Biological Control of Insect Pests

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V(A). Planned Program (Summary)

1. Name of the Planned Program

Biological Control of Insect Pests

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
215	Biological Control of Pests Affecting Plants				100%
	Total				100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	2.0
Actual	0.0	0.0	0.0	3.5

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	0	350148
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	12394
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	192021

V(D). Planned Program (Activity)

1. Brief description of the Activity

A permit request was submitted to USDA-APHIS to allow assessment of several foreign isolates of Metarhizium anisopliae and Beauveria bassiana against Nezara viridula.It is under review by APHIS. Research to better understand risk in working with entomophagous biological control agents was conducted. Studies on the biology and ecology of Planococcus minor, a potentially serious invasive pest was carried out in Trinidad. A digital identification tool for weevil biological control agents was released.Efforts to develop a digital identification tool for economically important weevils are continuing.

Research to assess the insect-plant interactions that may affect population dynamics, behavior and ecology of thrips in regard to tropical soda apple (an important weedy host) was initiated.

2. Brief description of the target audience

The target audience include: small-scale farmers, organic vegetable producers, organic gardeners, vegetable producers, extension workers and biological control scientists/entomologists.

The target audiencefor this research includes: Farmers, federal and state agencies, researchers, organic producers and conservationists across the nation. Part of the research is specifically targeted to regulators of biological control.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	0	0	0	0
2007	150	30	50	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2007:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	1	3	4

V(F). State Defined Outputs

Output Target
Output #1

Output Measure

Identification of biological control agents against indigenous and non-indigenous pests. Development of effective and efficient IPM strategies. Research and extension publications. Training of graduate and undergraduate students

Year	Target	Actual
2007	0	4

V(G). State Defined Outcomes

O No.	Outcome Name
1	Better control of pest species using natural enemies; More efficient production and greater profitability; Efficient use of agricultural chemicals (pesticides) by producers; Development of better pest identification tools; Reduction in spread of invasive species; Well-trained graduate and undergraduate students in biological control research area.
2	Improved knowledge base in identification of invasive species and identification of biological control agents.

Biological Control of Insect Pests
Outcome #1

1. Outcome Measures

Not reporting on this Outcome for this Annual Report

2. Associated Institution Types

3a. Outcome Type:

3b. Quantitative Outcome

Year	Quantitative Target	Actual

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area

V(H). Planned Program (External Factors)

External factors which affected outcomes

Natural Disasters (drought,weather extremes,etc.)
Public Policy changes
Government Regulations
Competing Programmatic Challenges
Other (Permitting Requirements)

Brief Explanation

The delay in getting permit from USDA-APHIS to import some of the entomophagous biological control has affected the progress and some of the outcomes. The permitting process is under review by APHIS and hopefully will be approved in the near future.Also, the insect rearing facilities need to be updated to meet current agency requirements.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

Before-After (before and after program)
During (during program)
Time series (multiple points before and after program)

Evaluation Results

The Biologal Control Programcomprises a partnership betweenFAMU, the Agricultural Research Service and the Animal and Plant Health Inspection Service of the United States Department of Agriculture. The two USDA agencies have placed three scientists and three staff members at FAMU to conduct cooperative research on vegetable pests and to explore economically important biological control agents. The FAMU program receives approximately $250,000 per year in support from the agencies. The track record of the program in training students, publications and grant activity has been outstanding. Currently, there are 4 Ph.D. and 3 MS students enrolled in this program. Several identification tools and keys for various insect groups have been released. Working with the Caribbean Invasive Species Group, the Program assisted in designing on-line tools for the port authority in Florida to quickly identify the invasive insect species before they could become a major pest in the United States.

Key Items of Evaluation

A digital identification tool for weevil biological control agents.
Four doctoral students enrolled in the Biological Control Program at FAMU.
Development of Lucid keys and other expert systems.