

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

**Program # 12**

**1. Name of the Planned Program**

Horticulture and the Reduction of Pests and Disease Outbreaks in Plants

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	20%		40%	
211	Insects, Mites, and Other Arthropods Affecting Plants	40%		10%	
212	Pathogens and Nematodes Affecting Plants	20%		20%	
215	Biological Control of Pests Affecting Plants	10%		20%	
216	Integrated Pest Management Systems	10%		10%	
	<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	5.0	0.0	8.0	0.0
Actual Paid Professional	3.3	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
140036	0	309708	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
136431	0	359646	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**

- Identify, select or breed species and cultivars of plants which are better adapted for use in the landscapes and environment of Rhode Island and the Northeastern US.
- Develop and deliver training for green industry professionals and gardeners emphasizing the use of plants that require less water, labor, nutrients, and pesticides.
- Reduce pest-induced damage to horticultural and forest plants, while maintaining environmental quality by minimizing the use of agrochemicals.
- Develop novel non-chemical methods of controlling invasive plant species.

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

We have active partnerships with agricultural producers of turf grass and ornamental plants, administered by a joint advisory committee of the Plant Sciences department, the RI Nursery and Landscape Association (RINLA) and the New England Sod Producers Association. We have research and demonstration projects on several nurseries and we work closely with RINLA to determine research needs and to design educational programs. We have similar working relations with the RI Golf Course Superintendents Association. We also target consumers through educational outreach programs designed to promote acceptance of local products.

Producer and commodity groups: The Rhode Island Nursery and Landscape Association (RINLA) represents nurserymen, landscapers, tree farms and arborists. The Rhode Island Greenhouse Growers Association represents greenhouse growers and vegetable producers. The Rhode Island Fruit Growers Association represents orchards and small fruit growers. The RI Farm Bureau acts as an umbrella for RI agriculture with national links. Contacts are also maintained with regional commodity groups such as the New England Nursery Association and New England Floriculture, Inc. Given the size of the industry, there are numerous direct contacts between the Director, Station faculty and professionals (research and outreach) and industry representatives. RINLA has made major contributions to the University, including support for new hires, scholarships, and the development of a formal garden demonstrating sustainable plantings (see a virtual tour of this facility at [riaes.cels.uri.edu/explore](http://riaes.cels.uri.edu/explore)). The principle commodity groups representing turf grass production and management in Rhode Island are the Rhode Island Golf Course Superintendents Association (RIGCSA), the New England Sod Producers Association (NESPA), and the New England Regional Turfgrass Foundation (NERTF). We have strong working relationships with many of the individual golf course superintendents and sod producers throughout Rhode Island. Through our Winter School and Green Share programs, we provide annual educational and re-certification programs for growers, creating an excellent forum for exchange of information from this vital stakeholder group.

### **3. How was eXtension used?**

eXtension was not used in this program

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

### **1. Standard output measures**

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1700	700	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	11	15

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Peer reviewed publications

Year	Actual
2012	15

**Output #2**

**Output Measure**

- Books and monographs

Year	Actual
2012	0

**Output #3**

**Output Measure**

- Abstracts

<b>Year</b>	<b>Actual</b>
2012	2

**Output #4**

**Output Measure**

- Conference proceedings

<b>Year</b>	<b>Actual</b>
2012	0

**Output #5**

**Output Measure**

- Technical documents, fact sheets and bulletins

<b>Year</b>	<b>Actual</b>
2012	2

**Output #6**

**Output Measure**

- Workshops

<b>Year</b>	<b>Actual</b>
2012	0

**Output #7**

**Output Measure**

- Website development and refinement

<b>Year</b>	<b>Actual</b>
2012	0

**Output #8**

**Output Measure**

- Public presentations

<b>Year</b>	<b>Actual</b>
2012	0

**Output #9**

**Output Measure**

- Student training

<b>Year</b>	<b>Actual</b>
2012	19

**Output #10**

**Output Measure**

- Development of tools and germplasm for use in breeding grasses and ornamental plants with traits important for the development of sustainable landscapes

<b>Year</b>	<b>Actual</b>
2012	0

**Output #11**

**Output Measure**

- Release of biological control agents benefiting traditional agriculture, landscape horticulture and the environment of southern New England

<b>Year</b>	<b>Actual</b>
2012	0

**Output #12**

**Output Measure**

- MS Theses and PhD Dissertations

<b>Year</b>	<b>Actual</b>
2012	0

**Output #13**

**Output Measure**

- Professional training

<b>Year</b>	<b>Actual</b>
2012	0

**Output #14**

**Output Measure**

- Professional/scientific presentations

<b>Year</b>	<b>Actual</b>
2012	0

**Output #15**

**Output Measure**

- Post docs

<b>Year</b>	<b>Actual</b>
2012	1

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

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

O. No.	OUTCOME NAME
1	Identify and improve sustainable trees, shrubs, and grasses, with an emphasis on native species (#)

## **Outcome #1**

### **1. Outcome Measures**

Identify and improve sustainable trees, shrubs, and grasses, with an emphasis on native species (#)

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

- 1862 Extension
- 1862 Research

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

Change in Knowledge Outcome Measure

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

<b>Year</b>	<b>Actual</b>
2012	5

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

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

The program focuses on issues that are of direct relevance to the state and region. Programs on turf management and pest control benefit the robust turf industry and golf courses. Other pest control is working toward "greener" management approach and horticulture efforts directly benefits small farms.

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

Integrated management of pests has been investigated including biological control, chemical treatment and changes in practices. Approaches for increasing crop yield in RI were investigated. An array of public meetings and scientific presentations were made to disseminate the findings of this work.

#### **Results**

Naturally-occurring adelgid resistance in eastern hemlocks has been identified and is being capitalized on. Trials indicate that chlorpyrifos can provide significant control of nematode populations as a non-target effect. Advances in monitoring techniques have resulted in better timed insecticide treatments which results in fewer insecticides applied. This results in less resistance within a weevil population and insect controls continue to be effective. Temporary low tunnels were found to be the best system for production of melons in Rhode Island. The low tunnels yielded the most fruit, and the greatest total fruit weight, for all six varieties tested.

## **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
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205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes 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.)

##### **Brief Explanation**

Weather conditions resulted in the delay of several planned studies.

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

##### **Evaluation Results**

This program addresses an array of issues relevant to the state and region. Because all of the research conducted under this program is of an applied nature, evaluation is based on attendance at public presentations and meetings and implementation of practices. Public presentations related to this program attracted over 2000 attendees during the current reporting period. Additional dissemination was accomplished by technical brochures and newsletters that were obtained and requested by large numbers of participants. Assessment of implementation of the findings indicates that the practices are readily accepted by the farm and turf community. Of particular significance is the reduction in pesticides and increased efficacy that has resulted from changes in practices.

##### **Key Items of Evaluation**