

**V(A). Planned Program (Summary)**

**Program # 10**

**1. Name of the Planned Program**

Integrated Pest Management

Reporting on this Program

**V(B). Program Knowledge Area(s)**

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
205	Plant Management Systems	10%		0%	
206	Basic Plant Biology	5%		0%	
211	Insects, Mites, and Other Arthropods Affecting Plants	10%		11%	
212	Pathogens and Nematodes Affecting Plants	5%		22%	
213	Weeds Affecting Plants	5%		18%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	5%		0%	
215	Biological Control of Pests Affecting Plants	10%		2%	
216	Integrated Pest Management Systems	50%		43%	
512	Quality Maintenance in Storing and Marketing Non-Food Products	0%		4%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

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

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	3.5	0.0	3.0	0.0
Actual Paid Professional	5.8	0.0	6.5	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
157109	0	260328	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
157109	0	295762	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	2088249	0

### V(D). Planned Program (Activity)

#### 1. Brief description of the Activity

Research and extension programming will be conducted many IPM areas, including the following:

1. urban entomology and plant pathology
2. plant disease and nematode diagnostics
3. cotton and corn pest management
4. greenhouse tomato pest management
5. soybean management by application of research and technology
6. public health issues related to vector control

#### 2. Brief description of the target audience

The target audience for this program includes home pest control providers, homeowners, cotton producers, corn producers, soybean producers, greenhouse tomato producers, and public health officials.

#### 3. How was eXtension used?

The resources provided through eXtension were used to supplement and enhance our public learning experiences provided by MSU Extension agents and specialists. eXtension was also used as a resource in state-based planning processes. Overall, 212 MSU employees are eXtension users, with 15 new registrations during this reporting period. Further, MSU Extension has 64 employees that serve on one or more of the 72 Communities of Practice (COPs); MSU Extension employees are member of 33 COPs. Twelve MSU Extension employees serve as a leader for a COP, leading 9 COPs. MSU Extension personnel are members of the Urban Integrated Pest Management COP and Imported Fire Ants COP.

### V(E). Planned Program (Outputs)

#### 1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	50697	29924	0	0

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

### Patent Applications Submitted

Year: 2012

Actual: 0

### Patents listed

## 3. Publications (Standard General Output Measure)

### Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	4	39	0

## V(F). State Defined Outputs

### Output Target

#### Output #1

##### Output Measure

- Number of clientele attending workshops, seminars, short courses, and demonstrations.

Year	Actual
2012	13437

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Number of producers adopting IPM production practices.
2	Number of producers increasing profits.
3	Number of producers reducing environmental impacts of pesticide use.

## **Outcome #1**

### **1. Outcome Measures**

Number of producers adopting IPM production practices.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2012	2687

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

1) Alternatives to conventional fungicides are needed by homeowners, Horticultural growers, and peanut growers to address environmental and personal safety and management needs not met by products currently available. 2) Most growers do not know why their crops decline/die and use pesticides indiscriminately to address the problem. 3) Peanuts are new crop to MS. Diseases common to other production regions may or not be here, resulting in unneeded or ineffectual disease management. 4) Soil compaction seems to contribute to decline of Urban trees.

#### **What has been done**

1) Conducted biological "fungicide" trials in greenhouse poinsettias and peanuts to control common production diseases. Collaborated with greenhouse and sweetpotato growers who desire to try such products by helping them to establish and rate their private trials. 2) Received grower samples and visited their production sites to identify and effectively address pest problems. 3) Created a disease calendar linked to images to help growers and consultants identify the problems. Conducted trials for white mold.

#### **Results**

1) Biological 'fungicides' work erratically in apparently similar circumstances, so products not fully recommended. 2) Site visits and diagnoses produced major savings in (crops/number of producers): pansy/6, impatiens/2, chrysanthemum/4, poinsettia/6 and the basil/1. Peanut grower visits saved numerous fungicide sprays planned for non-problematic leaf spots. 3) Determined that a fungicide application in white mold history fields <45 days after planting, when soil temperatures at planting exceed ca. 70° F, may reduce problems >45 days later.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
205	Plant Management Systems
206	Basic Plant Biology
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

## **Outcome #2**

### **1. Outcome Measures**

Number of producers increasing profits.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Condition Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2012	2150

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Invasive species are a widespread problem in terrestrial and aquatic agroecosystems across the U. S. Invasive species increase the cost of growing row crops, grazing cattle, raising timber, managing highways, preventing flooding, managing recreational lakes, maintaining turf, and preserving constructed installations. These species include pathogens of plants and animals, insect pests, weeds, and vertebrates. The best solutions are to empower local landowners and governments to manage these issues, and coordinate between groups involved in local efforts.

#### **What has been done**

We have developed the Invasive Plant Atlas of the MidSouth to train volunteers in identifying problem plant species, and recording locations on the accompanying webpage ([www.gri.msstate.edu/ipams](http://www.gri.msstate.edu/ipams)). In this, we have partnered extensively with local, state, and federal government agencies and nongovernment organizations (such as the Mississippi Cooperative Weed Management Area) to improve the detection, monitoring, and early response for these

and delivered outreach products for the use of public and private landowners.

### Results

In 2012, we held two workshops for the Invasive Plant Atlas of the MidSouth ([www.gri.msstate.edu/ipams](http://www.gri.msstate.edu/ipams)) in Mississippi, training 32 volunteers. We also organized and led a training workshop on invasive aquatic plant management for approximately 50 attendees at the MidSouth Aquatic Plant Management Society. We have managed two invasive species webpages: Invasive Plant Atlas of the MidSouth ([www.gri.msstate.edu/ipams](http://www.gri.msstate.edu/ipams)) and the Cactus Moth Detection and Monitoring Network ([www.gri.msstate.edu/cactus\\_moth](http://www.gri.msstate.edu/cactus_moth)). Our specific collaborations include the Mississippi Cooperative Weed Management Area, Pearl River Valley Water Supply District, Mississippi Department of Agriculture and Commerce, and others.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
216	Integrated Pest Management Systems

### Outcome #3

#### 1. Outcome Measures

Number of producers reducing environmental impacts of pesticide use.

#### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

#### 3a. Outcome Type:

Change in Condition Outcome Measure

#### 3b. Quantitative Outcome

Year	Actual
2012	1075

#### 3c. Qualitative Outcome or Impact Statement

##### Issue (Who cares and Why)

Traditionally Mississippi faces almost exclusively tobacco thrips in cotton which are easily controlled with insecticide seed treatment. However, in 2012 the primary species present in MS cotton was Western flower thrips which are not controlled with insecticide seed treatments or many of the traditional foliar insecticide sprays.

##### What has been done

As soon as cotton began emerging across the state, severe injury from thrips feeding began to show up and foliar treatments began to be applied. It was discovered that the traditional organophosphate chemistry used for foliar thrips control was not adequate, and producers began to reapply the same products. MSU Extension identified the species as Western flower thrips, only controlled with insecticides in the spinosad family. MSU Extension immediately released information with recommendations to control this pest.

#### **Results**

In 2012, producers averaged 2.3 foliar applications for Western flower thrips on 85% of the acres (480,000 acres planted). It is conservatively estimated that if producers would have continued to apply the incorrect insecticides to control this pest, it would have required at least one additional application on (480,000 x 85% = 408,000 acres) of the cotton acres as well as unneeded insecticide into the environment. This is a cost savings to producers directly related to quick action of MSU Extension of \$3,672,000.

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

#### **V(H). Planned Program (External Factors)**

##### **External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

##### **Brief Explanation**

{No Data Entered}

#### **V(I). Planned Program (Evaluation Studies)**

##### **Evaluation Results**

MSU Extension agents and specialists, as well as MAFES faculty, used a variety of recommended methods to gather needed information. Specific strategies will be initiated and utilized for collecting evaluation information to determine program outputs and outcomes (see impact statements for examples).

In FY 2012, MSU Extension agents and specialists were required to submit four quarterly reports (January, April, July, and September). This quarterly report collects information about the number of contacts, types of contacts, and number of programs conducted in each Priority Planning Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements is also made. The evaluation results are a combination of this quantitative and qualitative data.

MAFES scientists operate research programs under an approved Hatch or Hatch-Multistate CRIS project plan of work. Outputs, outcomes, target audiences, and impacts are reported annually through the CRIS (REEport) system. Annual and project termination reports are developed by scientists and reviewed by Department Heads and the Director's office before submission to USDA-NIFA through REEport.

### **Key Items of Evaluation**