funds will be available. Enhancements will be included in the center proposal but the parameters of that program have yet to be determined. May have a greater emphasis on working groups and other collaborative efforts. The Friends of IPM awards are under evaluation. May appoint a nomination committee and accept outside recommendations as well. The submission process continues to be under-utilized, while the award process continues to be very rewarding. The program will now have a graduate student award in addition to the other awards. Center may develop another layer of committee to direct Center activities on a more consistent basis than the steering committee which only meet twice a year. May also be looking to reorganize the steering and advisory committees.

SERA representation to SRIPMC: Doug Johnson's term is expiring as the SERA representative, and he is no longer the IPM Coordinator for KY. Suggested that Ric Bessin be contacted about becoming the new representative for SERA 003 on the advisory council. Tom Royer will take on responsibility of communicating with both Doug and Ric.

eXtension and IPM: SWAT analysis conducted in DC. Small committee created to explore further. Keith Douce submitted a proposal to create an IPM Community of Practice. Will serve as an umbrella to house any material pertaining to IPM within eXtension. eOrganic suggested as model to look at.

Incoming Secretary for SERA-003: Charles Allen Nominated (Tom Royer, seconded by Clayton Hollier). Unanimous vote of approval.

Evaluations and Priorities meeting in Athens, GA: Had a good meeting and ideas were suggested for moving forward with program evaluation. A proposal has not been forthcoming from that group through that. Opportunities to leverage expertise from Ayanava Majumdar and Nick Furhman coupled with organization of Doris could be utilized to develop some regional training and coordination of evaluation materials.

Priorities from that meeting are available on the SRIPMC website.

Location for the next meeting: Tom Royer will be chair of the group. Suggested site of Oklahoma City or in Tulsa. Will get back to the group at a future date after investigating pricing and such for those locations. Date will be selected in order to avoid overlap with the SWB and SEB ESA meeting.

Adjourn Meeting

State Reports:

SERA-IEG3 2011 ANNUAL REPORT FOR

THE UNIVERSITY OF FLORIDA

Norm Leppla

PROGRAM MANAGEMENT: IPM Florida has been in place since 2001 and Norm Leppla has been the full-time IPM Coordinator since its inception. The total annual EIPM-CS funding for 2011 was about \$170,179; the state added the coordinator's salary and control of the federal funds was shared with the Associate Dean for Extension, Joan Dusky. The IPM Florida office is being maintained at about the same level as in 2010 and still encompasses agriculture, communities and Environmental areas. Extramural funding was obtained to support cooperators, rather than in-house IPM Florida activities. Technical support was contributed by highly experienced personnel of the Entomology and Nematology Department (information technologies, graphics, administrative). The IPM Florida management structure on the website (<http://ipm.ifas.ufl.edu>, About Us) was followed with extra emphasis on information, especially website content, IPM guides, funding for cooperators, education and training, collaboration with Cooperative Extension, and regional and national liaison. Planning and priority setting were accomplished by consulting with colleagues and clientele. Program recognition is maintained through use of the UF/IFAS and IPM Florida wordmarks on Extension materials distributed to stakeholders. The director continued as co-chair of the Extension Goals and Focus Areas committee on "Protecting Florida from Existing and Emerging Pests and Diseases." He served as President of the Entomological Society of America, Southeastern Branch. Professional development was limited to IPM and biological control meetings and reading.

PROGRAM DELIVERY: Maintenance of the IPM Florida website continued to be a time-consuming priority accomplished by Plant Medicine students about 180,000 sessions in 2011). Pertinent international, national, state and local IPM information was distributed to the 250- to 300-member distribution list. New Extension publications available on the IPM Florida and Extension websites are listed below. Accomplishments included updating the manual, "Integrated Pest Management Policy and Treatment Options for University Housing," publishing a paper in the Journal of Integrated Pest Management, "Advancement of Integrated Pest Management in University Housing," updating an Extension guide, "Guidelines for Purchasing and Using Commercial Natural Enemies and Biopesticides in Florida and Other States," cooperatively planning and helping to conducting several Extension programs, and participating in the Florida statewide Small Farms Alternative Enterprises Conference by organizing and delivering a session on NRCS/IPM cooperation and providing an IPM booth. Numerous presentations were delivered at scientific and IPM conferences. Extramural funding for cooperators

included Joe Funderburk, PI, "State-Wide Implementation of Novel Push-Pull Strategies for IPM of Thrips" Florida Specialty Crops Block Grant; Amanda Hodges, PI, "Identification Tool for Arthropod Pests of Citrus, USDA/APHIS; and Charlie Mellinger, PI, NRCS/IPM workshop, Critical Needs and Emerging Issues, SR IPM Center. Education and training included UF classes in biological control, plant pest risk assessment and management, biological invaders, and agricultural and environmental sustainability. Additionally, instruction was provided in insect rearing at Mississippi State University. The benefits of IPM Florida were measured in terms of the number of collaborative projects initiated and completed with results delivered to clientele groups, plus publications, presentations, grants, and consultation, including education and training.

PROGRAM INVOLVEMENT: Collaboration with Cooperative Extension was extensive, particularly participation at county and statewide meetings. The IPM Coordinator served as an Extension representative and chair of the UF/IFAS Tenure, Permanent Status and Promotion Task Force. He also chaired the FAMU Center for Biological Control Advisory Committee. Research collaboration was through projects in mole cricket biological control, campus housing IPM, thrips IPM, and filth fly IPM. Disciplines included Entomology, Plant Pathology, Agronomy, Horticulture, Environmental Horticulture, Nematology, and Agricultural Education and Communication. Significant inter-Institutional collaboration was with USDA, APHIS, PPQ; USDA, ARS; FAMU; FDACS, DPI; USDA, NRCS; and MSU. Statewide involvement was in conjunction with projects and organization meetings, plus the Florida Entomological Society. Professional activities beyond Florida were the Entomological Society of America (National, SEB) and SERA-003. Numerous manuscripts, research proposals and projects, grant proposals, and related documents were reviewed.

ADMINISTRATIVE SUPPORT: IPM Florida received full support from the chairman of the Entomology and Nematology Department, the UF/IFAS administration, key clientele groups, and the Southern Region IPM Center. Professional development opportunities involved participation in the Insect Rearing Workshop at Starkville, MS, and Extension meetings around Florida.

Extension IPM Projects Primary Cooperators

Living Extension IPM Field Laboratory Bob Hochmuth

IPM for Thrips in Florida Vegetables Joe Funderburk

Internet-based Certification of Pesticide Applicators Fred Fishel

IPM in Public Health: Mosquito-Borne Diseases Cynthia Connelly

IPM for Pastures Yoana Newman

IPM for Citrus Larry Duncan

IPM for Ornamentals Gary Knox

Herbicide Resistance Management Jay Ferrell & Brent Sellers

Non-target Impacts of Insecticides Registered for Ornamental Plant Use in Florida Steven Arthurs

New Technologies and Educational Materials to Address National Emergent Citrus Pests & Diseases
Amanda Hodges

An ICT-Based Diagnostic Reference and Tutorial for Scouting Arthropod Pests of Tomato Hugh Smith,
Amanda Hodges, Gene McAvoy, Alicia Whidden

Assessment of IPM Development for Florida's Major Crops Amanda Hodges, Stephanie Stocks

A Brief Summary of Agricultural Herbicides Rafael Vega, Fred Fishel

Important Plant Pathogens in Florida CDKen Johnson

Selected Extension Activities

Leppla, N. C. and J. H. Frank. Use of Larra Wasps for Controlling Invasive Mole Crickets. Turf Grass Field Day, May 18, Citra, FL

Leppla, N. C., T. Green and P. Werts. Opportunities for Florida Growers to Finance Integrated Pest Management (IPM) Through USDA, NRCS Programs, Florida Small Farms and Alternative Enterprises Conference, Kissimmee, Florida, July 15, 2011 (workshop sponsored by UF, IFAS; USDA, NRCS; IPM Institute of North America; Glades Crop Care; and the USDA, NIFA Southern Region IPM Center

Advancing IPM and Sustainable Agriculture Practices on Your Farm Through USDA, NRCS Programs, Florida Small Farms and Alternative Enterprises Conference, Kissimmee, Florida, July 16, 2011

IPM/DPM/NRCS booth at the Florida Small Farms and Alternative Enterprises Conference, Kissimmee, Florida, July 16, 2011

Leppla, N. C. 2011. What is IPM or IPM Strategies? Livestock and Pasture Integrated Pest Management Field Day, Derek Barber, Columbia Co., August 25, 2011.

IPM Publications

Kevyn J. Juneau, K. J., N. C. Leppla and A. W. Walker. 2011. Advancement of Integrated Pest Management in University Housing. *Journal of IPM* (2:1-6, 2012)

Funderburk, J., S. Reitz, S. Olson, P. Stansly, H. Smith, G. McAvoy, O. Demirozer, C. Snodgrass, M. Paret, and N. C. Leppla. 2011. Managing thrips and tospoviruses in tomato. UF/IFAS EDIS ENY-859 (IN895)

Leppla, N. C. and K. L. Johnson, II. 2010. Guidelines for Purchasing and Using Commercial Natural Enemies and Biopesticides in Florida and Other States. UF/IFAS, EDIS IPM-146 (IN849). Updated 9/2011.

Frank, J. H. and N. C. Leppla. 2011. Mole Cricket Biological Control for Florida Sod Growers. Florida Sod Growers Newsletter, Florida Lawn. www.floridasodgrowers.com.

Success Stories

Collaborated with the University of Florida Department of Housing and Residence Education (DOHRE) to help it become the first university program in the U.S. or world to receive Green Shield Certification from the IPM Institute of North America, an independent, third-party evaluator. This certification is the result of a commitment by DOHRE personnel to meet the rigorous standards for integrated pest management (IPM) in the facilities they manage. The DOHRE is responsible for maintaining facilities for about 7,500 students living in single-student residence halls and nearly 1,900 students and their families who also live on campus. This successful Green Shield certification was accomplished through a partnership between multiple DOHRE units (Building Services, Pest Control Services, Maintenance Services, Residence Life and Education, and Research and Organizational Development), and the UF/IFAS Extension IPM program and Entomology and Nematology Department. Green Shield Certification signifies that the best available IPM practices are employed to provide UF students and their families with advanced protection from potentially harmful pests. The housing guide that describes the DOHRE

IPM program will be disseminated to all university and college housing departments in Florida and the U.S. in 2012.

Co-organized and participated in an Association of Natural Biocontrol Producers short course, "Practical Biological Control for the Florida Horticulture Industry," plus a tradeshow booth for the industry at the Florida Nursery, Growers, and Landscape Association (FNGLA)-sponsored "The Landscape Show," September 29-October 1, 2011 in Orlando, FL. Industry and university experts delivered presentations on biological control of the most important pests of ornamental plants, emphasizing pest identification, natural enemies that are commercially available, and techniques for proper timing and application to maximize control. Presentations were followed by a hands-on practical session where participants observed live natural enemies, learned about purchasing and application technology, and received one-on-one answers to pest control questions. The ANBP team was available at the booth to promote biological control awareness and deliver practical solutions for Florida's horticultural industry. This highly successful event led to an invitation by FNGLA for ANBP to provide similar activities at the Tropical Plant Industry Exposition (TPIE) at Ft. Lauderdale in 2012. The outcome is increased use of commercial natural enemies by the Florida horticulture industry.

University of Georgia

Paul Smith- IPM Coordinator

SERA 003 Report 2011

Outputs

Activities: IPM diagnostic facilities at the University of Georgia, which are primarily the Digital Diagnostics through Digital Imaging (DDDI) program, the bugwood database, and the Homeowner Diagnostic Laboratory, were extensively utilized during the project period. The Bugwood database received more than 2 million hits to their web system. The diagnostic system received numerous submissions throughout the year and was used to identify the foreign invader *Megacopta cribraria*, which was identified following homeowner complaints in October 2009.

Research is continuing on *Xylella fastidiosa* in blueberries. During this project period, population dynamics including timing of emergence, development, and vector competence of leafhopper vectors were investigated. This research will continue in order to gain a better understanding of disease transmission in this system. The aim is to create targeted management strategies aimed at reducing the number of required insecticide applications.

Events: Cotton IPM team members conducted 68 educational programs at the county or local cotton production meetings, participated in and made six presentations at regional and national professional meetings, and conducted three field day extension events. Additionally, cotton team members maintained the Cotton Insect Hotline (1-800-851-2847) which provides up to date insect management information to cotton producers in Georgia. Cotton team members also conducted the Cotton Scout School which had 53 attendees.

Vegetable IPM team members conducted 33 county or multi-county educational programs with an average of 30-50 participants at each event. Vegetable team members conducted 4 field day events reaching over 200 contacts. Two additional presentations were made in cooperation with other southeastern state outreach programs. Vegetable team members served as organizers for the Vegetable Education Sessions at the Southeast Regional Fruit and Vegetable Conference in Savannah, Georgia. Team members gave 8 presentations at this meeting. Vegetable team members also participated and made 8 presentations at regional or national professional meetings and 4 presentations at international meetings. All team members have active research/demonstration programs, with a total of 98 research demonstrations projects in vegetable IPM in 2009.

Peanut IPM team members conducted 47 county or multi-county educational programs during this program period. Six presentations were given at regional or national professional meetings. Peanut team members conducted 5 field days, and a tri-state Peanut Diseases Tour with Alabama and Florida.

In a collaborative effort with Fort Valley State University, an IPM Training in Organic Farming was conducted with approximately 30 participants.

Products: The Profile kit, a self-contained resistance management system, was further developed and validated during this project period. The Profile kit can detect resistance to three major systemic fungicide classes used to control brown rot of peaches. These are the benzimidazoles, the demethylation inhibitors and the quinone outside inhibitors.

The broad scope of the Georgia Integrated Pest Management program makes evaluation of the program as a whole very difficult. The diversity of commodities, producer groups, and scientists involved often necessitates evaluation on a commodity-by-commodity or project-by-project basis. To date, program evaluation has primarily been based on crop production and pesticide usage estimates, however more interactive systems are being developed and implemented such as the Georgia Extension Leadership Service and various grower interview and survey systems. A brief overview of some of the major impacts of the Georgia IPM program are given below.

Cotton: Over the last several years, elimination of the boll weevil and the use of transgenic Bt cottons have allowed growers to truly employ IPM, utilizing natural and cultural controls, thresholds, and insecticides on an as needed basis. Prior to these events, it was not uncommon for insecticide applications to average 12-15 per year. Insecticide use averaged approximately 3 applications per acre during 2009. Nematodes are an important pest of Georgia cotton, infesting over 70 percent of the acres planted. During recent years efforts have included defining risk management zones which will allow the use of precision application of nematicides which will decrease nematicide use allowing for increased profits for growers and better environmental stewardship. Glyphosate resistant P. amaranth populations have rapidly spread in Georgia and have been confirmed in most production areas. Rather than relying on herbicides alone, research and education efforts for P. amaranth are focusing on a more integrated approach which includes the use of tillage, high residue cover crops, multiple herbicide chemistries, and hand weeding. To date, primary evaluation of this program has been based on

Vegetables: Research and educational efforts within vegetable IPM have ongoing impacts with the vegetable industry. Identification of efficacious pesticides, aiding in registration of these pesticides, and integration of these pesticides into IPM programs are among the most notable and obvious impacts. As an example, six new herbicide labels for pepper, cole crops, and onions were received in 2009 and these products were successfully integrated into the production programs for these crops. Research and education with methyl bromide alternatives has aided growers in shifting to alternative practices, with over 70% of crop acreage previously reliant on methyl bromide now produced with alternative approaches. This work has also resulted in identification of a non-fumigant alternative to methyl-bromide which is currently being further evaluated.

Peach: Introduction of the Profile Kit and the ensuing implementation in a fungicide resistance monitoring program in the peach growing regions of GA and SC are estimated to have saved \$20 million in yield losses and wasted fungicide applications.

Organic Farming Training: Pre- and post- tests administered during this training event indicated an overall 20% increase in knowledge for those participating in the training.

IPM in Peaches: Guido Schnabel, associate professor of fruit pathology from Clemson University, and Phillip Brannen, associate professor and extension fruit specialist from The University of Georgia, have teamed up to develop a monitoring system for detection of fungicide resistance in *M. fructicola* (Brown Rot), a major fungal pest of peaches in the southeast. This collaboration has resulted in development of the Profile kit, a self-contained resistance management system that can be utilized by any trained individual.

The effectiveness of this program was demonstrated during the 2009 growing season. Data collected from numerous disparate locations throughout the peach producing region of Georgia indicated DMI resistance in some areas. Producers were informed of their individual resistance issues, and recommendations were made to avert destructive epidemics of brown rot throughout the state as the season progressed. The ease of use of this system, and its relatively low cost make it a valuable management tool for southeastern peach producers.

IPM in Cotton: The county delivery model is an effective means of communicating educational programs to grower and industry clientele. Preparing county agents is an on-going process and includes formal training and periodic updates through newsletters and correspondence. 55 county agents were provided in-depth training on cotton production and pest management principles and practices during 2009. Members of the UGA Extension Cotton Team presented educational programs at 68 local or county cotton production meetings. Further, the cotton team conducted 3 field days during 2009, held the Cotton Scout School, and maintained consistent updates to the Cotton Insect Hotline (1-800-851-2847). Cotton team members presented six times at regional and national meetings.

IPM in Vegetables: In 2009, these three individuals gave approximately 33 presentations at County or multi-County level producer meetings (meetings sponsored by the UGA Extension Service) with an average of 30 to 50 contacts at each meeting. Presentations were given in all of the major vegetable producing counties in Georgia, and were customized to address the specific crops grown in each region. In addition, presentations were given at 4 field days in 2009, with over 200 contacts. An additional two presentations were made in cooperation with other Southeastern State's outreach programs. All three scientists also participate in industry sponsored meetings, with six presentations given at local and regional meetings. At the regional level, these three scientists serve as the organizers and backbone of the Vegetable Educational Sessions at the Southeast Regional Fruit and Vegetable Conference in Savannah, Georgia, with eight presentations at the 2009 meeting. This regional conference is the largest of its type in the southeastern U.S. and is attended by growers from throughout the southeast with individuals from 7 to 9 States regularly attending. Presentations at this meeting are generally attended by 50 to 80 attendees. Finally, all three are active in their respective professional societies, with eight presentations given at local, regional or national meetings, and four at international meetings.

L. Paul Guillebeau- This individual served as the IPM coordinator for the initial term of this project.

Raymond Noblet- This individual provided administrative leadership and support to the Georgia IPM program.

Phillip Brannen- This individual served as the primary UGA contact, and contributed significant effort for the collaborative peach project with Clemson University.

Guido Schnabel- This individual served as the primary Clemson contact and contributed significant effort to the collaborative peach project.

Dan Horton- This individual contributed significant effort and expertise for both the peach and blueberry IPM programs.

Phillip Roberts- This individual is a member of the Cotton IPM team and provided entomologic expertise to the team, county agents, and the cotton producers of Georgia.

Alton Sparks- This individual contributed significant effort and entomologic expertise to the Vegetable IPM program.

Julia Gaskin- This individual served as the organizer and primary UGA contact for the collaborative Organic Farming Training conducted with Fort Valley State University.

Marc Thomas- This individual served as the primary contact for Fort Valley State University and served as co-organizer for the Organic Farming Training.

David Adams- This individual provided entomologic expertise to the Peanut IPM team

Robert Kemerait-This individual served as the primary contact person and provided plant pathology expertise and effort to the Peanut IPM team.

Byron Candole- This individual served as the plant pathology diagnostician for the Georgia IPM program.

Lisa Ames- This individual served as the insect diagnostician for the DDDI program and the homeowner identification program.University of Kentucky IPM Program

SERA 2011 Annual Report, March 26, 2012

Program Management:

The University of Kentucky IPM program is administered by multiple departments and collaborative efforts from the College of Agriculture and Extension Service. Five working groups comprised of individuals holding crop specific expertise have been established to address IPM needs in Wheat, Corn and Soybeans, Nursery Crops, Vegetables and Consumer Horticulture. Establishment of state IPM priorities is accomplished at an annual Advisory Board meeting in March. College faculty, staff, county extension agents, IPM working group representatives and stakeholders participate in this meeting.

Programmatic Summary:

Coordination activities during 2011 included: Meeting of the UK-IPM Steering/Advisory Committee, 2011 Annual IPM Training School for field crops, support and maintenance of the UK-IPM website (<http://www.uky.edu/Ag/IPM/ipm.htm>), operation and maintenance of the Insect trapping Network consisting of an aphid suction trap and six pheromone baited moth traps each at two locations and the issuing of pest warnings based on trapping levels.

Corn & Soybean Working Group coordinated the following activities:

- Early Bird Meetings; three meetings in December 2011 to help producers make decisions on pre-pay and early purchases of inputs. 200 in attendance impacting 690,598 acres of corn, soybeans and wheat.
- SoyMVP (Soybean Management Verification Program) compares UK vs farmer practices. Kentucky CORE Farmer Program (corn, enhanced training).
- Grain Crops Update(Blog) at <http://graincrops.blogspot.com/>
- Grain Crops Academy, intensive management training program.

Nursery Crops Working Group activities included:

- Participation in the SNIPM – Southern Nursery Integrated Pest Management working group including book and app development
- Nursery IPM Scouting and Pest Management workshop
- Facebook blog featuring KY Nursery Crops IPM program information (<https://citc.ca.uky.edu/groups/nurserycropsipm/blog/>)

Urban Horticulture (Master Gardener) Working Group programs included:

- Assembling an archive of existing resources related to landscape IPM and best management practices arranged by topic area on an internal wiki site:
<https://citc.ca.uky.edu/groups/cesconsumerhortipmwiki/>. Topic areas addressed so far include Right Plant, Right Place; Water Efficiently; and Manage Yard Pest Responsibly in accordance with plans outlined in the proposal.
- Development of web-based learning modules in the areas list above.
- 2012 training sessions were conducted in two locations in the state resources to train County Extension Agents and Extension Master Gardeners

Vegetable IPM programs included:

- Development of Vegetable IPM guides that allow for proper identification of physiologic disorders, diseases and insect pests as well as beneficial insects. Two new guides were developed during grant year one and an older guide revised. Proper identification allows for better management of pesticides,
- A vegetable IPM web site was developed.(<http://www.uky.edu/Ag/IPM/ipmveg/>)
- In the vegetable IPM group conducted several IPM related field programs both independently and together during the winter months of 2011/12. Educational programs were conducted at five key auction/wholesale sites in Kentucky from January through March.

Wheat Science Working Group:

- Field Days and Annual Meetings which showcased research and educated producers, county agents, consultants and agribusiness on improving and expanding no-tillage and pest control measures, pest resistant rating in wheat variety trials 100 entries,
- Partnered with KY Small Grain Growers Assoc. for research on no-till and pest issues (leveraged \$82,000 in research grants)
- Field Day, May 2011 , attendance 130, Annual Winter Wheat Meeting, Jan. 2011 attendance 150
- 50+ Research trials
- Newsletters and Research Report Books

Statistical Summary

- KYGenIPM: Steer/Advisory Committee Meeting was held in March 2012 for developing priorities and operational comments. 93 clientele attended annual IPM training. Participants via survey indicated the program impacted > 388,000 acres of corn & soybean. 69% were Cert. Pesticide Applicators. Weekly insect trapping data was provided on the IPM website and in Kentucky Pest News.
- Corn/Soybean Working Group: Soy producers were shown how to avoid expense of \$12-\$24/ac by understanding the stink bug situation in KY. Corn producer may obtain a savings of \$12.5/ac, and preserve other benefits of crop rotation, by not purchasing rootworm-GM seed when not needed. SoyMVP demonstrated that by following UK guidelines, producers gained \$3.00 per acre. Across all soybean acres in KY, that would be about \$3 million.
- Nursery Crops Working Group: Multiple forms of electronic/social media were used to reach nursery crop clients, including You Tube, listserve, blog, and website. The electronic media for nursery crops IPM audiences has reached >500 growers. The listserve has 40 subscribers and has been estimated by growers to be valued at \$47 per month OR a total of \$22,560/Yr. Plans are to refine and target efforts. The Nursery Crops blog was changed to allow greater traffic; modeled after the SRIPMC. Plans are to continue developing the IPM Nursery Crops website to include diseases (This has begun) and added SiteMeter analytics.
- UrbanHort.(Master Gardener) Working Group: Deliverables are in progress. In spring 2012, training sessions will be conducted in two locations in the state resources to train County Ext. Agents and Ext. Master Gardeners.
- VegSci Working Group: Over 4K copies of each new IPM Guide was printed, increasing our impact. The guides have been so well received that UK Ext. Admin. paid for printing of one guide in 2009, allowing IPM funds to be used for printing subsequent guides. A vegetable IPM web site continues to be developed using information obtained from field activities (scouting, trapping counts, etc.). This will allow 24-7 access to growers in KY and surrounding states with have internet access. County level meetings for covering IPM practices reached >260 growers at auctions sites and wholesale cooperatives in 2011. Many growers who attend these meetings are from under-represented groups that do not drive or have internet access; therefore direct contact is an important outreach tool. Over 140 people attended the Hort.Res.Farm twilight tour held in July 2011.
- WheatSciWG: Educational and demonstrational efforts on control of invasive Italian ryegrass led to increased wheat productivity and improved pest management. It is estimated that KY wheat growers gained a savings of \$25.00/A by following UK recommendations. Soil Scientists within the group over the past 5 years developed an algorithm suitable for "on the go" nitrogen applications in KY. This KY specific tool allows precision application of N₂ to wheat which cost less and also limits N₂ in the soils

Publications

Bessin, R., and J. Obrycki. 2011. An IPM Scouting Guide for Natural Enemies of Vegetable Pests. ENT-67. 23 pp. <http://www.ca.uky.edu/agc/pubs/ent/ent67/ent67.pdf>

Bessin, R. and D. Johnson. 2011 Insecticide Recommendations for Conventional and No-tillage Field Corn. ENT-16.

Bessin, R. and D. Johnson. 2011. Insecticide Recommendations for Popcorn. ENT-62.

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Participants:

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Oklahoma IPM Program Report: 2011

2012 SERA-3-IPM Meeting, Memphis, TN

Designated Coordinator: Dr. Tom A. Royer
IPM Coordinator and Extension Entomologist
127 NRC
Stillwater, OK 74078-3033

EIPM Program Management: The coordinated IPM program for Oklahoma is named IPM Oklahoma! The coordinator devotes 60% time to the IPM Program and 30% time to Extension Entomologist.

Coordinator duties include:

- Serves as the state contact for IPM related inquiries from stakeholders and government agencies
- Facilitates stakeholder input into Extension IPM program planning
- Facilitates establishment of multi-disciplinary teams and coordination of Extension IPM outreach efforts
- Coordinates program evaluation of Extension IPM programs and reports on state IPM activities at regional and national meetings.
- Keeping current on IPM issues and opportunities by serving on regional and national IPM committees and grant review panels.
- Enhances funding opportunities for pest management specialists and agents by promoting grant programs and assisting with proposal development
- Provides oversight for IPM program accounting and reporting
- Facilitating communication among project cooperators and stakeholders.

Extension IPM (EIPM) project proposals are solicited through the IPM Initiative Team <http://dasnr5.dasnr.okstate.edu/twiki/IntegratedPestManagement.htm>. Potential projects are reviewed based on stakeholder identified needs, EIPM priorities and anticipated funding level. Successful

proposals were assembled into a coordinated EIPM proposal developed and submitted by the IPM Coordinator.

For the 2010-2013 funding cycle, the OSU IPM Coordinator, the Assistant Director, Extension Ag and Natural Resources, and the Assistant Director, Oklahoma Agricultural Experiment Station reviewed potential Programs for submission. Five program emphasis areas were included in the proposal <http://cris.nifa.usda.gov/cgi-bin/starfinder/30549/crisassist.txt> that was funded <http://cris.nifa.usda.gov/cgi-bin/starfinder/30549/crisassist.txt> .

The IPM Coordinator is responsible for management of the program grant funds and oversight of expenditures. The Coordinator works with Oklahoma State budget administration to establish separate accounts and budgets for each project; accounts are monitored on a monthly basis to ensure that budgets are not overspent. The IPM Coordinator manages the IPM website and program communications and coordinates publicity for training events. In addition to email announcements, the website for the Oklahoma IPM program is being revised (<http://www.ento.okstate.edu/ipm/>). IPM Oklahoma! attempts to support collaborations among the 1890 and 1862 Land Grants and provides a bridge to connect IPM efforts in Oklahoma with regional and national programs.

Extension IPM Program Delivery and Evaluation: Project leaders for the various Program Emphasis Areas are responsible for completing the projects, and for administering program evaluations. This includes communications and program publicity, development of Extension publications and resources, education and training activities, and program evaluation. A logic model was developed to assist program evaluation. In addition, the IPM Coordinator works with a Program Evaluation specialist to develop evaluation tools that can measure short-term outcomes and longer term impacts. The IPM coordinator is responsible for summarizing the results of the various program evaluations.

PROGRAM EMPHASIS AREAS, 2011

IPM Implementation for Agronomic Crops (Toby Osborn, Jerry Goodson, Kris Giles, Jeff Edwards, Chad Godsey, Tom Peeper, Joe Armstrong):

- Evaluation of OSU elite wheat varieties for diseases and Hessian fly.
- Monitoring seasonal occurrence of Hessian fly with pheromones
- Herbicide-resistant Weeds Management program.

- Demonstration of IPM cotton programs for herbicide resistance and monitoring for lepidopteron pests in transgenic cotton varieties
- Evaluation of seed treatments and in-furrow insecticides for control of thrips and nematodes
- Development and demonstration of IPM approaches to manage aphid and lepidopteran pests of winter canola.

IPM Implementation for Animal Agriculture: (Justin Talley).

- Litter beetle management in poultry houses
- Sustainable use of ear tags for stable fly management in cattle
- Survey for phorid fly establishment as a biological control for red imported fire ant.

IPM Training for Consumer/Urban Environments: (Kim Toscano, David Hillock).

- Development of IPM demonstration gardens

IPM in Public Health: (Brad Kard, Kevin Shelton, Gina Peek).

- Bed bug management program

IPM Training and Implementation in Schools: (Brad Kard, Kathleen Kelsey, Kevin Shelton)

Program Highlights

IPM Implementation for Agronomic Crops: Hessian Fly Management: (Kris Giles, Jeff Edwards Tom Royer): Oklahoma State entomologists saved Oklahoma wheat growers more than 1.5 million in yield losses by screening winter wheat varieties for resistance to Hessian fly, resulting in the release of 5 new wheat varieties that contained partial or full resistance to Hessian fly. Research is continuing to monitor emergence patterns for Hessian fly for development of pest management strategies.

Issue: Winter wheat is grown on 5.6 million acres in Oklahoma for pasture, grain and dual purpose (pasture + grain). Hessian fly has become a more prominent pest due to fly-susceptible varieties. Traditional “fly free” planting dates that were developed in the 1930’s appear to be ineffective.

What has been done? Estimates of yield loss suffered by Hessian fly infestations can reach 5 bushels per acre, when a susceptible variety is infested with 1 fly per stem. A Hessian fly screening program (lab and field) was instituted to evaluate new winter wheat releases through the Oklahoma State winter wheat breeding program. Two resistant varieties of winter wheat “Duster” and “Centerfield” were released in 2006. Duster has been rapidly adopted by Oklahoma wheat growers, going from 0.3% of acres planted in 2008 to more than 16% of acres planted in 2011, and becoming the 2nd most planted variety in Oklahoma. Additional varieties, “Billings” which was released in 2009, “Ruby Lee” released in 2011, and “Gallagher” which was released in 2012, are also partially or fully resistant to Hessian fly. In addition, entomologists are using a newly developed pheromone to monitor seasonal emergence of Hessian fly for development/enhancement of management tools for Hessian fly.

Results Approximately 848,000 acres of the winter wheat acres were planted to “Duster”. Of that, a minimum of 5% or 50,000 acres were planted in areas where Hessian fly was documented to be a serious problem in the 2 years previous to 2011 resulting in an estimated \$1.5 million in yield savings.

IPM Implementation for Agronomic Crops: Canola IPM (Kris Giles, Tom Peeper, Josh Bushong, Tom Royer) Oklahoma State University entomologists and area agronomists showed canola producers how to save \$3.7 million by reducing insecticide applications using an IPM program for aphid control.

Issue Canola is a potentially valuable rotation crop for Oklahoma wheat growers. It allows them opportunities to manage difficult grassy weeds such as Italian ryegrass, and cheat while providing them with an additional cash crop. Harvested acreage in Oklahoma has grown from 41 acres in 2002 to over 125,000 acres in 2010-2011 worth ca. \$55.1 million. However, insect pests (aphids and caterpillars) regularly infest winter canola throughout winter and spring causing economic damage. In 2007, canola producers were surveyed about their pest management concerns and listed insects as the second most important production problem that they faced and aphids (cabbage, turnip and green peach aphids) the key insect pest problem. Because producers were unfamiliar with their management, they often made multiple insecticide applications to control them with limited success.

What has been done? Entomologists and area agronomists conducted research demonstrations from 2005-2007 to evaluate management strategies for canola aphids. They determined that aphids could be effectively managed with a combination of insecticide seed treatments and regular scouting using a threshold of 200 aphids per plant.

Impact The research demonstrations showed that producers could save an average of \$30 per acre by reducing insecticide applications from four per season to one with no loss in yield. This resulted in \$3.7 million in potential cost savings in the 2010-2011 canola crop.

Additional Programs Related to IPM

Biological Control of Musk Thistle: (Scott Price, Tommy Puffinbarger, Tom Royer)

Oklahoma ranchers and producers manage musk thistles through an IPM program that includes the use of biological control agents that are integrated with carefully timed mechanical and chemical controls. Through the program, producers can achieve up to 95% control of musk thistle with fewer herbicide applications.

Issue: The invasive weed, Musk thistle (*Carduus nutans* L) was first identified in Oklahoma in 1944, and is currently found in more than 62 counties. Infestations of musk thistle in improved pastures cause significant economic losses in Oklahoma. In 1998, Oklahoma legislators passed a law designating musk thistle, along with scotch and Canada thistles, as noxious weeds in all counties of the state.

What has been done? A musk thistle IPM program was developed in the early 1990s and has been implemented statewide through cooperative efforts of researchers, Extension personnel, and landowners. It focuses on increasing public awareness of the problem, development of educational information, demonstrating various control options, and introducing new biological control agents. Two demonstration and educational meetings were conducted in 2011 to landowners and NRCS employees. Extension educators and landowners collected approximately 27,000 musk thistle head weevils and 3,000 musk thistle rosette weevils in Alfalfa and Grant counties in spring of 2011 for redistribution.

Results: To date, this program collected and redistributed more than 880,000 musk thistle head weevils and 42,910 musk thistle rosette weevils across the state. Landowners in NE Oklahoma have noted from 80% to 95 % decrease in number of musk thistle plants in areas where they are using an integrated approach that includes use of the musk thistle weevils. If the typical landowner applies 1 lb. active ingredient of herbicides per acre annually, biological control has decreased the amount of herbicides applied to the environment by 7.1 million lbs per year.

Disease Management in Turf (Damon Smith, Nathan Walker) Turf pathogens cause diseases of commercial turf and golf courses and are a significant concern for many turf managers in Oklahoma. Diseases like dollar spot of turfgrasses, can result in significant damage to plants requiring expensive inputs on the part of the grower/manager. The horticulture turf pathology research and extension program at Oklahoma State University conducts research to develop sustainable methods for controlling this disease and delivers the resulting information to stakeholders via the extension program.

What has been done? A dollar spot disease model was developed based on research trials conducted in Oklahoma and in Wisconsin. A logistic regression-based model was developed using both datasets. Separate validation experiments in both locations in 2009 and 2010 resulted in a significant savings of fungicide sprays without compromising disease control. As a result of these research experiments, funding was obtained from the United States Golf Association to validate the model in five locations throughout the U.S. (Oklahoma, Wisconsin, Mississippi, Tennessee, and Pennsylvania).

Results Results from the 2011 trials indicate that an average of one fungicide spray was saved across all locations without compromising disease control. This can result in several thousands of dollars in savings per fungicide spray.

IPM for Oklahoma's Green Industries: (Mike Schnelle, Eric Rebek, Kim Toscano) Despite the recent down-turn in the economy, gardening remains the number one hobby of Americans including citizens of the State of Oklahoma. Consequently, over 500 nurseries, greenhouse and or garden center operations remain viable businesses throughout the state (stat from Oklahoma Nursery and Floral License Directory, ODAFF). Given the sheer number of green industry professionals not to mention allied groups such as landscape architects, urban foresters, arborists, etc., it seems reasonable to assist these groups in order that they remain ranked in the top ten states for gross sales of products and services (Oklahoma has been ranked no. 10 (ten) in the nation on occasion for its gross sales).

What Has Been Done: The Oklahoma Green Industry is assisted by Mike Schnelle, Extension Ornamentals-Floriculture Specialist, and colleagues in a number of ways. Commercial workshops are regularly offered by the Dept. of Horticulture and L.A. and specifically Tree Care Issues and Plant Materials seminars were offered during 2011 (both have basic IPM tenets taught within). Furthermore, assistance was extended in the form of guest lectures and moderator services to a number of events not specifically chaired by Schnelle. Examples of these efforts were assistance with the Oklahoma Nursery and Greenhouse Trade Show and Conference, OKC (moderated and lectured). Our department, including Schnelle, also cooperated with the Urban and Community Forestry Council providing leadership on their board and lecturing at their annual conference that is frequented by green industry professionals defined above. Mike Schnelle also worked with a number of peripheral groups including the Oklahoma Arborists Association. Again, IPM basic concepts are regularly featured in Schnelle's lectures to the aforementioned groups.

Results: Conservatively over 700 green industry professionals received training in IPM and other environmentally-related topics by Schnelle in 2011. This transpired via lectures Mike delivered on pest-resistant plant materials at Winfield Solution regional workshops conducted in both Oklahoma City and Tulsa locations in 2011. Also, proper tree selection that was highlighted by Schnelle and Kim Toscano (October 2011) on Oklahoma Gardening, alone motivated 150,000 viewers to utilize pest-free plant materials which in turn translates to fewer chemical inputs into the environment. This then translates to greater water quality realized throughout Oklahoma (precise figures unavailable).

iWheat Project: (Kris Giles, Tom Royer, Norm Elliott, Bob Hunger, Joe Armstrong, Jeff Edwards) Oklahoma State University entomologists developed a way to assist growers with estimating damage from and sample greenbugs using the "Glance 'n Go" sampling system that also accounts for natural enemy activity. In 2011, a five state consortium began developing an "iWheat" program to further extend the adoption of Glance 'n Go" by providing it through Web 2 technologies, and by developing a "Glance 'Go" system for Russian wheat aphids.

Oklahoma Market Garden School: (Lynn Brandenberger, Tom Royer) This program is designed to familiarize current and future fresh market producers with management, production and marketing techniques for fresh produce. The program consists of eight 2 ½ hour sessions with one devoted to IPM.

Time-critical assessment of potential distribution of the Bagrada bug (*Bagrada hilaris*), a new and emergent crop plant pest in the United States: (Monica Papes, Tom Royer) Since its initial discovery in California in fall of 2008, the invasive Begrada bug has expanded into Arizona and New Mexico. This insect readily feeds on members of the Brassicaceae, including broccoli, cabbage and other vegetable pests. It is very likely that it could become a pest of canola, should it be able to establish in Oklahoma. Research is being conducted to predict its potential expansion in the United States, and develop strategies for its management and results will be shared with Extension Educators to help identify and deploy first responders.

Tom A. Royer

Extension Entomologist and IPM Coordinator

South Carolina IPM Program Report: 2011

2012 SERA-3-IPM Meeting, Memphis, TN

Designated Coordinator: Dr. Geoff Zehnder; zehnder@clemson.edu

IPM & Sustainable Agriculture Programs

B28 Long Hall, Clemson University

Clemson, SC 29634

Associate Coordinator: Kelly Gilkerson; kgilker@clemson.edu

IPM & Sustainable Agriculture Programs

B30 Long Hall, Clemson University

EIPM Program Management: The Coordinator and Associate Coordinator devote 50% time to the IPM Program and 50% time to the Sustainable Agriculture Program. IPM Program responsibilities include:

- Responding to IPM related inquiries from stakeholders and government agencies as state contact person for IPM
- Facilitating stakeholder input into Extension IPM program planning
- Facilitating establishment of multi-disciplinary teams and coordination of Extension IPM outreach efforts
- Coordinating evaluation of Extension IPM programs and reporting on state IPM activities at regional and national meetings.
- Keeping current on IPM issues and opportunities by serving on regional and national IPM committees and grant review panels.
- Enhancing funding opportunities for pest management specialists and agents by promoting grant programs and assisting with proposal development
- Providing oversight for IPM program accounting and reporting

- Facilitating communication among project cooperators and stakeholders via an email list and program website (www.clemson.edu/ipm).

Extension IPM (EIPM) project proposals are solicited internally via a call for proposals sent to state Extension IPM personnel. Proposals are reviewed by a panel consisting of Extension administration and the IPM Coordinator. Approvals are based on stakeholder identified needs, EIPM priorities and anticipated funding level. Successful proposals are integrated into a coordinated EIPM proposal developed by the IPM Coordinator.

For the 2010-2013 funding cycle a core IPM Program Advisory Committee comprised of the Clemson IPM Coordinator and Associate Coordinator, commodity team leaders, the Clemson Extension Director, and the Senior Extension Director for Small Farm Outreach at South Carolina State University provide oversight for the Extension IPM Program. The IPM Coordinator has collaborated with members of the IPM Advisory Committee to review existing stakeholder identified priorities and to develop the three-year program of Extension IPM activities (outlined in the EIPM-CS proposal). The IPM Advisory Committee including commodity team leaders and key stakeholder representatives communicate regularly to review input from their representative stakeholder/commodity groups and to identify/fine-tune specific training topics and activities for the year.

The IPM Coordinator is responsible for management of the program grant funds and oversight of expenditures. The Coordinator and Associate Coordinator work with Clemson budget administration to establish separate accounts and budgets for each project leader; accounts are monitored on a monthly basis to ensure that budgets are not overspent. The Associate IPM Coordinator manages the IPM website and program communications and coordinates publicity for training events. The Clemson IPM and Sustainable Agriculture Programs maintain an email list of over 1200 stakeholders including Extension agents, NGO and industry representatives, growers and other agriculture professionals in South Carolina. In addition to email announcements, a calendar of events is made available on the IPM website (www.clemson.edu/ipm). The EIPM Program facilitates linkages and collaborations among state IPM workers (1890 and 1862) and provides a bridge to connect IPM efforts in South Carolina with regional and national programs.

Extension IPM Program Delivery and Evaluation: Project/commodity team leaders have responsibility for development of training programs in targeted areas. This includes communications and program publicity, development of Extension publications and resources, education and training activities, and program evaluation. A logic model approach is used for program evaluation. That is, program inputs, outputs and outcomes are identified for each training activity. The IPM Coordinator and Associate

Coordinator assist with development of evaluation protocols and participant surveys for training events. Short-term outcomes are measured based on written participant surveys to be completed on-site, or online surveys completed after training events. The surveys will assess the participant's level of satisfaction with the training, whether the training increased their comprehension of pest management practices such that they will be able to implement (growers) or teach (Extension agents) new pest management strategies, and also recommendations for improvement of future training events. To measure longer-term impacts select participants are surveyed 6-12 months after each event to identify evidence of outcomes and changes in behavior. Program evaluation results are discussed with IPM Advisory Committee members and at the annual stakeholder meetings and results are factored into planning for future events. The IPM Coordinator and Associate Coordinator collaborate with commodity team leaders to develop annual project reports and success stories for each commodity area.

PROGRAM HIGHLIGHTS IN 2011

Agronomic Crop IPM (Jeremy Greene, Michael Marshall, Francis Reay-Jones):

- Impact of egg parasitoids on stink bug population development
- Border applications of insecticides to manage stink bug and reduce insecticide use
- Use of remote sensing for detection of insect pests in cotton
- Evaluation of next generation Bt cotton varieties for control of lepidopterous pests
- Evaluation of seed treatments and in-furrow insecticides for control of thrips and nematodes
- Control of glyphosate-resistant Palmer Amaranth in soybean using alternative management strategies

Additional information on these projects available at:

<http://www.clemson.edu/public/rec/edisto/research/cotton.html>

<http://www.clemson.edu/public/rec/edisto/research/soybeans.html>

<http://www.clemson.edu/public/rec/edisto/research/corn.html>

Kudzu Bug (Bean Plataspid) Research (Jeremy Greene). Since its initial discovery in Georgia in fall of 2009, the invasive Plataspid *Megacopta cribraria* has expanded rapidly into neighboring states, including South Carolina. Although this insect readily uses soybeans as both a feeding and reproductive host, the extent of its impact on soybean yield and quality are not yet fully understood. Likewise, management

options in soybeans are not well established. Research is being done to study the impact of these insects on soybean yield and quality. In addition, we evaluated treatment thresholds in the soybean maturity groups that are typically grown in the affected region, and began work to establish sampling plans based on the spatial dynamics of this insect within soybean fields. We hope to use this information to better prepare regional soybean growers to successfully manage this pest.

Site Specific Nematicide Placement (SNP) Project (Ahmad Khallilian, Will Henderson). Nematode management in cotton relies heavily on the use of nematicides, such as aldicarb (\$16/acre) or 1, 3-dichloropropene (\$36/acre). Farmers usually apply a uniform rate of one of these nematicides across an entire field or even farm. However, nematodes are not uniformly distributed within fields, and there may be substantial acreage in most fields where nematodes are either not present, or are not above the economic threshold. The Khalilian laboratory at Clemson has developed a site-specific nematicide placement system (SNP) system that is ready for commercial deployment and use by growers. Trials and hands-on demonstrations were conducted on 3 commercial farms to evaluate the effectiveness of the SNP system. An affordable map-based operator switch was developed and tested on 2 farms to replace the existing manual switch to enable site-specific nematicide application. Results were presented at 11 professional and industry conferences and at 5 workshops held in South Carolina.

Additional information available at:

http://www.clemson.edu/public/rec/edisto/research/precision_ag.html

Peach IPM: Precision Management of Brown Rot Disease. (Guido Schnabel, Achour Amiri, Phillip Brannen). Clemson University and University of Georgia scientists have developed an agar-based assay called the lipbalm tube assay to determine location-specific resistance profiles in *Monilinia fructicola*. The 'Profile' system was featured in "The Grower" and 'American Fruit Grower' magazines. It determines the sensitivity of local *Monilinia* populations to the three most commonly used fungicide classes (DMIs, BZIs, and QoIs) and identifies the most effective spray program for brown rot control based on location-specific resistance profiles. In addition, 'Profile' counteracts selection of pathogen populations for fungicide resistance, making disease management and the entire operation more sustainable for the future. In 2011 A simplified process for peach disease sample collection was developed along with a new assay method for the resistance monitoring kit. Peach disease samples were collected from approximately 50 locations representing over 70 percent of the peach growing area in SC. The web application to process and deliver the disease resistance data to growers in a timely manner was also improved and enhanced. The 'Profile' resistance monitoring program has been used since 2008 and almost all large-acreage producers from GA and SC are participating. It is estimated that savings to Georgia growers resulting from reduced losses to brown rot disease is \$6-\$10 million per year with similar savings to growers in South Carolina. Additional information available at:

http://www.clemson.edu/extension/horticulture/fruit_vegetable/peach/diseases/br_profile.html

Beekeeper IPM (Mike Hood). The small hive beetle (SHB) infests honey bee colonies throughout South Carolina and other states, and has become a major problem in many beekeeping operations resulting in complete hive destruction in many cases. A 20 page Clemson Extension publication entitled "Handbook of Small Hive Beetle IPM" was developed through research over the past 3 years and published in October 2011. Copies have been distributed to Extension/Research Apiculturists throughout the US, and to beekeepers attending small hive beetle workshops in South Carolina, and at the SC Beekeepers Association annual meeting. To date almost 1,000 hard copies of the booklet have been distributed. The publication is also available online at <http://www.clemson.edu/psapublication/> and 1,500 additional copies in digital format have been distributed.

Woody Ornamental IPM (JC Chong). The project goal is to develop a comprehensive training and demonstration program on integrated management of wood-boring insects for the ornamental and shade tree nursery industry. The target insect pests include members of the ambrosia beetles, bark beetles, flathead borers, long-horned beetles/round-headed borers, clearwing moths and pyralid borers. Monitoring programs for multiple wood-boring insect species were established at 2 nurseries in SC. Samples were identified, growers were alerted and a management program was developed for each nursery. Growers recorded the amount of pesticide used, crop losses and labor costs of the management program. A workshop on borer identification, sampling and management was attended by 38 nursery growers from SC and NC. Participants received training materials and resources on insect pest monitoring and management, and cooperating growers shared experiences with the management program. Additional information is available at:
http://www.clemson.edu/public/rec/peedee/faculty_staff/chong.html

Vegetable IPM (Edoe Agbodjan, Anthony Keinath, Geoff Zehnder).

Training in Ecologically-Based Vegetable Pest Management. Pest management information and strategies incorporated into the Vegetable IPM training program are adapted from a previously funded Southern Region SARE project led to develop a sustainable agriculture training curriculum for agriculture professionals. The curriculum, entitled "IPM for Organic Crops" was developed over four years by regional experts on disease, insect and weed management using research based information and recommendations, and is currently available on the eXtension Campus website <http://campus.extension.org>. The hands-on training is being conducted at the Clemson Organic Farm (Upstate region) and on small, diversified farms in other regions of the state. The Clemson Organic Farm was established in 2001 and currently occupies approximately 15 acres on Clemson campus in an area dedicated for agricultural research, teaching and public outreach programs. The Farm serves as a resource for experiential learning in sustainable agriculture and organic farming and over the years has hosted many training events for Extension agents and farmers in all aspects of sustainable agriculture including IPM (www.clemson.edu/sustainableag/student_farm.html). A total of 15 training events

including comprehensive one and two day training workshops were organized and taught by disease, insect and weed management experts and were attended by over 500 participants.

IPM Training for Limited Resource and Minority Vegetable Farmers (SCSU/1890 Extension. The overall goal of the SCSU Extension Small Farm Program is to provide outreach and assistance to local farmers in order to slow the rapid decline in numbers of small, minority farms in the South Carolina low country, and to reverse the trend of economic decline of small/minority farmers and assist them with the retention of their farm land. As part of this effort the EIPM Training Project teaches farmers how to implement cost-effective pest management strategies to produce high quality produce for local retail and wholesale markets. Twenty two (22) small, part-time, and limited resource farmers in Hampton, Allendale, Beaufort, Colleton, and Jasper Counties participated in the project during 2011. An Integrated Agriculture Resource Management Team was organized comprised of Cooperative Extension agents and specialists, USDA representatives, county agriculture agency representatives, local farmers and school and community volunteers to provide resources, assist with planning, and to support program efforts. A central vegetable IPM demonstration site was established along with four on-farm demonstration sites for IPM training. A total of eight vegetable field days and farm tours were organized for participating farmers throughout the growing season to teach farmers about sustainable vegetable production and IPM practices.

Consumer/Urban IPM (Eric Benson, Pat Zungoli): Two workshops on identification and management of pest ants and new urban pests were conducted and attended by 34 SC Extension agents. Extension resource materials were provided through Adobe Connect, and participants received urban pest management resource materials and a hand lens for insect identification. The training promoted adoption of IPM tactics including non-chemical strategies to manage urban pests while minimizing the impact on non-pest species in the environment. Participants learned to use field guides and keys to identify ants and learned key characters for the most common pest ants in SC. Survey results indicated that participants gained subject matter competency from participating in the training such that they would be able to offer similar training to their clientele on these two topics.

Additional information available at:

<http://www.clemson.edu/cafls/departments/esps/research/urban/index.html>

Texas IPM Report

SERA IPM Annual Meeting

3-26-2012

Statistical Summary:

The Texas AgriLife Extension IPM Program finished 2011 with 14 IPM Agents working in agriculture, 3 Urban IPM Program Specialists (San Antonio, Austin and Houston), a School IPM Program Specialist, a Pecan IPM Program Specialist (statewide) and a Statewide IPM Coordinator.

Highlights of the Texas IPM Program's 2012 activities were as follows. Written materials: 169 newsletters which reached 200,288 recipients, 15 Texas AgriLife Extension press releases, 2 peer reviewed publications, 18 abstracts or proceedings articles, 18 extension publications and 126 newspaper articles. Using electronic media: 301 radio programs, 19 TV programs, 49,950 web page visits with 23,366 unique hosts, 85 blog posts. Meetings for clientele included: 11,336 site visits, 775 scouts/practitioners trained, 244 consultants trained, 249 CEU's provided to 4,188 people, 37 Steering Committee Meetings with 277 members attending, 202 county meetings, 41 field days, 53 county/regional educational meetings, 236 educational meetings for school children, 19 educational meetings for civic clubs, 38 posters or oral presentations at professional meetings, 50 training meetings at which 2,045 master volunteers were trained and 13 ISEC educational meetings at which 185 people received training. Applied research and demonstration work included 258 projects and 7 community fire ant projects involving 551 households. Direct contacts were: 106,204 agriculture and 11,196,013 other. Funds generated (excluding state and EIPM sources) were \$721, 356 from local, industry, and governmental sources.

Programmatic Summary:

Resignations and retirements brought about the loss of 5 positions in 2011 that were not filled for lack of funding. Heat and drought caused significant program shrinkage as crop acreage that would have been scouted did not emerge or was abandoned. It was not a good year for crops, landscapes, pastures, etc.

In spite of the difficulties, IPM programs continued to make a difference. Field crop IPM programs were judged by producers to have a value to them of \$38.20 per acre across all crops (value in peanuts and cotton is higher and grain crops lower). A recent economic impact study by Texas AgriLife Extension

showed the program's value to cotton producers who participate in scouting programs at \$9.1 million per year (and this is but a small part of the value of the program to Texas producers).

A significant breakthrough was made in management of cotton root rot, a disease which causes \$30 million in losses each year to Texas cotton farmers. Recent work initiated by IPM Agents and supported by Plant Pathologists have discovered and provided sufficient information to acquire a Section 18 label for a fungicide which is effective against the disease. The fungicide, available in 2012, is the first control of cotton root rot in 150 years.

Integrated work from many extension and research partners is making progress against the \$14-200 million per year losses from aflatoxin in corn. The work involves hybrid development and testing, biological control using atoxigenic strains of the pathogen, Bt transgenic corn hybrids, and cultural techniques.

Work on the sucking insect complex in cotton, which causes \$13.7 million in losses/yr, is another IPM program focus. Sampling, thresholds, scouting, and control strategies are being investigated, developed and delivered to growers.

The School IPM Program teaches School IPM Coordinators how to work with others in their districts to control pests using IPM strategies. This has resulted in safer schools for 4.8 million Texas students in the nation's second largest state public school system.

Urban IPM Program Specialists work with the 9.8 million people in the Houston, Austin and San Antonio metropolitan area. Their primary emphasis is health & safety and youth education. Bedbugs, fire ants, cockroaches, household ants, termites and other pests are educational centerpieces of their work.

Programs on invasive pest detection/monitoring and herbicide resistant weeds are coming to the forefront in Texas. Caribbean (Raspberry) crazy ant, brown marmorated stink bug, bagrada bug and Asian citrus psyllid are important concerns.

Education of college students about IPM through hands-on IPM Internships is another important part of the program. Grower's have identified the need to develop the IPM professionals for the future. College students respond when they become aware of the opportunity to work in IPM. They enjoy and benefit from working daily during the summer with IPM Agents, Program Specialists and Specialists. Eight

students served as IPM interns in 2011. All of them reported that they benefitted and 88% said they would like to work in IPM. Two indicated they would pursue graduate degrees in IPM related fields.

SERA 003 Input for USDA NIFA Listening Session on Crop Protection Line of President's Budget

Our regional committee supports efforts to consolidate IPM funding lines to better serve the needs for research, extension, education and service in IPM related subjects to stakeholders in the US and around the world. It is our hope that this consolidation will provide opportunities to not only maintain but expand the support for critical IPM needs in the future. However, this consolidation needs to be done in a way that minimizes negative impacts to effective program management infrastructure and function including:

1. Developing funding mechanisms that support IPM Program delivery. RFA's associated with the new consolidated program should:

- Provide mechanisms to maintain established, effective IPM program delivery infrastructure within states and regions
- Provide opportunities for funding long-term IPM program development, implementation and delivery in addition to short term IPM projects
- Provide mechanisms to evaluate proposals based on degree of engagement of local/state stakeholders in setting IPM program priorities and stakeholder involvement in programs that address these locally identified issues
- Provide mechanisms to evaluate proposals based on degree of involvement of subject matter experts in the appropriate disciplines, and local or regional collaborators
- Provide opportunities for support of 'extension only' programs in addition to integrated research-extension collaborative efforts
- Include, in the proposal review process, professionals with demonstrated experience and/or expertise in extension education and delivery of IPM information to stakeholders

2. Developing funding mechanisms that maximize support for IPM Program delivery including:

- Limiting to the extent possible, the indirect cost rates associated with IPM program administration at host universities/institutions, thereby getting a higher percentage of appropriated funding into IPM delivery
- Increasing funding caps (per program) to allow competition for additional funds to minimize the impact of indirect costs associated with program administration at host universities/institutions and maximize the clientele learning, behavior change and condition change (economic, environmental and human health) that is associated with effective IPM program delivery

3. Developing funding mechanisms that maintaining the IPM coordination function carried out within each state and region. Coordination efforts allow for greater development of intra- and inter-

insitutional collaborations in IPM programs and projects, and helps to minimize duplication of effort, thereby increasing the efficiency of IPM delivery.