

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

**Program # 9**

**1. Name of the Planned Program**

Plant Protection for the 21st Century

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

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
211	Insects, Mites, and Other Arthropods Affecting Plants	15%			
212	Pathogens and Nematodes Affecting Plants	15%			
213	Weeds Affecting Plants	15%			
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	5%			
215	Biological Control of Pests Affecting Plants	10%			
216	Integrated Pest Management Systems	40%			
	<b>Total</b>	100%			

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

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

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	4.0	0.0	0.0	0.0
Actual	5.0	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
175518	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
182335	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

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

**1. Brief description of the Activity**

Campus and regional faculty members will conduct several regional workshops and short courses in partnership with commodity groups and private industry. Venues include commodity district meetings, soil and crop conferences, Ag Science Week, regional short courses, field days and demonstration projects. A suite of full color print publications related to pest and crop management will be developed, published and revised. Several websites are available for public use. The integrated pest management site also contains interactive information for clientele interested in black cutworm status. Weekly teleconferences among state and regional faculty members will be held during spring, summer and autumn for timely commodity and pest updates. Funding will be provided to regional extension specialists for local demonstrations of integrated pest management practices.

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

The primary target audiences are crop producers and their advisers, and private and commercial pesticide applicators. Programs will be developed for crop producers with a diversity of farm sizes, crops produced, and land resource bases. Crop advisers and service providers are important targets because of their extensive contact with crop producers, which makes them ideal intermediates for passing on Extension programming to a wider range of producers than could be reached by Extension personnel alone. Because the future of Missouri agriculture depends on young professionals replacing retiring farmers and personnel, youth organizations including FFA, 4-H, Young Farmers, and their teachers will receive specially designed programs.

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

**1. Standard output measures**

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Plan</b>	3000	5000	500	0
<b>Actual</b>	3730	7238	934	0

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

**Patent Applications Submitted**

Year: 2010  
 Plan: 0  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2010	Extension	Research	Total
<b>Plan</b>	0	0	

<b>Actual</b>	0	0	0
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**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Provide in-service training session(s) for regional Extension specialists on an annual basis.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	3	3

**Output #2**

**Output Measure**

- Develop or revise guide sheets on an annual basis for regional Extension specialists to use in producer meetings.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	5	10

**Output #3**

**Output Measure**

- Develop or revise plant protection program manuals on an annual basis for regional Extension specialists to use in producer meetings.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	3	2

**Output #4**

**Output Measure**

- Two print and electronic newsletters devoted to pest and crop management will be developed and distributed to regional specialists and other clientele.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	12	34

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

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

O. No.	OUTCOME NAME
1	50% of MO producers and crop advisors will indicate they have increased knowledge and plan to adopt at least one IPM strategy and/or system(s) into their operation.
2	Two thousand (2,000) private pesticide applicators will meet the legal need of certification by improving their knowledge of pesticides and their use.

## **Outcome #1**

### **1. Outcome Measures**

50% of MO producers and crop advisors will indicate they have increased knowledge and plan to adopt at least one IPM strategy and/or system(s) into their operation.

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

- 1862 Extension

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

Change in Action Outcome Measure

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

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	0	0

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

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

More than 30 different plant species are important to Missouri agriculture. This large number of species challenges pest management specialists to offer appropriate pest management recommendations.

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

The MU Integrated Pest Management Program involves an integrated approach by the various disciplines to develop and implement a comprehensive and multidisciplinary pest management program - including seminars, workshops, field days, development of curricula, guide sheets and manual, in-service training, Web sites, newsletters, weekly teleconferences and applied demonstrations.

#### **Results**

The MU Extension IPM Program, through these multiple approaches, educated Missouri farmers and their advisors about the purpose, foundation and implementation of Integrated Pest Management; disseminated information about effective and environmentally sound plant pest management practices; identified, monitored and evaluated existing and potential plant pests; and demonstrated IPM principles at the local level. The program emphasis areas were: IPM in Agronomic Crops, IPM in High Value/High Input or Intensively Managed Crops, and IPM support for Pest Diagnostics Facilities. This comprehensive approach and the selected emphasis areas are clearly aligned with the federal IPM Roadmap and other discussions related to future approaches for IPM education. Specific examples of the programs impact are listed in the impact section of this report.

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

<b>KA Code</b>	<b>Knowledge Area</b>
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- 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
- 216 Integrated Pest Management Systems

## **Outcome #2**

### **1. Outcome Measures**

Two thousand (2,000) private pesticide applicators will meet the legal need of certification by improving their knowledge of pesticides and their use.

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

- 1862 Extension

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

Change in Knowledge Outcome Measure

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

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	0	0

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

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

The Missouri Pesticide Use Act establishes that anyone using any pesticide which is classified for restricted use for the purposes of producing any agricultural commodity on property owned or rented by the applicator or their employer or on the property of another person, if used without compensation other than trading of personal services between producers of agricultural commodities, must complete the University of Missouri Extension Certified Private Applicator Training Program and be certified by the Director of Agriculture.

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

To meet the legal requirement mandated by the Environmental Protection Agency and by the Missouri Department of Agriculture's Bureau of Pesticide Control, an aspiring private applicator must fulfill one to the following: 1) attend a training program conducted by a local regional extension specialist, or 2) complete a self-study tutorial course through the viewing of a training DVD (135 minutes) and M-87 Private Pesticide Applicator Reference Manual in their local University of Missouri Extension Center. To keep the certification valid for a licensed private applicator, the applicator is required to renew once every five years by repeating the same process.

#### **Results**

Thirty-one regional extension specialists conducted formal educational programs for certifying

and recertifying private pesticide applicators in Missouri's 114 counties. This training provided training on such topics as integrated pest management, pesticide labels, pesticide application and storage, pesticide safety, personal protective equipment, selection and proper use of application equipment, health risks, and regulatory requirements. The Private Pesticide Applicator Training (PPAT) Program at the University of Missouri provided certification and recertification training to approximately 2087 agricultural producers this past year. In addition the program developed a new private pesticide training video. This video will be used in MU Extension Centers for training walk-in clientele and as a resource for formal training events hosted by regional extension specialists.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
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
216	Integrated Pest Management Systems

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

##### External factors which affected outcomes

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

##### Brief Explanation

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

##### 1. Evaluation Studies Planned

- After Only (post program)
- Before-After (before and after program)
- During (during program)

#### Evaluation Results

Some major program accomplishments this past year included: A team of state and regional Extension specialists collaborated in four regions to provide interactive day-long conferences under the overall theme of "Crop Management Strategies in an Era of Uncertainty." These presentations involved discussions of the integration of management practices and how this integration affects the various components of the interaction and an

assessment of the risks, benefits and costs of the whole system management approach. Comments, suggestions and alternative practices were solicited from participants via audience response systems and incorporated into the scenarios developed during the presentations. The conferences reached audiences that grow more than 660,000 acres of corn and soybeans in Missouri. Attendees rated the overall program content an 8.8 on a scale of 1 to 10 and 93% of those in attendance indicated they would attend a similar program next year. The participants also rated the conference proceedings and other handouts distributed at the conferences a 9.3. Many positive comments were also returned on the written evaluation forms pertaining to the use of audience response systems and the interactive nature of each presentation.

The MU Extension Soybean Rust Management Team surveyed Certified Crop Advisors (CCA's) concerning the effectiveness of the Missouri soybean rust monitoring program and their preferred sources of information about rust. The survey results showed that 100% felt the national rust website was useful or very useful, 100% used the information available there some or extensively when making recommendations to farmers about fungicides for soybean rust management, 94% would be concerned if the website was not available, and 100% felt University of Missouri Extension was effective or very effective in conveying information about soybean rust, and 59% indicated University of Missouri Extension was their preferred source of information about soybean rust.

A day-long field day and in-service education training program was conducted at the Bradford Research and Extension Center. Participants included agricultural retailers, technical service and research and development representatives from throughout the agricultural pesticide industry, crop consultants, extension faculty, farmers, and personnel from state and federal agencies. This training covered 1) the most recent information and recommendations pertaining to the management of the most prevalent weed, insect, and disease problems in Missouri's crops and forages, 2) information on the utility of new pesticides, pest management techniques, and/or genetically modified crops in Missouri, and 3) results from ongoing, collaborative research projects that address new and emerging pest management problems in Missouri's crops and forages. Attendees influence decisions on approximately 12 million acres of cropland throughout the Midwest. Many of these attendees are chemical industry representatives and crop consultants that make decisions on a large number of acres across several states. On a scale of 1 to 5 with 1 being poor and 5 being excellent, attendees rated this year's overall program content a 4.34.

## **Key Items of Evaluation**