

UNIVERSITY OF FLORIDA,
STATE MAJOR PROGRAM, IPM EMPHASIZING
BIOLOGICAL CONTROL

ANNUAL REPORT 2001
SARE GRANT PROJECT
ES01-055

DELIVERY OF BIOLOGICAL CONTROL
INFORMATION AND TECHNOLOGY IN
FLORIDA

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GENERAL INFORMATION

Project Number:	ES01-055
Project Title:	Delivery of Biological Control Information and Technology in Florida
SARE Funds:	\$49,919
Matching Non-Federal Funds:	\$44,030
Participants:	Coordinator: James P. Cuda, University of Florida
Report Year:	2001
Report Type:	Annual PDP
Start Date:	4/1/2001
End Date:	12/31/2001

SUMMARY

This program is delivering practical training in biological control and IPM as the preferred pest management strategy. This program is improving the knowledge base of extension professionals by developing and implementing in-service training programs in biological control techniques and IPM protocols for conventional and organic growers, Master Gardeners and other pest consultants. The program is developing educational materials for training extension professionals and producers on the biology and appropriate use of natural enemies and antagonists, and it is furnishing demonstration projects in the proper use of biological control agents. This program supports, and draws from other existing State Major Programs.

OBJECTIVES/PERFORMANCE TARGETS

BEHAVIOR-BASED OBJECTIVES (AS LISTED IN PROPOSAL)

1. Assist county faculty / mentoring groups in delivering information - synthesize, evaluate, integrate and apply information in support of county faculty; help identify audiences and technical needs; organize pertinent literature; describe biological control / IPM projects in the counties, successful and unsuccessful; and increase State Major Program (SMP) impact and efficiency. (Design Team, graduate student)
2. Link extension specialists and researchers with county extension faculty - list SMP members; identify expertise on specific crops, pests and natural enemies; form multi-institutional partnerships for research and teaching; coordinate resources and expertise; establish goals, determine resource needs, monitor implementation, and evaluate outcomes; and conduct annual meetings. (Design Team, O'Brien)

3. Enhance teaching of biological control / IPM - deliver training to county extension faculty, provide slide sets and PowerPoint presentations of pests and associated natural enemies, develop and disseminate other educational materials, and encourage team teaching. (Cuda, graduate student)
4. Establish and maintain a biological control / IPM website - establish a listserv to facilitate and increase communication; maintain linkages to county, state, national and international IPM programs, and connect with Pest Alert, Featured Creatures, School IPM and other local sources of information. The website also will be a portal to relevant IFAS web-based information systems such as the Electronic Digital Information Source (EDIS), the Distance Diagnostic Information System (DDIS), and the Florida Automated Weather Network (FAWN) (UF-IFAS 1999). (Fasulo, Douglas)
5. Advance commercial biological control / IPM in Florida - Increase opportunities for biological control business in Florida, encourage technology transfer and natural enemy production and supply within the state, provide access to the greater biological control community, assist with regulatory process for importation and release of beneficial living organisms, and interface with county and state IPM programs. (Leppla)
6. Determine educational and technical needs and opportunities for biological control and IPM - conduct strategic planning and establish shared objectives for targeted pests, identify promising natural enemies, and make rapid progress in solving problems of Florida's agricultural and non-agricultural clientele. (Design Team).

EXPECTED OUTCOMES

Developing effective training in biological control for IPM programs requires dedicated extension professionals and willing and cooperative growers. In order to succeed, growers must realize that implementing biological control as part of an IPM program is a more complex endeavor than simply treating pests when they occur. Therefore, the goals of this project are to:

- a. Improve the understanding and appreciation of biological control and pesticide alternatives in the farming, gardening, natural resources and urban communities;
- b. Reduce reliance on pesticides through the increased adoption of biological control and pesticide alternatives;
- c. Develop an effective network of extension specialists, county faculty, and mentoring farmers dedicated to delivering biological control technology within the context of IPM to user groups;
- d. Incorporate this pilot training program into the curriculum for the new Doctor of Plant Medicine degree program recently created at the University of Florida, and
- e. If the project is successful in Florida, partner with the newly established regional Pest Management Center located in Florida to implement the training program in other southern states, Puerto Rico and the U.S. Virgin Islands.

ACCOMPLISHMENTS/MILESTONES

1. Assist county faculty / mentoring groups in delivering information-

This program has applied for and will receive State Major Program status in the University of Florida Cooperative Extension system. We have received permission to schedule a statewide in-service in IPM emphasizing biological control for extension faculty via satellite teleconferencing. The in-service has been scheduled for April 10, 2002. SARE grant funds were vital to getting this workshop scheduled.

Dr. Jim Cuda was a guest speaker at the 2001 Master Gardener Volunteer Training workshop held in Sarasota on September 27. This workshop, jointly sponsored by Manatee and Sarasota Counties, gave us an opportunity to showcase our new IPM initiative and provide the attendees with practical info on IPM. The same presentation, with modifications, was given at the Environmental Horticulture Agents Conference and In-service Training 25 October 2001. Dr. Cuda was also co-instructor at the Biological Control of Melaleuca: Managing Melaleuca with the Snout Beetle course held November 14, 2001, by the Lee County, Florida, Extension Service in Fort Myers, Florida.

Dr. Norman Leppla Leppla, presented "Implement a Successful IPM Program in Your Own Yard" at the National Master Gardener Conference, Orlando, Florida, 05/30/01, "IPM and Biorationals for Master Gardeners," at the 2001 Master Gardener's Summer Institute, Ocala, Florida, 07/24/01, "Integrated Pest Management in Florida," at Greenteam, Multi-County Cooperative Extension, Tavares, Florida, 11/09/01. He also served as one of two coordinators of a symposium on augmentative biological control at the annual meeting of the Florida Entomological Society held August 5-9, 2001 at Hutchinson Island, Florida. Dr. Cuda presented on the "Extension support for implementing augmentative biological control in Florida" at the same symposium. Both Drs. Leppla and Cuda gave other presentations on IPM or biological control not listed here.

2. Link extension specialists and researchers with county extension faculty-

In 2001, through the Florida IPM and Biological Control listserv, we have solicited extension faculty for their information needs. One need identified was that of information on biological control of *Gaeumannomyces graminis* var. *graminis* (Take-all disease) on turfgrass. Program staff linked with University of Florida researcher Dr. Monica Elliott, who provided participants with a synopsis of current Take-all research efforts. Similar discussions have resulted in information being circulated on the side effects of pesticides on natural enemies, biological control of chinch bug, and a report by Dr. Leppla on what is known about the effects of companion planting on natural enemies.

In October and November of 2001, two exploratory meetings were held to form cooperative projects between staff of this program and staff of the Center for Biological Control, the Center for Cooperative Agricultural Programs, and the Center for Viticulture Science at FAMU (a historically black university). SARE funds in the amount of \$7067 were transferred to the director of the Center for Biological Control to develop a demonstration project on IPM for natural resources. A grant of \$2675 also was received from the FAMU Center for Cooperative Agricultural Programs to support this program.

An interview with our IPM Coordinator, Dr. Norman Leppla, in the November 2001 *Citrus & Vegetable* trade magazine brought a request from Cherry Lake, the largest woody ornamental nursery

in Florida. The nursery is seeking certification in IPM, which they recognize will save money, protect the environment and employees, and be a positive tool for marketing their product. In 2002 our program is working to identify the best certification tools for this producer and others.

3. Enhance teaching of biological control / IPM-

Groundwork has been laid in 2001 for the 2002 production of demonstration projects for master gardeners involving the use of natural enemies and other IPM or biological control methods. The Alachua County extension office will serve as the initial project site, the Entomos company will donate natural enemies, and permission has been granted for the hiring of a Doctor of Plant Medicine (DPM) graduate assistant to implement the project. The 2002 project in Alachua County will serve as a model for eventual application throughout Florida.

A grant proposal was submitted to the Southern Region IPM Special Events Program to obtain funding to establish an IPM demonstration project for small farm strawberry producers in north central Florida. DPM students will be recruited for work study on this demonstration project as well. The DPM (Doctor of Plant Medicine) program is a unique professional graduate program at the University of Florida. Graduates are trained in all areas of plant pathology, pest control, and plant nutrition.

Work has begun on the production of a literature review of companion planting information. The review will eventually be published as reference material for extension faculty and staff.

The University of Florida Institute of Food and Agricultural Sciences (IFAS) Communications Department has accepted a proposal from this program to create a television spot highlighting successful examples of IPM in Florida. Shooting for the spot is scheduled to begin February 2002. The spot will air on a regional news program and is intended to raise awareness about the benefits of IPM for producers, consumers, and the environment.

4. Establish and maintain a biological control / IPM website-

The Florida IPM and Biological Control Program Web site and listserv were established by May of 2001. A DPM graduate assistant (Daniel Sonke) was hired in September 2001 to compile information and make it available through the site. Additions continue to be made as resources are identified. At present (December 2001), the website (<http://biocontrol.ifas.ufl.edu>) contains:

Powerpoint presentations on IPM-related topics for use by extension faculty – 18

Software tutorials on IPM-related topics – 6

Links to 6 online image sites for images of pests and natural enemies.

News releases on IPM and Biocontrol related topics – 19

Links to resources for determining side-effects of pesticides on natural enemies – 5

A search engine for searching information on the site and on all University of Florida websites

Links to online resources for general IPM and biocontrol-related information – 53

Links to the University of Florida Distance Diagnostic and Identification System (DDIS) for Extension, the Florida Automated Weather Network (FAWN) and the IFAS Extension Bookstore.

Links to reports about IPM activities in Florida and the nation – 11

Links to information on specific pests, natural enemies, or pest cycles – 456, including 276 links to “Featured Creatures” fact sheets from the University of Florida Entomology and Nematology Web site.

A list of contacts who have agreed to answer extension faculty IPM and biological control questions.

The companion listserv was established for discussion about IPM and biological control topics. This is also used for informing users about additions to the Web site.

5. Advance commercial biological control / IPM in Florida-

The Entomos LLC company is located near the University of Florida campus in Gainesville, Florida, and has been very cooperative with program staff. Entomos has agreed to donate natural enemies for use in Master Gardener projects under development for 2002 and will benefit from data to be gathered in the projects.

The conference, "Growing Partnerships in Biocontrol" was organized, funded and chaired with cooperation from the Florida IPM and Biological Control Program as the first international meeting of the Association of Natural Bio-control Producers and International Biocontrol Manufacturer's Association. Held in Washington, DC October 25-27, 2001, the conference was for enhancing international collaboration, establishing common goals, and harmonizing quality control standards for natural enemies. This historic joint meeting was an unprecedented opportunity to discuss issues that are critical to the future of commercial biological control. Directions were determined for harmonizing quality control standards in North America, Europe and throughout the world. Subjects of common interest were laboratory and field quality control tests, new technologies and products, regulatory challenges, and ways to promote biological control. The conclusion will be a brainstorming session on international cooperation and action. The conference was attended by the major international leaders in commercial biological control, along with their collaborators in allied industries and government. Representatives were present from individual companies, the International Organization for Biological Control (Global Body, Arthropod Mass-Rearing and Quality Control Working Group), U.S. Department of Agriculture (National Biological Control Institute, Animal and Plant Health Inspection Service, Agricultural Research Service), state departments of agriculture, U.S. and European universities, and other affiliated groups. Members of the Australasian Producers Association and South African Insectaries Association have been invited and we expect colleagues from Asia and South America to participate in the future.

6. Determine educational and technical needs and opportunities for biological control and IPM –

The first draft of a survey to be sent to all extension faculty in Florida has been completed. The survey asks extension staff about their specific IPM and biological control needs. The survey will be sent out in Feb. 2002 via e-mail. The survey asks about needs in education, online information, consulting, publications, presentations, networking, and the like. Extension faculty who show interest by completing surveys will also receive a copy of *IPM in Practice: principles and methods of Integrated Pest Management* to help them implement IPM in agriculture, urban and natural landscapes.

The survey results will be used to decide what type of extension materials (publications, multi-media presentations, online resources, etc.) about IPM and biological control in Florida we will develop in 2002 and beyond.

The program listserv has also been used to ask extension faculty for their IPM and biocontrol needs. This has resulted in information being gathered and redistributed to listserv members on subjects such as take-all disease of St. Augustine grass and chinch bugs in turf. This listserv is ongoing and will continue in 2002.

IMPACT AND CONTRIBUTIONS/OUTCOMES

The program funded by this SARE grant has developed an effective network of extension specialists, county faculty, and mentoring farmers dedicated to delivering biological control technology within the context of IPM to user groups. The listserv created for information exchange has 65 participants including extension specialists, county faculty, and researchers. Information exchange has been facilitated by the listserv (examples given above), educational opportunities are scheduled for extension staff (satellite teleconferencing on April 10), and cooperative demonstration projects are being built (Strawberry IPM, Master Gardener Biological Control). The 35-member program design team includes county extension faculty, researchers in entomology and plant pathology from around the state, industry representatives.

Organizational linkages included the Florida Nurserymen and Grower's Association; Disney Epcot; the IFAS, Department of Entomology and Nematology, Department of Plant Pathology; the U.S. Department of Agriculture, Agricultural Research Service and Animal and Plant Health Inspection Service; Florida Department of Agriculture and Consumer Services, Division of Plant Industry, and Commissioners Office; FAMU, Center for Biological Control (a historically black university); and Entomos LLC.

Through the program funded by this SARE grant, the farming, gardening, natural resources and urban communities of Florida are gaining understanding and appreciation of biological control and pesticide alternatives, and assistance has been provided to county faculty in delivering information on IPM and biological control.

This program has applied for and will receive State Major Program status in the University of Florida Cooperative Extension system. County extension faculties are members of the program, and serve on the Design Team. Statewide in-service training in IPM and biological control will be provided for extension faculty via satellite teleconferencing. This training will be funded by a SARE grant. Similar training was provided to the 2001 Master Gardener Volunteer Training workshop for Manatee and Sarasota Counties and the Environmental Horticulture Agents Conference. "Implement a Successful IPM Program in Your Own Yard" was presented at the National Master Gardener Conference, "IPM and Biorationals for Master Gardeners," at the 2001 Master Gardener's Summer Institute, and "Integrated Pest Management in Florida," at the Greenteam, Multi-County Cooperative Extension meeting. A symposium on augmentative biological control was held at the annual meeting of the Florida Entomological Society.

A November 14, 2001, course in Biological Control of Melaleuca: Managing Melaleuca with the Snout Beetle given by Dr. Cuda in Fort Myers, Florida, had 53 participants. These were surveyed before and after the course. Before the course, 35.8% of participants stated that their "knowledge of biological control" was below average or poor. After the course, only 5.7% thought their knowledge of biological control to be below average and none felt it to be poor. Before the course 17% felt their biological control knowledge to be above average, while afterwards this number had increased to 60.4%. A full 100% said that they would recommend the course to others.

Similarly, at the 2001 Master Gardener Volunteer Training workshop held in Sarasota on September 27, Dr. Cuda surveyed his audience. Before the presentation, 78.3% of the 37 participants rated their biological control knowledge as below average or poor, while after the presentation this number had decreased to 5.6% and the number rating their biological control knowledge as at or above average had increased from 16.2% to 94.4%. The number who stated that they would recommend the seminar to others was 85.7%.

Master gardener activities were both state and national.

The program funded by this SARE grant is reducing reliance on pesticides through the increased adoption of biological control and pesticide alternatives. An interview with our IPM Coordinator, Dr. Norman Leppla, in the November 2001 *Citrus & Vegetable* trade magazine brought a request for assistance from Cherry Lake, the largest woody ornamental nursery in Florida. In 2002 our program is working to identify the best IPM emphasizing biological control methods for this and similar producers.

The program funded by this SARE grant is being incorporated into the curriculum for the new Doctor of Plant Medicine (DPM) degree program recently created at the University of Florida. One DPM student already serves on the steering committee for this program, and others will be recruited in the coming months for key positions with demonstration projects in IPM emphasizing biological control. In the month of January, Dr. Norman Leppla will be participating in educational and professional development seminars for DPM students and other students learning IPM and/or Biological Control through presentations.