2012 University of Rhode Island Combined Research and Extension Annual Report of Accomplishments and Results

Status: Accepted

Date Accepted: 05/22/2013

I. Report Overview

1. Executive Summary

In this report we describe the activities and impacts of programs associated with the Rhode Island Agricultural Experiment Station (RIAES or Station) and Rhode Island Cooperative Extension (RICE or Extension); collectively referred to as the Land Grant programs. RIAES and RICES are collaborative elements within the College of the Environment and Life Sciences (CELS) at the University of Rhode Island. Administrative oversight of RIAES and RICE is provided by the Dean of CELS. Day to day management of the Land Grant programs is provided by the Associate Dean.

The programs and projects supported within our Land Grant portfolio spans a wide range of disciplines, from the natural sciences to the social sciences. Equally important, the solutions that we share with stakeholders are based upon solid university research; research that depends on appropriate, modern infrastructure; the cutting edge tools of science; and multidisciplinary, multistate, problem-based approaches. The Land Grant programs are focused around a portfolio of 15 programs that now include: 1) Food Safety; 2) Nutrition, Health and Obesity Prevention; 3) Global Food Security and Hunger); 4) Children, 4-H and Families; 5) Sustainable Communities; 6) Vector Borne Diseases and Human Health; 7) Aquaculture and Fisheries); 8) Climate Change, 9) The Environment and Adaptive Agro-Ecosytems; 10) Community Gardening and Outreach; 11) Health and Well-being of Livestock; 12) Horticulture and the Reduction of Pests and Disease Outbreaks in Plants; 13) Natural and Environmental Economics, Markets and Policy; 14) Sustainable Energy; and 15) CELS CARES (College of the Environment and Life Sciences- Community Access to Research and Extension Services).

The Station and Extension are integral components of the missions of the College and University. The collaborative relationship with our federal partner, NIFA, has enabled our scientists, staff and students to leverage additional resources that provide contemporary knowledge, essential services and innovative programming for all Rhode Islanders.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	30.1	0.0	28.6	0.0
Actual	0.0	0.0	0.0	0.0

II. Merit Review Process

1. The Merit Review Process that was Employed for this year

- Internal University Panel
- External University Panel

- Combined External and Internal University Panel
- Expert Peer Review

2. Brief Explanation

RIAES and RICE use a Request for Proposals (RFP) strategy for the initiation of new projects/programs and the continuation of ongoing projects/programs. In short, a RFP solicits proposals in a specific target area (e.g., Equipment; Multistate Projects; Integrated Projects) that complements current areas of agricultural research and outreach or provides opportunities for expanding scope and mission of the Land Grant Programs @ URI. (Stakeholders assist in determining what needs are to be met by the RFP. See Stakeholder Input.) Proposals are reviewed by an internal panel of experts (Program Area Leaders [PALS]; rotating appointments), ad hoc University experts, and by a panel of 3 to 4 experts from outside the institution (external university panel). Proposals are ranked according to an evaluation rubric. Highest ranking proposals are then selected for funding.

RIAES and RICE also utilize Land Grant and state funding to support new faculty outside of the RFP process. Selection of new faculty for support by Land Grant funding is done by the Director in consultation with a panel of internal university experts. This allows both the Station and Extension to attract the best and brightest to complement ongoing research and outreach endeavors.

III. Stakeholder Input

1. Actions taken to seek stakeholder input that encouraged their participation

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of the general public
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals
- Survey of selected individuals from the general public

Brief explanation.

Diverse stakeholder input is solicited through robust, multi-level processes which provide opportunities for multiple channels of communication. These levels include: the project (typically sought by a principal investigator[s]), the program (sought by principal investigators or program leaders) and at an administrative level (sought by the Dean/Director). Additionally, at the administrative level, the Dean employs a variety of collaborative external groups including the Agriculture Industry Advisory Group. Hence, input from stakeholders is robust.

Although programs within the Rhode Island Plan of Work utilize different strategies for seeking stakeholder participation and input, the following were all used to encourage stakeholder participation: use of media to announce public meetings and listening sessions; targeted invitation to

traditional stakeholder groups; targeted invitation to non-traditional stakeholder groups; targeted invitation to traditional stakeholder individuals; targeted invitation to non-traditional stakeholder individuals; targeted invitation to selected individuals from general public; survey of traditional stakeholder groups; survey of traditional stakeholder individuals; survey of the general public; survey of non-traditional groups; and survey of selected individuals from the general public.

2(A). A brief statement of the process that was used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

Brief explanation.

Identification of individuals and groups was facilitated using advisory groups, internal focus groups, external focus groups, open listening sessions, needs assessments and use surveys. User groups also assisted in the identification of individuals. Examples of user groups that were solicited to identify stakeholders included the Rhode Island Agricultural Partnership (architect for Rhode Island's Five-Year Strategic Plan [http://www.farmland.org/documents/RI_agriculture_5yr_strategicplan.pdf]), the Rhode Island Department of Environmental Management Division of Agriculture, Rhode Island Nurserymen and Landscaper Association, the Rhode Island Natural History Survey, and municipal officials. One of the benefits of working in the smallest state is access to stakeholders. We're a state that's 1,000 square miles with a little over a million people.

2(B). A brief statement of the process that was used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Survey of the general public
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Survey specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Survey of selected individuals from the general public

Brief explanation.

Each of the following methods was used to collect stakeholder input: meeting with traditional stakeholder groups; survey of traditional stakeholder groups; meeting with traditional stakeholder individuals; survey of traditional stakeholder individuals; meeting with the general public; survey of the general public; meeting specifically with non-traditional groups; survey specifically with non-traditional groups; meeting specifically with non-traditional individuals; survey specifically with non-traditional individuals; meeting with invited selected individuals from the general public; and survey of selected individuals from the general public. Additionally, the Dean/Director employed an advisory group, the Agricultural Industry Advisory group, to provide input and reflections on the mission of the Land Grant programs and the direction of the programs including state needs. Importantly, each of the programs described in this report did not use all the methods listed above

3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities

Brief explanation.

Input was collected from external audiences and assessed. Emerging issues as well as continuing needs drove priority setting, action plans, budgeting and resource allocation.

Brief Explanation of what you learned from your Stakeholders

The critical element on stakeholder input is sifting wants from needs. Stakeholders are very eager to share reflections; the key strategic feat is separating the reflections into actionable steps.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1091615	0	1515871	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	1300654	0	1417246	0
Actual Matching	1094756	0	1551923	0
Actual All Other	0	0	0	0
Total Actual Expended	2395410	0	2969169	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	809691	0	1273381	0

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Food Safety

☑ 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
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	50%		50%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	50%		50%	
	Total	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	1.8	0.0	0.0	0.0
Actual Paid Professional	1.7	0.0	0.0	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
107693	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
82981	0	3329	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

- Continue to implement HACCP training for RI school food service operations
- Provide HACCP and sanitation education programs to a variety of food processors
- Host an annual Food Safety Conference for public and private stakeholders
- Maintain a Good Agricultural Practices (GAP) Program for commercial growers of fruit and vegetables
- Maintain RI Food Safety Manager courses
- Develop internet-based training on Food Safety issues
- Develop Food Safety Curriculum materials for Special Needs students (ages 16-21)

2. Brief description of the target audience

Food industry and food service workers and managers, food processors, consumers, agricultural producers, home gardeners, school administrators, school-aged children and their caregivers, special needs students, teachers, community volunteers, Master Gardener volunteers.

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	1130	75550	248	550

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	3	1	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer Reviewed Publications

Year	Actual
2012	1

Output #2

Output Measure

- Abstracts

Year	Actual
2012	3

Output #3

Output Measure

- Professional Training Sessions (educators, farmers, food industry and food service personnel)

Year	Actual
2012	20

Output #4

Output Measure

- Volunteer Training

Year	Actual
2012	1

Output #5

Output Measure

- Conferences Hosted

Year	Actual
2012	2

Output #6

Output Measure

- School Based Training Sessions (teachers and children)

Year	Actual
2012	0

Output #7

Output Measure

- Website Development and Refinement

Year	Actual
2012	2

Output #8

Output Measure

- Student training

Year	Actual
2012	4

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Develop, implement and evaluate new health and food safety training and resource materials for targeted audiences such as consumers, educators, food industry personnel and health care providers (# of new programs).
2	Implement the internet based training for Good Manufacturing Practices (GMP) and personal hygiene for processors and warehouses. As a member of a regional team (# of training sessions)
3	Commercial growers of fruit and vegetables, food industry producers PROCESSORS and school personnel FOODSERVICE will participate in appropriately directed food safety (# people trained).
4	Formulate new approaches for food safety education for consumers, school educators and the food industry in residential institutions in Rhode Island. (# People)
5	Revise and adapt food safety education for consumers, school educators and the food industry in RI and within the US

Outcome #1

1. Outcome Measures

Develop, implement and evaluate new health and food safety training and resource materials for targeted audiences such as consumers, educators, food industry personnel and health care providers (# of new programs).

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Health and food safety issues concerning a variety of foods keep evolving and information to target audiences require continuous revision and updating. Therefore new training and resource materials need development/revision, evaluation and implementation.

What has been done
URI Food Safety Program personnel, in cooperation with other food safety and health outreach experts throughout the US, have developed and implemented training and resource materials related to seafood safety, benefits/risks of seafood and food safety plan development at Residential Child Care Institutions. In addition, websites (http://web.uri.edu/foodsafety/, and Foodsafetyhealthfacts.org) have been developed and/or revised.

Results
Train the trainer programs for seafood HAACP trainers were completed using the extensively revised curriculum materials. Resources for health care providers regarding risk/benefit of seafood were close to completion. In addition, there was further dissemination of survey results regarding health provider knowledge of seafood safety and seafood benefits/risks. Collaboration with the Rhode Island Deopartment of Elementary and Secondary Education (RIDE) continued to provide Residential Child Care Institutional facilities with HACCP-based training.

4. Associated Knowledge Areas

KA Code	Knowledge Area
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #2

1. Outcome Measures

Implement the internet based training for Good Manufacturing Practices (GMP) and personal hygiene for processors and warehouses. As a member of a regional team (# of training sessions)

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Commercial growers of fruit and vegetables, food industry producers PROCESSORS and school personnel FOODSERVICE will participate in appropriately directed food safety (# people trained).

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	225

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
There is need for food safety information throughout the diverse RI community of educators, consumers, foodservice workers, food industry personnel and processors and commercial fruit and vegetable growers. Federal and state regulations mandate specific training that allows the RI food industry to be in compliance. In addition, participation in voluntary food safety programs is rapidly becoming an expectation for business and non-profits.

What has been done
The URI Food Safety Education Program has offered a variety of food safety training programs to numerous professional target audiences to address state and federal mandates and other food safety concerns. All trainings are revised to reflect current regulatory and research information

Results
The URI Food Safety Education Program has, in collaboration with regional academic partners and RI state agencies, successfully offered 12 professional training sessions that have been

highly evaluated.

4. Associated Knowledge Areas

KA Code	Knowledge Area
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #4

1. Outcome Measures

Formulate new approaches for food safety education for consumers, school educators and the food industry in residential institutions in Rhode Island. (# People)

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Revise and adapt food safety education for consumers, school educators and the food industry in RI and within the US

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	24293

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The "local" food movement has fostered a revival of interest in home food preservation. Issues related to quality and safety related local production and preservation should be addressed. School educators and volunteer foodservice workers continue to require professional development and food safety training, respectively.

What has been done

Preservation presentations have been developed and offered to consumers interested in home preservation. Interviews have also been given to the leading state newspaper regarding food safety issues of concern related to home food preservation. In addition, general food safety presentations were developed. The annual conference, in coordination with the Food Safety Task Force, continues to be held. Educational displays about gardener and GAP food safety has been used with the help of the Master Gardener volunteers.

Results
Workshops have been delivered and have been well received and attended. Static displays have been used at fairs/festivals. The specialists expanded the food preservation offerings to include "hand-on" classes which were well received. Based on attendee input and popularity of the class, the workshop will be revised for 2013 and offerings expanded.

4. Associated Knowledge Areas

KA Code	Knowledge Area
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

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 Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (No funding)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

All programs are evaluated on a 5-point Leikart scale with 1 as extremely disagree and 5 extremely agree. All URI Food Safety programs have been rated at a 4 or above for delivery and content. Further evaluation data for key programs have been published in peer-reviewed professional journals.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Nutrition, Health and Obesity Prevention

☑ 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
702	Requirements and Function of Nutrients and Other Food Components	50%		50%	
703	Nutrition Education and Behavior	50%		50%	
	Total	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	0.3	0.0	0.5	0.0
Actual Paid Professional	1.4	0.0	0.4	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**
88299	0	52918	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
109453	0	62117	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

- Pilot testing with community stakeholders
- Development of two modules: increasing whole grain intake and increasing consumption of low-fat dairy foods
- Student recruitment: baseline and post-intervention testing
- Assessments: anthropometrics, biochemical,clinical and dietary measures
-
- Developed and tested methods to assess free-living eating rate
- Validated eating behavior questionnaires against lab measures
- Designed and piloted interventions to reduce eating rate, moving from lab-based to community-based
- Modify interventions for food-insecure individuals
- Analyze YEAH data for relationships among perceived stress, BMI, and health-related behaviors

2. Brief description of the target audience

Young adults, college-age students at URI

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	283	0	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	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Refine, deliver and evaluate major healthy weight intervention study

Year	Actual
2012	126

Output #2

Output Measure

- Peer reviewed publications

Year	Actual
2012	3

Output #3

Output Measure

- Abstracts

Year	Actual
2012	4

Output #4

Output Measure

- Workshops

Year	Actual
2012	25

Output #5

Output Measure

- Student Training

Year	Actual
2012	7

Output #6

Output Measure

- Professional Training

Year	Actual
2012	0

Output #7

Output Measure

- Scientific and Professional Presentations

Year	Actual
2012	6

Output #8

Output Measure

- MS Thesis or PhD Dissertation

Year	Actual
2012	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increase understanding of lipoprotein metabolism and metabolic syndrome on human health in young adults.
2	Promoting healthful eating to prevent excessive weight gain in young adults

Outcome #1

1. Outcome Measures

Increase understanding of lipoprotein metabolism and metabolic syndrome on human health in young adults.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	157

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Young adults (those 18-24 years of age) have been identified as a population of interest by NIH in relation to risk for coronary heart disease Young adults are presenting with abnormal lipid profiles because of abnormal lipoprotein metabolism more frequently - this results in increased risk of metabolic syndrome and CHD. Because the lifestyle habits that can cause this increased risk and the biochemical changes can track later into adulthood intervening with college students on a mass scale is critical to reduce long-term chronic disease risk for a larger population than can be reached in one-to-one sessions or small intervention sessions

What has been done
In the spring of 2012, we completed pilot testing with community stakeholders - URI's Student Health Services and Dining Services targeting whole grain consumption. Using the results from the pilot work, in addition to focus group research, we developed two modules - increased whole grain intake and increased intake of low-fat dairy. We worked with our stakeholders on clear messages to be displayed in campus dining facilities, text/email messages, and interactive booths promoting the two modules. We recruited students who were full-time URI students with a meal plan and completed baseline and post-intervention testing. Assessments included antropometrics, biochemical clinical and dietary measures.

Results
We completed baseline and post-intervention assessments on approximately 100 participants and are currently completing the 6-month follow-up assessments on these participants. Of the 100 participants 26 consented to additional assessments that would provide more detail and information on biochemical and dietary (behavioral) measures. We are currently analyzing the data and cannot report on specific incidence or prevalence at this time.

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components

Outcome #2

1. Outcome Measures

Promoting healthful eating to prevent excessive weight gain in young adults

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	126

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
With ever increasing levels of obesity, it is important to study whether within meal eating behavior can be modified in ways that promote lower calorie intake and thus weight management.

What has been done
Developed and tested methods to assess free-living eating rate; validated eating behavior questionnaires against lab measures; assessed factors that may impact within-meal eating behaviors in "real world" settings, including social facilitation, meal type, location and utensil use; designed and piloted interventions to reduce eating rate, moving from lab-based to community-based protocol; assimilated pilot data regarding differences in within-meal eating behaviors among populations differing in socioeconomic status, and used these as a basis for modified interventions among food-insecure individuals. Analyzed YEAH data for relationships among perceived stress, BMI, and health-related behaviors.

Results
Five week one on one intervention is effective in modifying within meal eating behavior and caloric intake in a laboratory setting.

4. Associated Knowledge Areas

KA Code	Knowledge Area

702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

The study sample of URI college students may have been impacted by the weak economy. As tuition dollars increased, the economic status of students attending URI increased, therefore reflecting a student body from a higher socio-economic class.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

We have been successful in working with community stakeholders - URI students, Student Health Services and Dining Services to develop a nutrition intervention that can reach large numbers of students at points of purchase. The nutrition intervention on increasing whole grains and low-fat dairy products have the potential to decrease coronary heart disease risk. We had hoped to recruit a total of 200 students but we only recruited 157 students. We are currently in the midst of the 6-month follow-up assessment visits and will soon start the analysis to see how the intervention impact the students' behaviors and coronary heart disease risk factors.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Global Food Security and Hunger

☑ 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
703	Nutrition Education and Behavior	50%		0%	
704	Nutrition and Hunger in the Population	50%		0%	
	Total	100%		0%	

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	2.0	0.0
Actual Paid Professional	0.0	0.0	0.0	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
0	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	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

•Assess the diet quality of targeted low-income, vulnerable populations.
•Assess the food security status of targeted low-income, vulnerable populations.

•Assess the food resource management and food safety practices of the target audience.
•Develop and implement assessment tools, curriculum, print materials and social marketing campaigns.
•Evaluate the effectiveness of interventions and materials related to behavior change.
•Facilitate and strengthen community partnerships.
•Seek external funds to support program goals.

2. Brief description of the target audience

Low-income, Food Stamp eligible and participating families, children and older adults.

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	3717	97768	6013	1500

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	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer reviewed publications

Year	Actual
2012	0

Output #2

Output Measure

- Abstracts

Year	Actual
2012	0

Output #3

Output Measure

- Scientific/Professional presentations

Year	Actual
2012	1

Output #4

Output Measure

- Website Development and Refinement

Year	Actual
2012	1

Output #5

Output Measure

- Public Service Announcements and Social Marketing Campaigns

Year	Actual
2012	1

Output #6

Output Measure

- Video Productions

Year	Actual
2012	0

Output #7

Output Measure

- Curriculum Development and Delivery

Year	Actual
2012	1

Output #8

Output Measure

- Fact Sheets, Bulletins and Newsletters

Year	Actual
2012	29

Output #9

Output Measure

- Student Training

Year	Actual
2012	12

Output #10

Output Measure

- Volunteer Training

Year	Actual
2012	20

Output #11

Output Measure

- Workshops and Programs

Year	Actual
2012	1643

Output #12

Output Measure

- MS Thesis or PhD Dissertation

Year	Actual
2012	4

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	25% of EFNEP and FSNE Families and Older Adults will improve dietary practices from baseline in one or more domains (diet quality, food security, food resource management, or food safety) thus reducing future risk of disease and improving health and quality of life (# representing 25%).

Outcome #1

1. Outcome Measures

25% of EFNEP and FSNE Families and Older Adults will improve dietary practices from baseline in one or more domains (diet quality, food security, food resource management, or food safety) thus reducing future risk of disease and improving health and quality of life (# representing 25%).

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Diet quality is directly link to health outcomes. The EFNEP/SNAP-Ed programs have focused on diet quality and food resource management especially during the current economic slowdown. With poverty on the rise, food choices are negatively impacted. Decreased nutrition in all ages can result in increased disease.

What has been done
A focus was placed on increasing fruit and vegetable consumption among all age groups and decreasing the consumption of sugar-sweetened beverages and energy dense snacks. Workshop series were implemented in order to expand contact hours, thereby increasing dosage, and offering greater opportunity for behavior change. A total of 1643 community workshops (both EFNEP and SNAP-Ed) were conducted. Approximately 10,000 direct contacts and 100,000 indirect contacts were recorded. We distributed over 40,000 program-related materials including recipes, fact sheets, posters, calendars and handouts. Social media was expanded to include a more extensive website, plus twitter and pinterest accounts.

Results
Of 428 adults studied, 45.6% indicated a positive change in fruit consumption at program exit and 50.2% of 428 adults indicated a positive change in vegetable consumption at program exit.

Of 175 participating fifth grade students, 44% of the students indicated that ate fruit or vegetable everyday as opposed to 26% at program start.

The number of seniors reporting consumption of 2 or more cups of vegetables/day increased by 25% from pre to post survey.

75% of participants in healthy cooking workshops reported a 25% decrease in sugar consumption, and a 17% increase in fruit and vegetable consumption.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

The economic situation during 2012 fiscal year was a dire one for the state of Rhode Island. Unemployment was second highest in the nation and SNAP participation increased by 17%.State and local governement cut-backs continued to mean that there were fewer personnel to review and approve proposed partnerships, activities and expenditures. Eligibility for federally sponsored food programs increased, putting food dollars in competition with dollars allocated for heat or rent.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Workshops and training programs use pre and post assessment tools to evaluate change in stakeholder knowledge.

Behavior change of stakeholders is assessed through longitudinal tracking of participant behaviors compared to behaviors identified prior to participation in programs.

Extension outputs are subject to peer evaluations before publication.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Children, 4-H and Families

☑ 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
802	Human Development and Family Well-Being	20%		0%	
806	Youth Development	80%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	7.0	0.0	0.0	0.0
Actual Paid Professional	3.0	0.0	0.0	0.0
Actual Volunteer	24.6	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
154955	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
161029	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

•Forge academic connections to strengthen CFF curriculums, provide undergraduate experiential learning opportunities, increase program research base and utilizes evaluation expertise to measure impacts and improve programs

•Connect target audience to CFF educational programs though workshops, web-based training and newsletters, 4-H volunteer training and curriculum guides (train the trainer), community-based agency trainings (train the trainer)

•Develop resources and information to connect youth and families to community and land-grant resources (CFF to serve as the portal)

•Expansion of the 4-H club system into currently underrepresented, urbanized areas of the state and creation of a state-wide network of 4-H science enrichment after school programs that serve as a catalyst for improve the science based knowledge, skills and academic motivation among urban elementary and middle school students

•Expand educational outreach to children of deployed military through Military 4-H Clubs and operation: Military Kids.

2. Brief description of the target audience

Youth 5-18 years of age
Parents of targeted youth
Community-based family-serving agencies and organizations
Children of military in deployment cycle
Volunteers

3. How was eXtension used?

eXtension was used as a resource for our animal science programs.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	4022	247466	8178	20760

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	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Workshops

Year	Actual
2012	141

Output #2

Output Measure

- Volunteer Training (number of new volunteers per year)

Year	Actual
2012	47

Output #3

Output Measure

- 4-H Record Book Submissions

Year	Actual
2012	147

Output #4

Output Measure

- Youth reached through programs

Year	Actual
2012	1462

Output #5

Output Measure

- Number of community/family serving groups and organizations reached

Year	Actual
2012	42

Output #6

Output Measure

- Community Service (# of projects per year)

Year	Actual
2012	64

Output #7

Output Measure

- Activities and Programs (# per year)

Year	Actual
2012	85

Output #8

Output Measure

- Student Training (# per year)

Year	Actual
2012	7

Output #9

Output Measure

- Website development and refinement

Year	Actual
2012	5

Output #10

Output Measure

- Curriculum development and delivery

Year	Actual
2012	14

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Through project work and science and health enrichment programs, (%) 4-H club members and after school group members will demonstrate increased knowledge and skills that can be incorporated into their academic and personal lives.
2	% of enrolled 4-H youth who will demonstrate a commitment and understanding of their community and a sense of connectivity through increased delivery of community service programs to those in need.
3	Though training programs, club leadership activities and adult mentors, % of 4-H members who will develop leadership skills (e.g., public speaking, project leadership), gain confidence in their ability to lead and make a difference in their schools and communities and to incorporate these life skills into their daily lives.
4	# of parents, volunteers and adults serving youth and their families who will gain knowledge and skills that will foster positive youth development and family health and well-being.
5	# of parents who will learn and adopt more effective methods for parental discipline of children and better use of family time.
6	Pre-post measurement of educational activities, workshops to measure increases in knowledge and skills, focus groups and surveys to assess practice change and adoption, analysis of contact information and demographics to measure expansion of programs to currently underrepresented groups (urban, cultural-diverse communities, minorities, etc.) (Number of assessments per year)

Outcome #1

1. Outcome Measures

Through project work and science and health enrichment programs, (%) 4-H club members and after school group members will demonstrate increased knowledge and skills that can be incorporated into their academic and personal lives.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	53

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Out-of-school educational programs provide youth with a safe, supportive environment for developing academic and life skills. Research demonstrates a significant relationship between poverty and academic achievement in school." There is a great concern over the fact that children of underrepresented audiences do not excel in math and science classes." URI/HDF CE program targets these youth in urban areas with the delivery of science enrichment programming. Science and Healthy Lifestyles programming is a major focus of the RI 4-H club system, after school programming and Operation: Military Kids.

What has been done
4-H Pathways for Success in Science and Technology, in partnership with Inspiring Minds developed engineering modules targeting underserved Providence high school students. Modules included Chemical Engineering, Unreal Technology and Build Your Own Personal Computer. 4-H programming in focused on animal science, ecology, horticulture, technology, robotics and healthy lifestyles workshops, programs and events. New for FY12 was the 4-H Junior Scientist event taught by 40 URI undergrads, the 4-H Tech Wizards afterschool program and the first RI 4-H Science Academy.

Results
Evaluation studies documented increased knowledge and skills and positively increased youth attitude toward science and learning through 4-H and URI/HDF afterschool science enrichment programs. In FY12 increased numbers of military and underserved youth participated in 4-H SET and Healthy Lifestyles workshops and the new 4-H Tech Wizards mentoring program reach 60 at-risk urban youth weekly in afterschool programming. 53% of 4-Hers and afterschool enrollments participating in science and health projects/programs, competitions and events demonstrated an increase in knowledge and skills. 170 Providence youth demonstrated increased knowledge and

application of skills through the creation of lotions, perfume, crystals, candy etc in the Unreal Technology Engineering Module and built their own personal computers. 90 youth created experiments at the URI 4-H Junior Scientist Event and 24 club leaders received training at the RI 4-H Science Academy and completed at least one of the science programs within their 4-H clubs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #2

1. Outcome Measures

% of enrolled 4-H youth who will demonstrate a commitment and understanding of their community and a sense of connectivity through increased delivery of community service programs to those in need.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	62

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many of today's youth lack opportunities to engage in positive out-of -school educational programs under the mentoring of caring adults who guide them in developing valuable life skills while aiding them in creating positive connections to the larger community and assisting them in successfully making the transition to productive, contributing young adults.

What has been done
RI 4-H Clubs and afterschool programs are expected to plan and conduct at least one community service project during the 4-H year as part of the Citizenship mission mandate. 4-H volunteers are provided with community service opportunities through the 4-H volunteer listserv and connected to requests from citizens and community groups requiring assistance. 4-H groups may apply for financial support through the RI 4-H Foundation Club Grant program for their projects. Beyond serving their communities, 4-H clubs volunteer with Operation: Military Kids. 4-H members document their community service hours through their 4-H record books.

Results

50% of active 4-H clubs in RI reported carrying out an average of 2 or more community service projects in FY12 (average of 25 members per club) resulting in 525 youth participating in two or more community service project or 62% of the FY12 4-H club enrollment. 147 4-Hers who submitted record books in FY12 reported 3982 community service hours or an average of 27 hours per 4-H member. Seven 4-H Clubs received State 4-H Excellence Awards with community service requirements a significant portion of the selection process. Community service projects included food pantry baskets, adopting a military family at Christmas, bunnies to nursing homes, a wildlife baby shower fundraiser, benefit horse shows, a spring celebration for a community, beach clean-up, caroling on horseback, shoveling brigade for elderly neighbors, fundraisers for local charities and support and materials for a local community garden.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #3

1. Outcome Measures

Though training programs, club leadership activities and adult mentors, % of 4-H members who will develop leadership skills (e.g., public speaking, project leadership), gain confidence in their ability to lead and make a difference in their schools and communities and to incorporate these life skills into their daily lives.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	45

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many youth are lacking in school and family-center opportunities and support to increase their communications and leadership skills. Youth need a safe and nurturing environment to test their abilities and receive constructive and supportive feedback. Encouragement by caring adults and positive peer support enable youth to develop confidence and incorporate these life skills into their school and community.

What has been done
All 4-H members are strongly encouraged to participate in the RI 4-H Public Presentations programs at the club, district and state level. 4-H volunteers and staff provide training and

competitive and
non-competitive speaking opportunities are provided to all 4-H ages. Besides District and State competitions, 4-Hers are encouraged to participate in events to educate the public including 4-H Goes to the Zoo, Washington Co. Fair Farm School and Speak Out for Military Kids. 4-H teens demonstrated leadership skills in their 4-H clubs as junior leaders and at 4-H events and programs on the state and regional level.

Results
382 4-H youth or 45% of RI 4-H club members participated in district and state public presentation programs, 4-H Farm School, Eastern State Exposition and other public events promoting 4-H. 4-H teens demonstrated their leadership ability by assuming major roles at 4-H Fairs, animal science workshops and events and Rhode Island and New England 4-H Animal Committees and event. 4-H members actively participated in communication workshops, public presentations training and record book workshops. 4-H volunteers reported increased leadership skills and confidence among their 4-H club officers and teen leaders. In FY12 4-H Horse Teen Advisory Council was formed and 20 teens representing their clubs take an active role in planning and evaluation the RI 4-H Horse education program and events. In FY12 76 youth and teen leaders assumed leadership roles at for RI at the Eastern States Exposition.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #4

1. Outcome Measures

# of parents, volunteers and adults serving youth and their families who will gain knowledge and skills that will foster positive youth development and family health and well-being.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	945

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The number of RI children and families living in poverty continues to increase. Family structures are stressed by poverty and decreasing community connection creating a weakened environment

for child rearing. There is limited access to parent education programs for families and links between service providers and families have either been eliminated as a result of budget cuts.

What has been done
Cooperative Extension Specialists from the URI Department of Human Development and Family Studies worked with two graduate students to developed/adapted, implemented and evaluated 40 parenting workshops for the 2012 programmatic year.

Results
Direct programs reached 945 families. Summative evaluations collected at the conclusion of each 2 hour workshop yielded the following results: 98% of workshops rated the workshop as great or perfect; 97% rated the presenter as great or perfect; 92% indicated the information was practical; 86% reported learning 3 new concepts; 98% rated delivery methods as excellent. Outcome evaluation yielded the following: Research states that parents who attend Parent/Family educational workshops, engage in significantly more nurturing parenting and less harsh parenting compared to parents who have not attended any educational training.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #5

1. Outcome Measures

# of parents who will learn and adopt more effective methods for parental discipline of children and better use of family time.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	450

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The number of RI children and families living in poverty continues to increase. Family structures are stressed by poverty and decreasing community connection creating a weakened environment for child rearing. There is limited access to parent education programs for families and links

between service providers and families has either been eliminated as a result of budget cuts.

What has been done
RI Agencies personnel who worked directly with families were asked to identify program needs for parents and families in their respective geographic areas. Cooperative Extension Specialists from the URI Department of Human Development and Family Studies along with two graduate students developed/adapted, implemented and evaluated 40 workshops for the 2012 programmatic year. Summative evaluations were conducted at workshops to assess quality as well as outcomes.

Results
Summative evaluations collected at the conclusion of each 2 hour workshop yielded the following results: 98% of workshops rated the workshop as great or perfect; 97% rated the presenter as great or perfect; 92% indicated the information was practical; 86% reported learning 3 new concepts; 98% rated delivery methods as excellent. Outcome evaluation yielded the following: Research states that parents, who attend Parent/Family educational workshops, engage in significantly more nurturing parenting and less harsh parenting.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #6

1. Outcome Measures

Pre-post measurement of educational activities, workshops to measure increases in knowledge and skills, focus groups and surveys to assess practice change and adoption, analysis of contact information and demographics to measure expansion of programs to currently underrepresented groups (urban, cultural-diverse communities, minorities, etc.) (Number of assessments per year)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	6

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The number of RI children and families living in poverty continues to increase. Family structures are stressed by poverty and decreasing community connection creating a weakened environment for child rearing. There is limited access to parent education programs for families and links between service providers and families has either been eliminated as a result of budget cuts or decreased.

What has been done

Pre measurements of educational programs included parents sharing their prior knowledge through surveys and discussions. Post measurements of educational activities included summative evaluations that were conducted to assess outcomes. During each workshop parents were given the opportunity to summarize key understandings, thus communicating increases in knowledge and skills. Throughout workshops participants gave feedback on clarity of information delivered, and this reflection aided assessment of practice change. In the city of Providence the agencies that we work with have diverse underrepresented groups that they serve. All workshops were conducted in both Spanish and English to address the cultural needs of parents.

Results

Summative evaluations collected at the conclusion of each 2 hour workshop yielded the following results: 98% of workshops rated the workshop as great or perfect; 97% rated the presenter as great or perfect; 92% indicated the information was practical; 86% reported learning 3 new concepts; 98% rated delivery methods as excellent.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

The tumultuous economy has had a negative effect on hiring new faculty and staff. Uncertain state budgets and budget cuts continue to have a negative effect on service delivery.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Direct observation and reporting of change in knowledge/skills and behavior change buy 4-H Club leaders and 4-H staff.

Review of 4-H record books to documentleadership and community serviceand participation.

Post of assessment 4-H events for program/event evaluation, redirection and revisions.

Summative evaluation used to evaluation learning materials and learning process.

High level of satisfaction was reported by stakeholders.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Sustainable Communities

☑ 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%		100%	
601	Economics of Agricultural Production and Farm Management	20%		0%	
602	Business Management, Finance, and Taxation	20%		0%	
605	Natural Resource and Environmental Economics	20%		0%	
608	Community Resource Planning and Development	20%		0%	
	Total	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	1.0	0.0	0.0	0.0
Actual Paid Professional	2.4	0.0	0.6	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**
56749	0	21458	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
172668	0	61156	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

• Study and promote commercial farm viability
• Promote responsible stewardship of agricultural lands
• Work with municipalities and community members to manage natural and economic resources wisely
• Teach and promote sustainable development techniques and management to communities
• Promote, enhance and expand sustainable tourism in the state of Rhode Island
• Participate as active member of local, regional and national agricultural committees and working groups

2. Brief description of the target audience

• Farmers/ Farm Organizations
• RI Department of Environmental Management (RI DEM), Division of Agriculture
• Other Agricultural Service Providers
• Tourism Councils and Tourism Businesses
• Land Trusts
• Policy Makers and Municipal Leaders
• Grassroots and Community Organizations

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	2098	6100	102	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	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Conduct Community based workshops

Year	Actual
2012	5

Output #2

Output Measure

- Professional training

Year	Actual
2012	14

Output #3

Output Measure

- Public presentations

Year	Actual
2012	0

Output #4

Output Measure

- Website development and refinement

Year	Actual

2012	1

Output #5

Output Measure

- Student Training

Year	Actual
2012	6

Output #6

Output Measure

- Local, regional and national agricultural sector committee participation

Year	Actual
2012	15

Output #7

Output Measure

- Local, regional and national agricultural sector working group participation

Year	Actual
2012	9

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Provide information and training to farmers and rural landowners on estate planning strategies and economic development opportunities.
2	Improve viability of agriculture in the state of Rhode Island and southern New England through farmer education/information and consulting concerning sustainable agricultural practices, value-added products and agri-tourism.
3	Provide information and training to municipal leaders and organizations on management of natural resources and community assets.
4	Be better poised to disseminate up-to-date information on agricultural production, pest management, business management, farm transfer, crop insurance options, and other information relevant to fostering a vibrant agricultural industry in RI.
5	Improve climate for RI's agricultural producers through greater access to public and private funding and networking opportunities.

Outcome #1

1. Outcome Measures

Provide information and training to farmers and rural landowners on estate planning strategies and economic development opportunities.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Improve viability of agriculture in the state of Rhode Island and southern New England through farmer education/information and consulting concerning sustainable agricultural practices, value-added products and agri-tourism.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2098

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
With ever-increasing scarcity of land due to high real estate values from development pressure, growers in the region need to get the highest possible return on their agricultural investments in time, energy and money.

What has been done
URI agricultural extension staff members are in constant contact with agricultural producers in RI as well as nearby Massachusetts and Connecticut. Extension staff presented up-to-date information on pest management and production topics at educational meetings (1,254 direct contacts), through telephone correspondence (515 direct contacts), and in-person farm visits (329 direct contacts). Over 6,000 direct contacts were reached through newsletters and regional production guides.

Results
Attendance at public meetings continues to increase and agricultural growers avail themselves to the services provided by Extension as evidenced by increasing phone calls and in-person office

visits.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
605	Natural Resource and Environmental Economics

Outcome #3

1. Outcome Measures

Provide information and training to municipal leaders and organizations on management of natural resources and community assets.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Be better poised to disseminate up-to-date information on agricultural production, pest management, business management, farm transfer, crop insurance options, and other information relevant to fostering a vibrant agricultural industry in RI.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The agricultural industry in Rhode Island is multifaceted due to its uniquely singular peri-urban geographic characterization. The range of items produced across the industry is widely varied and includes turf, nursery stock, fruits, vegetables, meat and animal products, and greenhouse ornamentals. All items are found throughout our geographically small but populous region; and individual operations are horizontally diverse as well. As such, Extension staff are constantly

engaged in professional development to better serve their diverse stakeholder ranks.

What has been done
Rhode Island Extension staff attended trainings and meetings concerning crop insurance planning, the Pest Diagnostic Network, the Entomological Society, plant disease diagnostic training, soil health assessment training and spotted wing drosophila information sessions.

Results
RI agricultural growers were beneficiaries of results of the latest research as a result of timely trainings and sharing of information through educated and connected Extension staff. In particular, management options of a few very economically important emerging pests were disseminated widely.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development

Outcome #5

1. Outcome Measures

Improve climate for RI's agricultural producers through greater access to public and private funding and networking opportunities.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Rhode Island Extension staff have some of the closest contact with members of the agricultural industry and are well positioned to speak on behalf of these stakeholders in discussions concerning technical assistance needs and public policy issues.

What has been done

Rhode Island Extension staff participated in the following local and regional committees which exist for the purpose of supporting and improving the agricultural industry: 1) Cooperative Agricultural Pest Survey, 2) Bimonthly NRCS State Technical Meeting, 3) CELS Cooperative Extension meeting, 4) Biannual SARE Coordinator Meetings, and 5) Bimonthly RI Agricultural Partnership meeting.

Results

More landowners were beneficiaries of NRCS funding and more agricultural producers received SARE funding through USDA in RI and southern New England during the reporting period. Also, the Rhode Island Agricultural Partnership produced a peer-reviewed study valuing green-related industry in Rhode Island at $1.7 Billion, further justifying its recognition as an important economic force in the state.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
605	Natural Resource and Environmental Economics

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Other (Personnel change)

Brief Explanation

One of two Rhode Island Extension agricultural agents left their position at the University, leaving only one agent to serve the state for a period of 16 months. The vacancy resulted in fewer acheivements than might have been accomplished had the program been fully staffed.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Workshops and training programs use pre- and post- assessment surveys to evaluate stakeholder impact.

Key Items of Evaluation

All programs and trainings receive generally favorable to highly favorable responses.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Vector Borne Diseases and Human Health

☑ 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
721	Insects and Other Pests Affecting Humans	50%		100%	
722	Zoonotic Diseases and Parasites Affecting Humans	50%		0%	
	Total	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	1.0	0.0	2.0	0.0
Actual Paid Professional	0.5	0.0	0.1	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
23429	0	8363	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
22990	0	11862	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

• Use surveillance data accumulated over a dozen years to develop new tools to pinpoint risk, both spatially and seasonally.
• Use computer models to view disease patterns in Rhode Island and to develop models for disease risk.
• Determine landscape patterns that present the greatest risk for encountering a tick bite.
• Formulate landscape plans to reduce the chances of encounters between ticks and people.
• Create a web-based decision support system. Using this system, people will be able to compile a customized risk index and then follow links that will help them devise short- and long-term disease prevention action plans.

2. Brief description of the target audience

The target audience will be diverse and will represent all Rhode Islanders, especially those at greatestrisk of contracting vector borne diseases.This audience will include:

Community members

Grassroots agencies

Municipal and State Policy Makers

Home owners

Educational Institutions

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	1200	4000	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	0	5	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer reviewed publications

Year	Actual
2012	0

Output #2

Output Measure

- Books and monographs

Year	Actual
2012	0

Output #3

Output Measure

- Abstracts

Year	Actual
2012	0

Output #4

Output Measure

- Conference proceedings

Year	Actual
2012	0

Output #5

Output Measure

- Workshops

Year	Actual

2012	3

Output #6

Output Measure

- Website development and refinement

Year	Actual
2012	1

Output #7

Output Measure

- Public presentations

Year	Actual
2012	2

Output #8

Output Measure

- Public service announcements

Year	Actual
2012	100

Output #9

Output Measure

- Student training

Year	Actual
2012	2

Output #10

Output Measure

- M.S. theses and Ph.D. dissertations

Year	Actual
2012	0

Output #11

Output Measure

- Postdoctoral fellow training

Year	Actual
2012	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Identify areas of high risk for vector borne diseases in Rhode Island
2	Create tick surveillance database
3	Create web-based decision support system to reduce risk to vector borne diseases.
4	Reduce tick abundance community-wide
5	Increase research funding
6	Develop climate-based tick encounter risk prediction model

Outcome #1

1. **Outcome Measures**

Identify areas of high risk for vector borne diseases in Rhode Island

Not Reporting on this Outcome Measure

Outcome #2

1. **Outcome Measures**

Create tick surveillance database

Not Reporting on this Outcome Measure

Outcome #3

1. **Outcome Measures**

Create web-based decision support system to reduce risk to vector borne diseases.

Not Reporting on this Outcome Measure

Outcome #4

1. **Outcome Measures**

Reduce tick abundance community-wide

Not Reporting on this Outcome Measure

Outcome #5

1. **Outcome Measures**

Increase research funding

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Develop climate-based tick encounter risk prediction model

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
RI is a high incident tick area with a large number of the citizens having been infected with tick borne pathogens. As such, programs to reduce tick populations and contact with ticks are of critical interest and importance.

What has been done
The correlation between relative humidity and incidence of ticks was examined using data collected over a period of 12 years.

Results
Analysis of long-term state surveillance records collected by URI's Center for Vector-Borne Disease allowed for tick samples, sampled at each study site, (early season = round one; late season = round two), identified a significant and positive relationship (coefficient = 0.0344, SE F 0.015, P = 0.040) between the ratio of nymphs collected in round one vs. round two and tick adverse humidity events (TAHEs) (> 8 h) recorded in June (largely round one). This suggested that TAHEs are an indicator of tick mortality and could be used to predict exposure risk during the same year. We have developed a web based site The TickEncounter Resource Center (http://www.tickencounter.org) promotes tick-bite protection and tick-borne disease prevention by engaging, educating, and empowering people to take action.

4. Associated Knowledge Areas

KA Code	Knowledge Area
721	Insects and Other Pests Affecting Humans
722	Zoonotic Diseases and Parasites Affecting Humans

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Appropriations changes
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Human behavior)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The results of this work are being utilized by the general public as well state health officials to reduce encounters with ticks and the potential diseases associated with them.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Aquaculture and Fisheries

☑ 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
303	Genetic Improvement of Animals	20%		0%	
304	Animal Genome	20%		0%	
307	Animal Management Systems	0%		40%	
311	Animal Diseases	40%		40%	
604	Marketing and Distribution Practices	20%		20%	
	Total	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	0.8	0.0	2.0	0.0
Actual Paid Professional	1.3	0.0	2.0	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**
110165	0	148596	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
10997	0	128604	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

The focus of this program is to: 1) investigate causes of diseases of shellfish and the mechanisms of innate immunity, particularly matrix metalloproteinases in hemocytes, 2) research genetic factors controlling muscle growth in rainbow trout, a model species for aquaculture, 3) investigate novel approaches for the development of vaccines for commercially cultured finfish and 4) develop and share strategies to enhance location of shellfish farms.

2. Brief description of the target audience

The target audience includes the aquaculture industry, the fishing industry, producers and distributors, scientists and researchers, the RI Dept. of Environmental Management and Coastal Resource Management Council, policy makers, and parties interested in entering the field.

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	400	1700	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	0	2	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer Reviewed Publications

Year	Actual
2012	2

Output #2

Output Measure

- Abstracts

Year	Actual
2012	2

Output #3

Output Measure

- Scientific and Professional Presentations

Year	Actual
2012	3

Output #4

Output Measure

- Workshops

Year	Actual
2012	2

Output #5

Output Measure

- Student training

Year	Actual
2012	7

Output #6

Output Measure

- MS theses and PhD dissertations

Year	Actual
2012	1

Output #7

Output Measure

- Postdoctoral fellow training

Year	Actual
2012	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increased aquaculture production in Rhode Island (both of current species and new species). An increase in technology and understanding of basic mechanisms of immunity and muscle growth that will ultimately enhance production.
2	Provide training to improve fisheries management.
3	Optimizing location of shellfish farms

Outcome #1

1. Outcome Measures

Increased aquaculture production in Rhode Island (both of current species and new species). An increase in technology and understanding of basic mechanisms of immunity and muscle growth that will ultimately enhance production.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
An increasing share of the seafood consumed in the US is produced by aquaculture. Methods to enhance production are of interest to all commercial aquaculturists.

What has been done
Investigation of the immune response in shellfish and finfish was conducted. In shellfish, high throughput sequencing was used to assess genes that might be involved in the immune response. For finfish, a novel approach for production of vaccines is being tested. Transgenic trout were developed and used to investigate factors regulating muscle growth.

Results
Several target genes that may be important in the shellfish immune response have been identified and will be the basis for further investigations. Vaccines against Vibrio species in salmonids were developed using a bioinformatics approach and tested in fish. The results were ambiguous and further studies will be conducted. F2 transgenic trout have been generated and used in multiple studies to assess factors regulating growth rate.

4. Associated Knowledge Areas

KA Code	Knowledge Area
303	Genetic Improvement of Animals
304	Animal Genome
311	Animal Diseases

Outcome #2

1. Outcome Measures

Provide training to improve fisheries management.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Optimizing location of shellfish farms

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Shellfish aquaculture in RI is increasing yearly and farmers are seeking assistance in locating farms. The RI Dept. of Environmental Management which regulates leases is also interested in ensuring farms are located in locations that will both increase the opportunity for success and decrease pollution and user conflict.

What has been done
Surveys of the soil types at various oyster farms in the state are being investigated to determine the characteristics best for culture. Other environmental characteristics are being examined for locating oyster and mussel farms.

Results
Soil and water acidity at several farming locations was found to be below normal levels and could impact shell formation and viability. Dredging was found to markedly change the bottom structure and fauna, ultimately impacting oyster culture. Best management procedures are being assessed and determined for shellfish farms in RI at various locations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Government Regulations

Brief Explanation

Hurricanes impacted oyster farms and test plots. The identification of a new pathogen in RI waters impacted the movement of oysters for several planned studies.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The projects under this program cover a range of topics that have the potential to benefit aquaculture locally, regionally, nationally and internationally. All of the projects have been successful in generating results of interest to the scientific community and commercial aquaculturists. Stakeholders are interested in seeing these type of projects continue in the state. Studies on the citing of oyster farms have the most direct impact and the results of these are being used by participants and regulators of this burgeoing industry.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Climate Change

☑ 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
101	Appraisal of Soil Resources	10%		10%	
112	Watershed Protection and Management	50%		50%	
131	Alternative Uses of Land	15%		15%	
133	Pollution Prevention and Mitigation	25%		25%	
	Total	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	3.0	0.0	7.0	0.0
Actual Paid Professional	2.1	0.0	1.6	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
216921	0	71877	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
56538	0	162369	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

• Research investigations focus on watershed patterns and processes that affect the fate of nitrogen and environmental flows. Research methods include lab and field studies as well as geospatial analyses.
• Extension programs create locally relevant programs focused on land and community management.In cooperation with stakeholders and partner agencies, we will identify needs and build upon successful local programs to create and disseminate new materials, tools and curricula in RI and New England. Our water quality programs will continue development, delivery, training and application of proven water quality management tools and techniques such as:
Develop of curricula and training on best management practices (BMPs) for conventional and alternative and innovative onsite waste water treatment

- Public outreach and training on stormwater management
- Development of curricula and training regarding private wells
- Volunteer Water Quality Monitoring

2. Brief description of the target audience

Public decision makers / Policy makers / NRCS / local, state and federal agencies

Municipal planners

Private sector firms engaged in watershed management, landscaping, onsite waste water treatment and private wells

A variety of NGOs (land trusts, environmental organizations, etc).

Agricultural producers

The general public

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	1999	43125	86	360

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	0	4	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer Reviewed Publications

Year	Actual
2012	4

Output #2

Output Measure

- Fact sheets, bulletins and newsletters

Year	Actual
2012	7

Output #3

Output Measure

- Website development and refinement

Year	Actual
2012	5

Output #4

Output Measure

- Training manuals and Instructional CD's developed

Year	Actual

2012	0

Output #5

Output Measure

- Public service announcements, news releases/articles
  Not reporting on this Output for this Annual Report

Output #6

Output Measure

- Books and monographs
  Not reporting on this Output for this Annual Report

Output #7

Output Measure

- Abstracts

Year	Actual
2012	15

Output #8

Output Measure

- Workshops and Conferences hosted or Co-hosted

Year	Actual
2012	57

Output #9

Output Measure

- Presentations and Short Courses

Year	Actual
2012	46

Output #10

Output Measure

- Student training

Year	Actual
2012	12

Output #11

Output Measure

- MS theses and PhD dissertations
  Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increased (%) of the proportion of professionals and the public knowledgeable about maintenance, improvement and challenges of climate variability and climate change related to onsite wastewater treatment.
2	Increased understanding by scientists and decision makers through publications and presentations of the management and risks of watershed nitrogen delivery.
3	Increased (%) development of locally based water resource data for use by communities and the public that can assist in risk assessment and management related to watershed changes, climate variability and climate change.
4	Increase in the proportion of the public and professionals knowledgeable about options for addressing risks related to watershed changes, climate variability and climate change related to storm water management.
5	Increase in targeted households and professionals gaining knowledge of private well management options related to land use, climate variability and climate change, including testing, treatment, siting and protection measures.

Outcome #1

1. Outcome Measures

Increased (%) of the proportion of professionals and the public knowledgeable about maintenance, improvement and challenges of climate variability and climate change related to onsite wastewater treatment.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Onsite wastewater treatment systems serve approximately 30 percent of the Rhode Island population. Old, failed, or improperly functioning onsite wastewater treatment systems cause nitrogen and bacterial contamination which poses a direct public and environmental health risk. Educating practitioners, regulators, decision makers, and system owners about advanced treatment technologies for onsite wastewater and about management approaches is needed to help raise the awareness level, and enable a shift to modern state-of-the-science approaches.

What has been done
During the reporting period, the URI project team delivered 44 workshops to wastewater practitioners in nine states/territories, reaching a total of about 1075 practitioners, providing continuing education credits needed by those licensed professionals to renew their professional licenses. These classes included in-door and out-door hands-on venues and ranged from half-day to two-day venues with qualifying exams. Courses included new classes on wastewater microbiology for OWTS practitioners and the first ever class offered on designing advanced OWTS for designers in the US Caribbean (PR and USVI). URI provided technical assistance to Old Saybrook, CT in their adoption of and state regulatory approval of advanced OWTS in nitrogen sensitive coastal zone. Coordinating with Vermont OWTS regulators, URI developed two 1-day classes to train VT practitioners on how to site, design, install and service advanced OWTS and bottomless sand filters. Conducted three required classes for Rhode Island and Massachusetts wastewater practitioners to enable them to receive regulatory jurisdiction approval to design and install bottomless sand filters.

Results
MA, VT and RI regulatory programs require practitioners to take the URI bottomless sand filter (BSF) training class before designing or installing a BSF. In reporting period 32 wastewater professionals from RI and MA took the class. These classes have enabled licensed practitioners to renew their existing professional licenses and retain their employment. To begin to raise awareness in the industry, a keynote address was delivered to 180 attendees at the 2012 National Onsite Wastewater Recycling Association annual conference that spoke about the issues of climate change and the impact on OWTS. Twenty-one onsite wastewater professionals took the URI inspector training classes, were tested and passed their exams, and received OWTS Inspector Registrations which are required in order to conduct inspections in several Rhode Island communities having wastewater management programs. Approximately 40% of all onsite wastewater treatment system applications to the Rhode Island Department of Environmental Management are for advanced OWTS. Use of advanced OWTS, tested by URI, that denitrify wastewater are now required in state designated watersheds that are nitrogen sensitive. Professionals engaged in design and installation of these systems are trained by URI. This has helped protect these watersheds from further degradation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
112	Watershed Protection and Management
131	Alternative Uses of Land
133	Pollution Prevention and Mitigation

Outcome #2

1. Outcome Measures

Increased understanding by scientists and decision makers through publications and presentations of the management and risks of watershed nitrogen delivery.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Modeling for TMDL Development, and Watershed Based Planning, Management and Assessment. The export of nitrogen (N) from coastal watersheds can exert profound effects on the function and value of coastal estuaries. The goal of our research is to characterize the extent of in-stream nitrate removal in low gradient streams
and identify stream attributes that relate to elevated nitrate removal rates. As we gain more insight into in-stream
nitrate removal, we will be able to contribute to the scientific dialog that seeks to target site-specific nitrate control
strategies to locales with high potential for export to coastal waters.

What has been done

We developed a draft of a customized ArcMap document that uses some functions in the ArcHydro data model extension, providing maps of N sources and sinks within a watershed and estimating risk of N movement from sources to the watershed outlet based on sinks within the watershed. We created a guidance document for using the tool and developed several case studies for training and illustrative purposes. We developed an action plan to move N-Sink from a visualization tool to an interactive tool in which users can change inputs and manipulate data to explore the effects of different land use decisions. We assessed the role of intermittent streams as N sinks. We instrumented 6 intermittent streams with data loggers to record stream depth and continued with a detailed assessment of N removal capacity (via slug tests) and stream features. We also have assessed the impact of woody debris and extended retention times on denitrification in three beaver ponds in RI. We completed mesocosm studies of beaver pond sediments looking at N cycling.

Results

We gathered information on our N-Sink model from RI-NRCS and the U.S. EPA that will be used in an action plan for improvements to its usability and functionality. This N-Sink tool will be usable by coastal land use managers in effectively managing land for watershed nitrogen. Through our field assessments of six intermittent streams and scaling up to 250 m reaches of stream with seasonal N removal data and field-based hydroperiod data, between 0.6 to 22.5 kg N could be removed from these streams annually. We provide evidence that intermittent headwater streams serve as hotspots for N removal in watersheds. This argues for the importance of including them in watershed N assessment tools. Also, the protection of the forest cover along streams is important if developments occur since grass riparian zones alter the structure of small streams, i.e., removing pools and debris dams that are central to the extended retention times associated with these sites. Outcomes of this research will contribute to better watershed management by improving the knowledge base for the selection of locales for individual and public investment of pollution control and restoration, thereby advancing stream/riparian restoration and management practices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation

Outcome #3

1. Outcome Measures

Increased (%) development of locally based water resource data for use by communities and the public that can assist in risk assessment and management related to watershed changes, climate variability and climate change.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

URI Watershed Watch. Seasonal droughts, rising nutrient levels, nuisance algae blooms and the spread of invasive aquatic plants have increased awareness that water quantity and quality is a concern for the public local, state and national decision makers. Agency resources, both staff and financial, to monitor water resources in New England have always been insufficient, while the need increases yearly. Monitoring is long-term, with best decisions based on at least 10 years of data. Detecting trends and threats to local waters is increasingly becoming the responsibility of local communities and watershed organizations.

What has been done

Held multiple classroom and field training sessions for WQ volunteers. Presented workshops and talks locally to nationally. Approximately 400 scientist-led volunteer monitors performed weekly or biweekly ecological monitoring on 270 locations in RI, CT and MA, for 40 local to statewide organizations measuring water clarity, temperature, oxygen content, pH and alkalinity. They process samples for chlorophyll analysis. Sites are 1/3 lakes or ponds, 1/3 rivers and streams, 1/3 estuaries, bays, salt ponds. They also collect samples for lab analyses of nutrients and bacteria. Presented workshops and spoke in numerous sessions at 2012 National WQ Monitoring Conf, facilitated scholarships for 32 volunteer monitoring coordinators. Co-hosted annual NE Lakes conference to educate and train lake and watershed organization members about lake and watershed ecology. Invited speaker at Land Trust and Citizen Science conferences. Provided 25 years of data to WI and FL limnologists researching long-term WQ changes.

Results

Because of Extension-led volunteer monitoring an unparallelled record of water clarity, temperature, oxygen content,nutrients and bacteria levels now exists in all NE states. Over 20,000 data points aggregated into site specific monitoring results were posted on the URIWW website and distributed to sponsoring organizations as well as RI DEM & US EPA in this fiscal year alone. Regulatory agencies have used the data to create regulations to protect excellent water quality as well as to document poor water quality, and to help best direct their resources. Extension has used monitoring results to target programs to specific geographic areas. Local groups have used the data to take action to enact local ordinances to promote farm and home owner awareness and action to deal with runoff and erosion. These data are also now being used to document surface water temperature changes and resultant hypolimnetic hypoxia and anoxia, and also to track cyanobacteria blooms.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
131	Alternative Uses of Land
133	Pollution Prevention and Mitigation

Outcome #4

1. Outcome Measures

Increase in the proportion of the public and professionals knowledgeable about options for addressing risks related to watershed changes, climate variability and climate change related to storm water management.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
URI NEMO. Stormwater pollution is a major cause of impaired water quality in Rhode Island, leading to swimming beach closures, shellfishing bans, loss of recreational value, and degraded habitat. Most Rhode Island municipalities operate small Municipal Separate Storm Sewer

Systems (MS4s), and are required to comply with the EPA Phase II Storm Water Rule under the RIPDES permit program. These MS4s must enact storm water management programs to reduce pollutants that can enter drainage systems during storm events. This represents a significant burden for most municipalities already struggling with few
staff, shrinking budgets, and in most cases, limited expertise in education and outreach.

What has been done

RI NEMO provided education and outreach to municipal officials, watershed groups, the public and K-12 teachers on managing stormwater. We organized 9 new workshops for municipal officials; conducted 2 rain garden design courses with construction of 3 demonstration rain gardens at public libraries, co-sponsored a bioretention training workshop which included construction of a bioretention facility and inspection and maintenance guide, and served on a technical review committee working to update the RI Soil Erosion and Sediment Control Handbook. We continued to provide municipal stormwater managers and watershed groups with educational materials for their use in educating and involving the public in preventing stormwater pollution. These materials are widely used education on prevresulting in 23 articles on stormwater topics appearing in state and local news papers. We continued to update the state stormwater website, RIStormwateSolutions.org.

Results

Stormwater workshops for municipal officials reached more than 700 stormwater managers, design engineers, environmental educators, and others. At least 98 percent of RI stormwater managers, representing 34 of RI's 39 municipalites and 6 institutions (MS4s) regulated under the Phase II permit program, have been trained in the 2010 RI Storm Water Manual and related topics. Muncipalities thoughout the state used or customized URI materals to educate residents and others about actions they can take to prevent stormwater pollution, enabling them to develop effective stormwater managment programs and meet permit requirements. This training and outreach is conducted under the RI Stormwater Solutions project, which is managed by RI NEMO in cooperation with the RI Department of Transportation, the RI Department of Environmental Management, and the state's municipalities. In recognition of this progress, the US Federal Highway Administration awarded the 2012 Exemplary Human Environment Initiative award for Educational and Training Activities to the RI Stormwater Solutions project. Website: www.fhwa.dot.gov/environment/ehei/awards/2012/rhode_island.cfm

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation

Outcome #5

1. Outcome Measures

Increase in targeted households and professionals gaining knowledge of private well management options related to land use, climate variability and climate change, including testing, treatment, siting and protection measures.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
URI Home-A-Syst. Ten percent of Rhode Islanders depend on private wells for drinking water. In New England private wells serve 40 percent of the population. These residents are responsible for the quality of their own drinking water and need to be aware of contaminant risks to their drinking water sources and how to protect against such risks. Changing property laws and regulations in the region have increased demand for well water testing and educational materials. Education about protecting private sources of drinking water is critical to the health and safety of families relying on private wells. Audiences include private well owners, scientists and researchers, educators, federal, state, and local policymakers, and non-profit organizations.

What has been done
With RI Department of Health and state certified testing labs, developed promotional well testing discount postcard that was mailed to more than 60,000 RI households. Will continue to work with state certified labs to revise and offer promotional testing package.
Held 3 private well water workshops for 90 people in communities throughout Rhode Island. Annually the webpage receives over 40,000 visits, including private well protection, landscaping for water quality protection, and small acreage livestock management on residential properties. Hosted the regional 2011 Northeast Private Well Water Symposium in Southbury, Connecticut, November 14 & 15, 2011 for 124 professionals involved in private well water protection. Program evaluations indicate that attendees will apply what they learned at this event to improve the protection of private drinking water supplies.

Results
Post workshop evaluations show that workshop participants are taking action to protect their private well, most notably, 51% of workshop participants had their well water tested. Paper published in the Journal of Extension summarizing outcomes of private well education and training program 2004 - 2009. Evaluation of the promotional well testing discount was conducted and summarized for poster presentation at the 2011 Northeast Private Well Water Symposium. During this reporting period, more than 100 households have taken advantage of this promotional well water testing discount.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation

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 Public priorities
- Competing Programmatic Challenges

Brief Explanation

The tumultuous economy has had a negative effect on hiring new faculty and staff. Uncertain state budgets and budget cuts continue to have a negative effect on service delivery.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

· Workshops and training programs use pre and post assessment vehicles to evaluate change in stakeholder knowledge.

· Behavior change of stakeholders is assessed through longitudinal tracking of participant behaviors compared to behaviors identified prior to participation in programs.

· Extension and research outputs are subject to peer evaluations before publication.

· Citations of published works are quantified through services such as the ISA Web of Science and Google Scholar.

· Google analytics tracking software is used to generate detailed information about website use. Information includes the number of views and downloads per webpage and the numbers and types of visitors (.gov, .edu, .org, .com) to each portion of the websites.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

The Environment and Adaptive Agro-Ecosystems

☑ 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
101	Appraisal of Soil Resources	15%		25%	
123	Management and Sustainability of Forest Resources	25%		15%	
131	Alternative Uses of Land	30%		10%	
135	Aquatic and Terrestrial Wildlife	10%		25%	
136	Conservation of Biological Diversity	20%		25%	
	Total	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	0.5	0.0	1.0	0.0
Actual Paid Professional	0.0	0.0	1.0	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
0	0	117860	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	90309	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

Sustaining wildlife through habitat management is a critical issue for RI.Migrating song birds require suitable food sources to complete their migration and coastal lands have undergone extreme changes in vegetation, potentially imperiling migration success and fecundity for many native species.Ruffed Grouse are a of particular concern in southern New England because they are a native gamebird species that is currently too rare to sustain a hunting season and they serve as a "sentinel species" for the response of many species to the success or failure of management of early successional forests. Although vernal ponds in forested watersheds provide essential habitat for a host of organisms, the fecundity of these organisms is highly linked to forest disturbance and management, requiring a careful understanding of the underlying ecology. Invasive plants and and animals (e.g., Hemlock Wooly adelgid) threaten the integrity of New England habitats and could affect biodiversity within the state.

2. Brief description of the target audience

A mixture of public policy personnel (federal and state agencies as well as town conservation, planning and management officials), local nonprofit groups involved in land management, such as conservancies, interested and involved citizens, and private landowners and high school students through training and participation in the Rhode Island Environthon.

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	2130	3500	76	410

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	0	5	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer reviewed publications

Year	Actual
2012	21

Output #2

Output Measure

- Fact sheets, Bulletins and newsletters

Year	Actual
2012	3

Output #3

Output Measure

- Short courses

Year	Actual
2012	8

Output #4

Output Measure

- Website development and refinement

Year	Actual
2012	6

Output #5

Output Measure

- Books and monographs
  Not reporting on this Output for this Annual Report

Output #6

Output Measure

- Abstracts

Year	Actual
2012	17

Output #7

Output Measure

- Workshops and Conferences hosted

Year	Actual
2012	6

Output #8

Output Measure

- Public presentations

Year	Actual
2012	29

Output #9

Output Measure

- Student training

Year	Actual
2012	45

Output #10

Output Measure

- MS Theses and PhD Dissertations

Year	Actual
2012	9

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increased (%) forest and conservation geospatial information resources and use by towns, agencies, NGOs and the public
2	Increased understanding by wildlife biologists and managers through publications and talks of how habitat quality and forest management practices affect populations of grouse, migrating song birds, amphibians and other wildlife.
3	Increased understanding by wildlife biologists and other habitat managers through publications and talks on the risks of invasive species, with special emphasis on phragmites.
4	Increased understanding by wildlife biologists, NGOs, local and state officials through publications and talks on people's willingness to support ecosystems and conservation.
5	Increased development of new sub-aqueous soils interpretive approaches and dissemination of these approaches to other scientists and natural resource managers through publications, workshops or talks.
6	Data will be used in models for coastal managers that will enable them to assess potential for coastal marsh restoration to enhance C sequestration in those ecosystems.
7	Our proposed research would increase understanding of three critical issues: inadequate GIS-based information about the spatial extent of early successional habitat, inadequate use of the Adaptive Management Paradigm to evaluate past and present efforts to expand early successional habitat, and inadequate understanding of how certain forest management activities affect populations of key wildlife species. Our proposed research will directly strengthen outreach programs to promote better targeted and more effective forest management interventions in southern New England.
8	Increased understanding and acceptance by the nursery industry, the general public, professional groups, and research scientists through patents, publications and talks of the occurrence and value of adelgid-resistant eastern hemlocks.

Outcome #1

1. Outcome Measures

Increased (%) forest and conservation geospatial information resources and use by towns, agencies, NGOs and the public

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Geospatial research and technology can play an enormously important role in providing decision support for land use decision making. In particular, new GIS, GPS and remote sensing tools are continually being made available which are poised to assist local decision makers to both visualize existing and future land use patterns, and model the various impacts of these patterns. Local governments also play an important role in forest and wildlife management within Rhode Island. Policy makers and professionals need information on which to base their land use decisions, including options for land preservation, identification of sensitive areas, and the management and protection of open space areas.

What has been done
Several new training programs developed to use geospatial data and technology for land stewardship. 395,158 data files (832 GB) downloaded from RREA-supported geospatial data clearinghouses. Represented RI in the Northeast LiDAR Project to acquire accurate elevation data for coastal New England counties. In partnership with local land trusts, we developed a standard protocol for the creation of conservation land management plans. Assisted with the 2012 RI Land and Water Conservation Summit. Over eighty online map services now available. GPS base station correction data and equipment loans support conservation work such as evaluating forest health, mapping public access trails, and monitoring invasive species.

Results
URI RREA personnel served in a variety of leadership and supporting roles for initiatives that have far-reaching impacts on the state and region. The URI RREA Program is the sole provider of instructor-led geospatial technology training opportunities in Rhode Island and provides a unique opportunity for trainees to learn about the management of forest resources while learning new

technical skills. The RREA-supported geospatial data clearinghouse (RIGIS) is the sole portal for GIS data in the state and is extensively used by the natural resource management community. Our technical training and GIS data are the basis of thousands of land management decisions across the state.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity

Outcome #2

1. Outcome Measures

Increased understanding by wildlife biologists and managers through publications and talks of how habitat quality and forest management practices affect populations of grouse, migrating song birds, amphibians and other wildlife.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Managing coastal environments for migrating songbirds. Migrating song birds require suitable food sources to complete their migration and coastal lands have undergone extreme changes in vegetation, potentially imperiling migration success and fecundity for many native species.

What has been done
Graduate and undergraduate students and research technicians conducted field experiments that determined (a) how variation in refueling rates of migratory birds at different coastal New England sites is related to fruit resource abundance, (b) the fruit preference of birds during migration, and (c) how body condition of migratory birds affected their movements at stopover sites that differed

in the abundance of fruits.

Results
All proposed field experiments were completed. One MSc student successfully defended her thesis in August 2012, one PhD student completed his last field season and will complete his degree by Dec 2013, one PhD student completed her first field season on this project. McWilliams and colleagues presented results from this research at two scientific conferences and published ten peer-reviewed publications based on this research.

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity

Outcome #3

1. **Outcome Measures**

Increased understanding by wildlife biologists and other habitat managers through publications and talks on the risks of invasive species, with special emphasis on phragmites.

Not Reporting on this Outcome Measure

Outcome #4

1. **Outcome Measures**

Increased understanding by wildlife biologists, NGOs, local and state officials through publications and talks on people's willingness to support ecosystems and conservation.

Not Reporting on this Outcome Measure

Outcome #5

1. **Outcome Measures**

Increased development of new sub-aqueous soils interpretive approaches and dissemination of these approaches to other scientists and natural resource managers through publications, workshops or talks.

2. **Associated Institution Types**

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Hydropedology: Genesis, Properties, and Distribution of Hydromorphic Soils. Developing subaqueous soil use and management interpretations is critical to providing coastal managers with tools to make decisions. Of particular interest water quality, aquaculture and restoration of commercially important shellfish populations, effects of dredging, the role of subaqueous soils in the regional and global carbon cycle, and submerged aquatic vegetation health and restoration.

What has been done

In this project, we are testing various subaqueous soil types to determine the most productive areas for shellfish aquaculture, evaluating which aquaculture methods may be the best approach depending on the soil type, and determining what dredging for navigation purposes does to the biological community. In our associated outreach efforts we are coordinating with coastal managers, regulators, and aquaculture specialists to insure that the results from our studies are delivered directly to the stakeholders. We also presented our findings at several regional meetings.

Results

In both years of our studies significant differences were found in growth and survival of oysters relative to the soil type. Differences in growth between on-bottom and bag-and rack aquaculture approaches are still being assessed. Our preliminary analyses suggest that the degree of mortality and oyster quality may differ depending on the approach. The size of the seed oyster that is placed on the bottom is also important, the larger the better. Our preliminary studies of water column and soil pH suggest that coastal acidification may be impacting recruitment of oysters in the wild. Effects of dredging on soil ecology are still being assessed. Our preliminary studies suggest that dredging areas with eelgrass significantly impacts the soil biology and ecology.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources

Outcome #6

1. Outcome Measures

Data will be used in models for coastal managers that will enable them to assess potential for coastal marsh restoration to enhance C sequestration in those ecosystems.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Nutrient loading to coastal ecosystems alters primary production, promotes hypoxia, and can alter the sustainability of many resources that depend on coastal wetlands. This work will specifically help to predict impacts of nutrient loading on greenhouse gas emissions from coastal salt marshes in Narrangasett Bay, RI.

What has been done
Greenhouse gas fluxes were measured by 3 undergraduates and 2 Ph.D. graduate students in 3 marshes along an N gradient. Methods were optimized and will be applied in the next field season. Preliminary data were provided to a collaborator who is modeling major environmental controls on the gas fluxes observed thus far.

Results
Data thus far indicate strong potential for N loading to affect greenhouse gas emissions from coastal ecosystems, and on-going work will aim to better quantify the extent of this impact while identifying major environmental controls.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources

Outcome #7

1. Outcome Measures

Our proposed research would increase understanding of three critical issues: inadequate GIS-based information about the spatial extent of early successional habitat, inadequate use of the Adaptive Management Paradigm to evaluate past and present efforts to expand early successional habitat, and inadequate understanding of how certain forest management activities affect populations of key wildlife species. Our proposed research will directly strengthen outreach programs to promote better targeted and more effective forest management interventions in southern New England.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Conservation of early successional forests within the eastern United States is an important management concern because these forests and their associated wildlife species are relatively rare and require active management.

What has been done
The research on the spatial extent of early successional habitat in RI concluded that the extent of shrubland habitat in RI is still decreasing, and that the populations of many wildlife species depending on this habitat are at risk. The research on private involvement in forest management concluded that the RI Coverts program has been effective in motivating private landowners to play an important role in creating wildlife habitat. The research on American Woodcock provided new insights on the impact of forest management on this important and charismatic early successional species.

Results
This research involved the continued training of four graduate students and six undergraduate students in field biology skills, laboratory analysis skills, and computer-intensive analysis of data. The proposed GIS analyses are completed. A third successful field season was completed on the woodcock project. During the last year of the project, we successfully evaluated past and present

management efforts to expand early successional habitats for wildlife species at risk.

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife

Outcome #8

1. Outcome Measures

Increased understanding and acceptance by the nursery industry, the general public, professional groups, and research scientists through patents, publications and talks of the occurrence and value of adelgid-resistant eastern hemlocks.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The hemlock woolly adelgid is an invasive pest that kills eastern hemlocks. Some rare naturally-occurring eastern hemlock trees may possess some degre of resistance to the adelgid. If borne out, these trees could play an important role in combatting the threat posed by this pest.

What has been done
We have worked with the URI Office of Intellectual Property to prepare for the filing of a preliminary patent. We have greatly increased the number of grafted and propagated cuttings we have in our common garden. We have spoken at three symposiums about the potential for adelgid-resistant hemlocks and their role in an integrated pest management program.

Results
We have learned that adelgid resistance does persist in propagated cuttings from putatively-resistant parent trees, and developed improved grafting techniques suitable for large-scale plant production. Working with researchers from the Alliance to Save Threatened Forests, and RI-based nursery professionals, has enabled us to communicate our results to a wide range of constituencies.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

We exist in turbulent times nationally, regionally, locally, and institutionally. Appropriations budgets are being cut dramatically on many fronts, resulting in fewer resources for increasing need areas. As finances and personnel change, it is likely our programs and outcomes will have to shift to accommodate them.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

· Workshops and training programs use pre and post assessment vehicles to evaluate change in stakeholder knowledge.

· Google analytics tracking software is used to generate detailed information about website use. Information includes the number of views and downloads per webpage and the numbers and types of visitors (.gov, .edu, .org, .com) to each portion of the websites.

· Extension and research outputs are subject to peer evaluations before publication.

· Citations of published works are quantified through services such as the ISA Web of Science and Google Scholar.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Community Gardening and Outreach

☑ 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
112	Watershed Protection and Management	20%		35%	
136	Conservation of Biological Diversity	20%		35%	
205	Plant Management Systems	25%		30%	
806	Youth Development	35%		0%	
	Total	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	3.0	0.0	0.0	0.0
Actual Paid Professional	3.1	0.0	0.1	0.0
Actual Volunteer	26.9	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
146868	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
65420	0	5946	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

• Ongoing outreach efforts to increase knowledge, change behavior and improve conditions related to environmental quality, community well-being and social equality;
• Delivery of sustainable horticulture and urban agriculture outreach to school children and to residents in the urban population center in the state;
• Installation of demonstration sites for use in such research and Extension programs; and
• Development and dissemination of fact sheets, websites and newsletters.

2. Brief description of the target audience

- Decision makers and policy analysts (local, state and federal agencies)
- The general public
- Early adopters (i.e. Master Gardeners, Master Composters)
- Agricultural producers
- School-aged children
- Urban populations
- Municipal planners
- Private sector firms engaged in watershed management, landscaping, onsite wastewater treatment and/or private wells
- Various NGOs (land trusts, environmental nonprofit organizations)

3. How was eXtension used?

eXtension was used to survey other State Coordinators of Master Gardener Programs nationwide to inform decision-making at URI.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	121000	250000	5000	100000

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	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer reviewed publications

Year	Actual
2012	0

Output #2

Output Measure

- Fact sheets, bulletins and newsletters

Year	Actual
2012	15

Output #3

Output Measure

- Public service announcements, news releases/articles

Year	Actual
2012	16

Output #4

Output Measure

- Website development and refinement

Year	Actual
2012	7

Output #5

Output Measure

- Books and monographs

Year	Actual
2012	0

Output #6

Output Measure

- Abstracts

Year	Actual
2012	0

Output #7

Output Measure

- Workshops or Conferences hosted or co-hosted

Year	Actual
2012	31

Output #8

Output Measure

- Presentations and short courses

Year	Actual
2012	80

Output #9

Output Measure

- Student training

Year	Actual
2012	10

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increase in target audiences (households) gaining research-based knowledge of landscape management practices that minimize contamination of surface and groundwater with pesticides and fertilizers.
2	Increase in target audiences (household) gain of science-based research of landscape design and management practices that minimize degradation of wildlife habitat and biodiversity and contamination of surface and groundwater with pesticides and fertilizers.
3	Increase in knowledge and critical-thinking skills of students in grades K-12 related to individual environmental stewardship, sustainable horticulture, urban agriculture and energy.
4	Expanded impact of Extension and alleviation of Extension staff time required to administer and extend the reach of public education in RI through the recruitment, training, support, management, recognition and retention of URI Master Gardener volunteers to deliver outreach messages on behalf of staff.
5	Maintain and enhance Master Composter Training to extend the educational reach of Extension by recruiting, training and managing volunteers to educate and encourage RI citizens to compost. In addition to the core training, compost workshops will be added throughout the year for the general public.
6	Establish and maintain demonstration gardens in partnership with URI Master Gardener volunteers that serve as field classrooms for Rhode Islanders interested in growing their own food; donate produce grown in the demonstration gardens to local food banks to increase nutrition in underserved communities.

Outcome #1

1. Outcome Measures

Increase in target audiences (households) gaining research-based knowledge of landscape management practices that minimize contamination of surface and groundwater with pesticides and fertilizers.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Increase in target audiences (household) gain of science-based research of landscape design and management practices that minimize degradation of wildlife habitat and biodiversity and contamination of surface and groundwater with pesticides and fertilizers.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Rhode Island is the second most densely populated state in the United States, and the negative impact land development and poor landscape management practices have on habitat quality and quantity and water quality are profound.

What has been done
In partnership with state and local regulatory agencies and nonprofit organizations, Extension staff have designed and delivered training programs that target homeowners, Master Gardener and Composter volunteers and college students interested and/or engaged in landscape design and/or management. Practical tips regarding landscape design and management techniques that protect habitat and surface and groundwater are shared, and through more rigorous training modules, professionals are able to expand their portfolio of services to include stormwater management techniques for water quality protection and invasive plant management for habitat preservation.

Results
A group of people numbering 2,000 are now aware (as of 2012) of the link between backyard landscape management and environmental degradation. Of those 2,000, nearly 500 professionals now count invasive management, storwmater management, planting design for habitat and ecological cultural practices among their new skills and/or business services.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
136	Conservation of Biological Diversity
205	Plant Management Systems

Outcome #3

1. Outcome Measures

Increase in knowledge and critical-thinking skills of students in grades K-12 related to individual environmental stewardship, sustainable horticulture, urban agriculture and energy.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	5500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Much of Rhode Island?s youth, especially in low income urban settings, lack access to nature and hands-on science education to supplement classroom learning. This is evidenced by the low science scores on NECAP testing (only 29% of high school students demonstrated proficiency in science) and few students entering into the STEM career field.

What has been done
The URI Learning Landscape Program, Eco-Exploration Camp and family outreach events provided experiential science learning opportunities to students in grades K-12. Half day field trips were offered in the winter and spring in both Kingston, RI and Providence, RI, with reduced admission and bus scholarships available for students from low income backgrounds, allowing us to reach a diverse audience. This program covered topics such as seed starting, composting, the

water cycle and watersheds, native mammals and birds, insects and pollination and ecosystems and adaptations. The Eco-Exploration Summer Camp held at a community garden in Providence connected elementary and middle school students from urban communities to the biodiversity found in city greenspaces, the origin of their food, native species and other issue-based topics. These programs are aligned with RI Grade Span Expectations for life and earth science, as well as for written and oral communication and environmental stewardship.

Results
Children from suburban and urban areas without access to gardens and experiences in the natural world had the opportunity to learn about environmental science while reinforcing skill development underway in their classroom curriculum. Students were exposed to science content and STEM career paths by visiting University-run programs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
136	Conservation of Biological Diversity
205	Plant Management Systems
806	Youth Development

Outcome #4

1. Outcome Measures

Expanded impact of Extension and alleviation of Extension staff time required to administer and extend the reach of public education in RI through the recruitment, training, support, management, recognition and retention of URI Master Gardener volunteers to deliver outreach messages on behalf of staff.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	775

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The ability of URI Extension staff to extend science-based information to address community environmental, economic, social and aesthetic challenges to the general public is limited by

funding and time restraints due to other projects.

What has been done
The 2013 Master Gardener Program core training was conducted from January - May of 2012 to train volunteer interns in sustainable horticulture and agriculture basics and practice to 110 new recruits; Extension staff supported the volunteer association in the development and implementation of a year-long continuing education program for veteran volunteers, volunteer recognition activities and community outreach programs and projects to keep volunteers engaged to deliver outreach messages on behalf of Extension staff.

Results
The active URI Master Gardener base grew to 575 individuals in 2012 donating over 49,000 hours of volunteer time delivering outreach messages on behalf of Extension staff.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
136	Conservation of Biological Diversity
205	Plant Management Systems
806	Youth Development

Outcome #5

1. Outcome Measures

Maintain and enhance Master Composter Training to extend the educational reach of Extension by recruiting, training and managing volunteers to educate and encourage RI citizens to compost. In addition to the core training, compost workshops will be added throughout the year for the general public.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	306

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Organic materials that are compostable in backyards make up almost 30% of the waste stream in Rhode Island. Transporting and landfilling these materials is expensive from both an economic and environmental standpoint.

What has been done
URI Master Composter volunteer who have successfully completed the core training volunteer year-round by staffing information booths, phone and email consultations, managing community compost sites and delivering public presentations through the URI Speakers Bureau.

Results
(82) active URI Master Composter volunteers donated over 3,000 hours of time in 2012; advanced and supplemental compost workshops and lectures were attended by over 300 participants.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
136	Conservation of Biological Diversity
205	Plant Management Systems
806	Youth Development

Outcome #6

1. Outcome Measures

Establish and maintain demonstration gardens in partnership with URI Master Gardener volunteers that serve as field classrooms for Rhode Islanders interested in growing their own food; donate produce grown in the demonstration gardens to local food banks to increase nutrition in underserved communities.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Food security and lack of access to healthy food continues to be a problem for many individuals and families in Rhode Island, especially in urban areas.

What has been done
URI Master Gardener volunteers have developed a total of (8) demonstration vegetable gardens in (6) different Rhode Island communities to showcase sustainable vegetable gardening techniques and practices through actual garden management throughout the season and via free educational workshops hosted at each of the gardens.

Results
In 2012, over 12,000 pounds of produce was grown and donated to local food pantries and the RI Community Food Bank. The demonstration gardens and educational workshops hosted at the gardens have helped to improve the lives of Rhode Island citizens through encouragement of healthy lifestyles and nutrition and environmental and economic sustainability.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

The ability to deliver programs and services was impacted by funding as fee programs and grants are used to supplement federal dollars received.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Written or digital evaluations were distributed and collected for each presentation, program, class and workshop offered in 2012 to assess changes in attitude and behavior as a result of program implemented by Extension staff and trained volunteers.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 11

1. Name of the Planned Program

Health and Well-being of Livestock

☑ 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
302	Nutrient Utilization in Animals	10%		0%	
311	Animal Diseases	90%		100%	
	Total	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	0.3	0.0	1.3	0.0
Actual Paid Professional	0.6	0.0	0.7	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
22670	0	80226	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
53418	0	65891	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

The research focus of this program is to investigate alternative methods of treating gastrointestinal nematode infections in small ruminant producers in the Northeast and other regions of the

country. Vitamin E supplementation and the use of condensed tannins from cranberry leaves were examined.

2. Brief description of the target audience

The target audiences for the proposed research are livestock farmers and extension agents in the Northeast and nationwide.

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	30	120	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	0	1	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer reviewed publications

Year	Actual
2012	1

Output #2

Output Measure

- Student training

Year	Actual
2012	3

Output #3

Output Measure

- Scientific and Professional Presentations

Year	Actual
2012	1

Output #4

Output Measure

- Public presentations

Year	Actual
2012	2

Output #5

Output Measure

- Abstracts

Year	Actual
2012	1

Output #6

Output Measure

- Fact sheets, bulletins and newsletters

Year	Actual
2012	0

Output #7

Output Measure

- MS Theses and PhD Dissertations

Year	Actual
2012	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Development of fertility assays for use in AI industry
2	Modification of animal feeds which will result in the improvement of immune status and disease resistance

Outcome #1

1. Outcome Measures

Development of fertility assays for use in AI industry

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Modification of animal feeds which will result in the improvement of immune status and disease resistance

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Gastrointestinal nematode (GIN) infections are a serious economic problem for small ruminant producers in the Northeast, limiting their ability to raise sheep and goats on pasture. The Barber Pole worm (Haemonchus contortus), in particular, has caused massive economic losses in the south and is starting to make its' presence felt in New England.

What has been done
Research was conducted to investigate the anthelmintic potential of the condensed tannins in cranberries and the effect of vitamin E supplementation on the host response to parasite infection. Two parasite control workshops were held for Rhode Island small ruminant producers and after the completion of a comprehensive parasite control survey, the producer farms were visited for the determination of FAMACHA and body condition scoring of their flock or herd.

Results
A significant inhibitory effect of cranberry extract on in vitro larval development and artificial exsheathment of Haemonchus contortus was observed. These investigations will be continued with lambs in 2013. On the outreach side Eight RI producers attended workshops and four

completed the comprehensive parasite control survey and participated in the farm visits. Rhode Island producers visited in previous years completed a follow-up survey with 100% indicating that their parasite control practices had changed since participating in this project.

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Government Regulations

Brief Explanation

We exist in turbulent times nationally, regionally, locally, and institutionally. Appropriations budgets are being cut dramatically on many fronts, resulting in fewer resources for increasing need areas. As finances and personnel change, it is likely our programs and outcomes will have to shift to accommodate them.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Results of experiments with condensed tannins derived from cranberry leaf extract appear promising for control of gastrointestinal nematodes in sheep and goats. The use of readily available natural product would be welcomed by producers. Extension efforts with local farmers have gone well with significant interest and multiple year participation.

Key Items of Evaluation

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%	
	Total	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 (seea virtual tour of this facility at 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

Year	Actual

2012	2

Output #4

Output Measure

- Conference proceedings

Year	Actual
2012	0

Output #5

Output Measure

- Technical documents, fact sheets and bulletins

Year	Actual
2012	2

Output #6

Output Measure

- Workshops

Year	Actual
2012	0

Output #7

Output Measure

- Website development and refinement

Year	Actual
2012	0

Output #8

Output Measure

- Public presentations

Year	Actual
2012	0

Output #9

Output Measure

- Student training

Year	Actual
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

Year	Actual
2012	0

Output #11

Output Measure

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

Year	Actual
2012	0

Output #12

Output Measure

- MS Theses and PhD Dissertations

Year	Actual
2012	0

Output #13

Output Measure

- Professional training

Year	Actual
2012	0

Output #14

Output Measure

- Professional/scientific presentations

Year	Actual
2012	0

Output #15

Output Measure

- Post docs

Year	Actual
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

Year	Actual
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

KA Code	Knowledge Area
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

V(A). Planned Program (Summary)

Program # 13

1. Name of the Planned Program

Natural and Environmental Resource Economics, Markets and Policy

☑ 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
605	Natural Resource and Environmental Economics	50%		50%	
609	Economic Theory and Methods	25%		25%	
610	Domestic Policy Analysis	25%		25%	
	Total	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	0.0	0.0	2.0	0.0
Actual Paid Professional	0.8	0.0	1.4	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
30336	0	139146	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
39712	0	165644	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

•Evaluate the impacts of ecolabeling on consumer demand for frozen seafood. •Determine the impacts of consumer concerns of PCB contamination of farmed salmon on US import demand for farmed salmon. •Evaluate the impact of farmed shrimp on the US market and how shrimp aquaculture is changing prices. •Investigate the impact of homogeneous resource modeling in a heterogeneous fishery by synthesizing a stochastic production frontier model with the estimation classification algorithm. •Model spatial decisions of fishermen in the Northeast Atlantic herring fleet. •Run experiments using the game theoretic model.

2. Brief description of the target audience

The target audience includes fishers, environmental economists, and policy makers.

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	100	0	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	0	4	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer reviewed publications

Year	Actual
2012	1

Output #2

Output Measure

- Books and monographs
  Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Abstracts
  Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Conference proceedings

Year	Actual
2012	3

Output #5

Output Measure

- M.S. theses and Ph.D. dissertations

Year	Actual
2012	1

Output #6

Output Measure

- Professional/scientific presentations

Year	Actual
2012	1

Output #7

Output Measure

- Student training

Year	Actual
2012	3

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increase understanding of scientists and decision makers through publications and presentations of the the outcomes of game theoretical models to identify fisheries where political intervention is likely based on the degree of heterogeneity among harvesters.
2	Increase understanding of private and public sector and scientists of economic and market factors in fisheries and aquaculture management through publications and presentations.
3	Improve understanding and management of agricultural and aquacultural risks, including those arising from climate change.
4	Increased understanding of the private and public sector and scientists of economic valuation of air quality and greenhouse gas emissions through publications and presentations

Outcome #1

1. Outcome Measures

Increase understanding of scientists and decision makers through publications and presentations of the the outcomes of game theoretical models to identify fisheries where political intervention is likely based on the degree of heterogeneity among harvesters.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Increase understanding of private and public sector and scientists of economic and market factors in fisheries and aquaculture management through publications and presentations.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Marketing, Trade, and Management of Fisheries and Aquaculture Resources: Effective management of our fisheries resources is critical to maintaining the health of our oceans and sustaining our recreational and commercial fishing communities. Insights from the work will generate new understanding of how to incorporate economic and market factors into fisheries and aquaculture management for the public and private sectors.

What has been done
The URI Seafood Initiative and its website haw been the primary output of this project in the past periods; howewr, with the departure of the principal investigator involved in the Initiative, nothing has occurred during this reporting period. A new project began during this reporting period, which is within the stated objective, that looks into better management practice for oyster aquaculture operation in the face of increasing risk of food bome disease due to climate change. The project will focus primarily the oyster farmers in RI. Efforts in collecting publicly available data has begun.

Results
The analysis of survey data collected was completed in previous reporting period, and due to the departure of principal investigator involved in Sustainable Seafood Initiative there has not been any follow up on that project. The new oyster farm project is still in its infancy; the anticipated outcomes include improved shellfish management policy that recognizes the market forces at work when evaluating proposed intervention in, or regulation of, shellfish harwst timing, volume, or practices. In particular, interventions on the supply side for a given species will necessarily interact with market demand, which will incorporate prices/availability of that species outside the local market, as well as prices/availability of other shellfish species in the region.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics
609	Economic Theory and Methods
610	Domestic Policy Analysis

Outcome #3

1. Outcome Measures

Improve understanding and management of agricultural and aquacultural risks, including those arising from climate change.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Climate change and globalization are sources of evolving risks to agricultural producers in the US. Climate change will result in increasingly variable production for land-based crops and aquaculture, and supply and demand effects will result in attendant price fluctuations. Globalization will exacerbate price risks due to increasing competition and equilibration of international market prices, as well as transmitting weather shocks abroad into price fluctuations inside the US. This project will address these risks (1) by re-formulating best management practices in light of the evolving risks; and (2) by exploring improvements to existing financial risk

management policies available to US farmers.

What has been done
Oysters: Preliminary results are being disseminated in the forthcoming issue of the Narragansett Bay Journal. Agriculture: This line of research is more basic: identifying cost-saving measures and alternative risk management policies, some of which may require national implementation to restructure crop insurance. Modeling and results are not complete enough at this stage for dissemination to the general public.

Results
Oysters: The simulation model has farmers choose between fast-growing oyster and disease resistant strains. The model uses an expected utility approach to identify the optimal share of disease resistant oysters in the farmer's portfolio, as a function of climate change and risk aversion. The model predicts that changing water temperatures in Narragansett Bay will lead to increasing reliance on disease resistant oysters, and extreme climate change may necessitate improved financial risk management. Agriculture: I have developed several decision-making frameworks for alternative means of insuring crop losses. I have found that deductible programs are always preferable to coinsurance programs with the same expected value when farmers are risk averse, but that in the case of shallow-loss policies these differences are small. Shallow-loss coverage is effective only in the range where losses happen more predictably, so farmers are unwilling to pay significant risk premium for deductibles. Thus, higher deductibles proposed in the current Farm Bill are likely extra subsidies rather than equivalent policies. Also, I have developed a new general equilibrium pricing model in which traditional crop insurance is replaced by options markets. Preliminary results suggest better coverage could be obtained cheaper than RMA rates. Implementation challenges still need resolution.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics
609	Economic Theory and Methods
610	Domestic Policy Analysis

Outcome #4

1. Outcome Measures

Increased understanding of the private and public sector and scientists of economic valuation of air quality and greenhouse gas emissions through publications and presentations

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Effective balancing of economic forces and unwanted byproducts of economic activity is critical for sustaining human health and wellbeing. Insights into the valuation of air pollution and greenhouse gas emissions will generate new understanding of how our economy should evolve and will evolve if left unchecked.

What has been done
Estimated house price appreciation resulting from 1990 Clean Air Act and assessed the distribution of those benefits across geographic locations and between various socioeconomic groups. Gathered data from Los Angeles Metro Area related to air quality, housing prices, population density, roads and topology and created variables for regression analysis using GIS. Gathered smart meter data from three buildings on the Naval War College campus and analyzed the data for evidence of energy reductions following energy efficiency upgrades.

Results
For air pollution, results indicate that while the prices of owner-occupied housing units respond quickly to changes in amenities, the prices of rental-occupied housing is slow to respond. Using housing markets to value environmental and other public amenities is quite common in economics, my results influence future analyses by validating the use of owner-occupied housing units to value amenities and by cautioning against using rental-occupied housing. In energy work, econometric estimates of energy savings corroborated ex ante engineering estimates, which argues that, contrary to many findings in the economics literature, energy efficiency projects can have measurable impacts on total energy consumption.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics
609	Economic Theory and Methods
610	Domestic Policy Analysis

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

We exist in turbulent times nationally, regionally, locally, and institutionally. Appropriations budgets are being cut dramatically on many fronts, resulting in fewer resources for increasing need areas. As finances and personnel change, it is likely our programs and outcomes will have to shift to accommodate them.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

· Extension and research outputs are subject to peer evaluations before publication.
· Citations of published works are quantified through services such as the ISA Web of Science and Google Scholar.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 14

1. Name of the Planned Program

Sustainable Energy

☑ 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
132	Weather and Climate	15%		20%	
133	Pollution Prevention and Mitigation	20%		20%	
141	Air Resource Protection and Management	15%		0%	
605	Natural Resource and Environmental Economics	25%		0%	
608	Community Resource Planning and Development	10%		40%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	15%		20%	
	Total	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	1.0	0.0	1.0	0.0
Actual Paid Professional	1.6	0.0	0.0	0.0
Actual Volunteer	0.0	0.0	0.1	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**
79648	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
46269	0	10439	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

Energy benchmarking and greenhouse gas inventory in selected RI municipalities
Feasibility and implementation of energy efficiency and renewable energy technologies
Feasibility and implementation of air quality control technologies
Energy training for municipal officials and employees
Residential energy education:
- Education of available efficiency programs and incentives provided by the public utility
- Education of current state initiatives for renewable energy and energy efficiency
Energy training and professional development training for URI students
Public energy education through workshops, newspaper columns, presentations, canvassing
Outreach Activities:
- Sustainable energy page on local websites
- Community workshops
- Library lectures on renewable energy technologies
- Site visits of state renewable energy projects

2. Brief description of the target audience

Municipal officials:
- Building and utility managers
- Financial administrators
- Mayors and Town Managers
Municipal employees
Residential energy consumers
Small business owners
School systems
ESCos (Energy Service Companies)
Ocean State Clean Cities Coalition
Legislators
Academic professionals (students and research faculty)
Private sector industry personnel

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	2660	105000	200	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	3	1	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Fact sheets, Bulletins and newsletters

Year	Actual
2012	20

Output #2

Output Measure

- Short courses

Year	Actual
2012	0

Output #3

Output Measure

- Website development and refinement

Year	Actual
2012	5

Output #4

Output Measure

- Workshops and Conferences hosted

Year	Actual
2012	30

Output #5

Output Measure

- Public presentations

Year	Actual
2012	21

Output #6

Output Measure

- Student training

Year	Actual
2012	50

Output #7

Output Measure

- Certifications

Year	Actual
2012	36

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Build and leverage partnerships across multiple stakeholder groups
2	Increase stakeholder awareness of energy conservation benefits (municipalities, small business, consumers)
3	Build capacity within local municipalities to address energy management and GHG emission reduction
4	Link funded activities to broader climate management issues.
5	Increase energy conservation behaviors by municipal, residential and small business stakeholders
6	Develop replicable project and program models for sustainable energy education and management
7	Design and install demonstration renewable energy projects as part of overall energy management system
8	Provide URI undergraduate and graduate students with opportunities to gain invaluable experiential and interdisciplinary experience addressing real-world energy challenges through the URI Energy Fellows Program.
9	Complete energy benchmarking of public facilities in (4) select Rhode Island municipalities to prioritize locations for and implement projects that achieve cost-effective, persistent greenhouse gas reductions and serve as models for communities across the country.
10	Provide a broader array of programs and services for RI stakeholders concerned about energy issues in the transportation sector through NIFA-funded energy outreach programs at URI, coordinated with the DOE-funded Ocean State Clean Cities Coalition (OSCC), also at URI.
11	Develop tools and guidelines and analyze data for use by RI cities and towns to site and manage new renewable energy activity through a project led by the Renewable Energy Siting Partnership (RESP) composed of URI scientists and outreach experts.
12	Capitalize on the wealth of both experience and funding available at the state and federal levels to accelerate and facilitate reduction of diesel pollution from work performed on projects managed by the RI Department of Transportation (RIDOT).
13	Assist homeowners, renters, and small business owners in select RI municipalities in reducing their energy consumption and saving money on monthly utility bills by partnering with National Grid to provide current information on available incentive and rebate programs for energy efficiency measures.
14	Provide URI undergraduate students from under-represented cultural backgrounds with interdisciplinary, experiential learning opportunities addressing real-world challenges and prepare those students to enter the job market with the skills and training needed to succeed through the Science and Engineering Fellows Program (SE Fellow).

Outcome #1

1. **Outcome Measures**

Build and leverage partnerships across multiple stakeholder groups

Not Reporting on this Outcome Measure

Outcome #2

1. **Outcome Measures**

Increase stakeholder awareness of energy conservation benefits (municipalities, small business, consumers)

Not Reporting on this Outcome Measure

Outcome #3

1. **Outcome Measures**

Build capacity within local municipalities to address energy management and GHG emission reduction

Not Reporting on this Outcome Measure

Outcome #4

1. **Outcome Measures**

Link funded activities to broader climate management issues.

Not Reporting on this Outcome Measure

Outcome #5

1. **Outcome Measures**

Increase energy conservation behaviors by municipal, residential and small business stakeholders

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Develop replicable project and program models for sustainable energy education and management

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Design and install demonstration renewable energy projects as part of overall energy management system

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Provide URI undergraduate and graduate students with opportunities to gain invaluable experiential and interdisciplinary experience addressing real-world energy challenges through the URI Energy Fellows Program.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Rhode Island has a growing green economy, and the energy sector represents one of the most rapidly growing industries. Businesses in the private sector are seeking individuals with experience and training in the energy field; and URI students are showing a growing interest in energy studies and experiential learning opportunities. Recognizing the need for training per employers and experiential learning and networking opportunities per students, the URI Energy Fellow Program was created in 2008 and continues to provide links to experiential learning

networking opportunities for undergraduate and graduate students.

What has been done
The URI Energy Fellows Program accepted (12) undergraduate and graduate students in 2012 to work on a variety of energy research and outreach projects led by URI Outreach Center staff, URI research faculty, and external partner organizations and businesses in RI. In addition to project work, students received general energy education, participated in team-building exercises and professional development workshops to improve communication and networking skills, and have attended field trips to expand their knowledge of the energy field and the different sectors within it.

Results
Of 21 URI Energy Fellows from the 2011 program, (3) or 14% pursued graduate studies in related fields, and (11) or 52% received job offers for both public and private sector energy-related positions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
133	Pollution Prevention and Mitigation
141	Air Resource Protection and Management
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #9

1. Outcome Measures

Complete energy benchmarking of public facilities in (4) select Rhode Island municipalities to prioritize locations for and implement projects that achieve cost-effective, persistent greenhouse gas reductions and serve as models for communities across the country.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Buildings account for 45% of carbon emissions and 70% of electricity consumption in the United States. Benchmarking building energy performance against other buildings with similar building and operating characteristics allows municipalities to assess energy management goals over time and identify strategic opportunities for savings. Municipalities are in need of technical assistance and training in identifying and implementing sustainable energy projects and guidance in fostering sustainable behavior change among their officials, employees, residents, and businesses.

What has been done
The URI Outreach Center Energy Team presented reports to (4) select RI municipalities that included a) a baseline of energy consumption as well as two additional years of comparable consumption data to identify trends and reductions; b) assistance with the adoption of municipal energy policies, c) a draft energy management guide, d) assistance with the development of replicable energy efficiency showcase projects, and e) hosted numerous educational workshops for officials, employees, and residents.

Results
Through means of education and outreach deliverables and the implementation of both energy policies and energy efficiency showcase projects, the URI Outreach Center Energy Team is on track to helping all (4) select RI municipalities achieve a 10% reduction in energy consumption and greenhouse gas emissions in both their municipal and residential sectors.

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
133	Pollution Prevention and Mitigation
141	Air Resource Protection and Management
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #10

1. Outcome Measures

Provide a broader array of programs and services for RI stakeholders concerned about energy issues in the transportation sector through NIFA-funded energy outreach programs at URI, coordinated with the DOE-funded Ocean State Clean Cities Coalition (OSCC), also at URI.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Ocean State Clean Cities (OSCC) Program provides resources and programs to reduce U.S. dependence on fossil fuels in the transportation arena. The wealth of information and services available through OSCC provides a valuable addition to energy services and information available to RI citizens.

What has been done
The OSCC hosted (7) outreach events focused on various alternative fuel programs, incorporated its website into the URI Outreach Center website, and written and distributed a newsletter that reaches over (1,000) stakeholders quarterly. Active OSCC stakeholder committees worked on biodiesel and electric vehicle infrastructure and opportunities to expand use of CNG vehicles in RI as well.

Results
An active and strengthening coalition of stakeholders are working collaboratively to explore all opportunities to reduce reliance on petroleum for transportation. Metrics are being gathered to allow quantitative assessment of progress.

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
133	Pollution Prevention and Mitigation
141	Air Resource Protection and Management
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #11

1. Outcome Measures

Develop tools and guidelines and analyze data for use by RI cities and towns to site and manage new renewable energy activity through a project led by the Renewable Energy Siting Partnership (RESP) composed of URI scientists and outreach experts.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The State of Rhode Island and many of its communities are considering investing in renewable energy infrastructure. Many of those considering these technologies lack the necessary resources to site and implement cost-effective projects and/or ability to measure impacts after implementation.

What has been done
On request from the RI Office of Energy Resources, URI researchers formed the RESP to provide technical expertise related to the effects renewable energy may have on the people, wildlife, and natural resources of Rhode Island. In particular, the RESP a) completed resource assessments for available landfill solar and hydropower potential in the state, b) developed publicly accessible GIS interactive mapping tools to allow communities to assess the viability and possible impacts of siting renewable energy facilities, c) designed and developed a website to house the mapping products, d) designed and developed a comprehensive clearinghouse of Rhode Island-specific energy data, e) led a complementary and integrated program for stakeholder involvement to engage the public in our work (16 public meetings), and f) organized and hosted a RI RESP Renewable Energy Day to provide public education on the project and the tools it developed.

Results
Proposals for future research to address and incorporate the ideas of various stakeholders have been submitted as a result of information gathered during the RESP stakeholder involvement sessions, and the website is currently being launched for use by state and local officials.

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
133	Pollution Prevention and Mitigation
141	Air Resource Protection and Management
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #12

1. Outcome Measures

Capitalize on the wealth of both experience and funding available at the state and federal levels to accelerate and facilitate reduction of diesel pollution from work performed on projects managed by the RI Department of Transportation (RIDOT).

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Cleaning up diesel pollution to improve air quality is an important goal throughout New England states where respiratory disease has reached historic levels. Diesel engines produce significant air pollution including fine particular matter (PM), nitrogen oxides (NOx) and more than 40 different types of Hazardous Air Pollutants (HAPs). Diesel emissions have been linked to a myriad of health problems, ranging from shortness of breath to cancer and cardiac arrest. Construction equipment engines typically produce more diesel emissions than other diesel engines because their engines are larger and are not regulated as strictly.

What has been done
As part of the URI/RIDOT Diesel Emissions project, the following were completed: a) review and analysis of available technologies and best practices in use, b) immediate implementation of a carefully monitored pilot project to reduce diesel emissions from a RIDOT-funded construction project in a highly populated urban area, c) extrapolation of the costs and benefits of the pilot project to the RIDOT program in RI, along with development of RI-specific contract specifications,

and 4) preparation of a final report summarizing lessons learned and providing a road map for diesel emissions reduction from DOT construction projects in RI.

Results
The list of the (14) vehicles assigned to the RIDOT Waterfront Drive Project were provided by the RIDOT Contractor, Cardi Construction. All (14) vehicles: a) had their vehicle identification numbers and engine family numbers verified, b) were each pre-data logged for a four-week period to determine duty cycle, and c) was pre-opacity tested. Further, appropriate retrofit technology for each vehicle was identified and selected; and a retrofit plan was submitted to RIDOT outlining the retrofit allocations. A bid process was undertaken to purchase and install the appropriate technology that RIDOT deemed appropriate, with Cardi Corporation selecting the contractor to order and install the retrofits. Once installed, post-opacity testing was performed on each vehicle in order to gauge the level of pollution reduction achieved.

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
133	Pollution Prevention and Mitigation
141	Air Resource Protection and Management
605	Natural Resource and Environmental Economics
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #13

1. Outcome Measures

Assist homeowners, renters, and small business owners in select RI municipalities in reducing their energy consumption and saving money on monthly utility bills by partnering with National Grid to provide current information on available incentive and rebate programs for energy efficiency measures.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Energy prices in Rhode Island are among the highest in the country. RI also faces major consequences from rising greenhouse gas emissions, including rising sea level and extreme weather events. National Grid offers numerous energy efficiency programs that provide incentives and rebates to residents, businesses, and municipalities to engage in energy efficiency projects that will reduce their energy consumption and money spent on monthly utility bills. Many, if not all, of the programs available to energy consumers are not well known and as a result lack investment.

What has been done
The URI Outreach Center Energy Team developed surveys for (2) select RI municipalities to determine the current knowlege and awareness of residents and small business owners of National Grid efficiency programs, including a refrigerator recycling program, energy assessments, and weatherization retrofits. Energy Fellows canvassed in each of the (2) select municipalities and provided multiple presentations and information sessions to encourage participation in National Grid programs.

Results
By providing information to RI residents and small business owners, over (250) residents and (9) small businesses received an energy assessment; (50) residents received weatherization retrofit services; and (661) refrigerators were recycled. National Grid estimated CO2 reductions of about 400 metric tons through the resulting participation in these programs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
133	Pollution Prevention and Mitigation
141	Air Resource Protection and Management
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #14

1. Outcome Measures

Provide URI undergraduate students from under-represented cultural backgrounds with interdisciplinary, experiential learning opportunities addressing real-world challenges and prepare those students to enter the job market with the skills and training needed to succeed through the Science and Engineering Fellows Program (SE Fellow).

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	9

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
RI businesses seek individuals who have experience and training in the science and engineering fields, while URI seeks to increase the diversity of students trained in these fields. Also, graduating students are looking to enter the workforce with marketable skills and experience; but there are few current existing opportunities for these students to engage in experiential learning activities.

What has been done
The URI Outreach Center, in collaboration with the College of Environment and Life Sciences and the College of Engineering, organized the first year of the SE Fellows Program and engaged a number of students from the two colleges in URI faculty and staff-led projects. Students also participated in professional development workshops throughout the course of the fellowship to improve their communication and networking skills.

Results
The SE Fellow Program saw (9) students through in its first year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
133	Pollution Prevention and Mitigation
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Competing Public priorities

Brief Explanation

The URI Outreach Center's previously offered Master Energy Training was scheduled to be held again in March 2012, but low enrollment required cancellation of the program in 2012. The Outreach Center's Energy Team is currently working to redesign the program to increase interest from municipal officials, business owners, the general public and students throughout RI.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

- Workshops and training programs use pre and post-assessment vehicles to evaluate changes in stakeholder knowledge
- Behavior change of target audiences is assessed through longitudinal tracking of participant behaviors compared to behaviors identified prior to participation in programs
- Success of GHG and energy reduction programs are tracked through means of energy benchmarking and data analyses
- Google analytics tracking software is used to generate detailed information about website use (information includes number of views and downloads per webpage and the number and types of visitors to each portion of the websites)
- The URI Outreach Center Energy Team partners with National Grid to track the number of residents and small business owners who participate in available efficiency programs specifically as a result of URI effort.
- Students and faculty mentors who participate in the Energy Fellows and Science and Engineering Fellows programs are provided an evaluation to complete at the end of the program year

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 15

1. Name of the Planned Program

CELS CARES

☑ 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
902	Administration of Projects and Programs	100%		100%	
	Total	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	2.0	0.0	2.0	0.0
Actual Paid Professional	2.4	0.0	5.8	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
122885	0	467094	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
136850	0	424611	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

The experiment station and extension developed a request for proposals (RFP) process that encouraged innovative, integrated proposals that meet the needs of state stakeholders. Proposals are then evaluated by internal university teams and external peers.Infrastructure needs are also addressed by

this program.

2. Brief description of the target audience

Academic faculty, university staff, graduate students, undergraduate students, university administrators

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	125	1000	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	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Proposal submissions

Year	Actual
2012	11

Output #2

Output Measure

- Proposals funded

Year	Actual
2012	5

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	New knowledge generated
2	Research and extension infrastructure built and adequately supported
3	Number of integrated research and extension projects increase
4	Cultures of research and extension merge

Outcome #1

1. Outcome Measures

New knowledge generated

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
CELS CARES is a peer-reviewed mechanism to identify meritorious proposals to support RI research and outreach activities.

What has been done
We solicited proposals that integrated research and outreach as well as proposals that supported the purchase scientific equipment and instrumentation.

Results
Proposals were funded. New knowledge generated was reported in the planned program areas of this Annual Report of Results and Accomplishments.

4. Associated Knowledge Areas

KA Code	Knowledge Area
902	Administration of Projects and Programs

Outcome #2

1. Outcome Measures

Research and extension infrastructure built and adequately supported

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Infrastructure is essential to provide the platform from which to provide research and extension services.

What has been done
Funding for students, personnel, supplies, travel, equipment and instrumentation were competitively provided to research and extension faculty.

Results
Research and extension infrastructure was supported through CELS CARES. The infrastructure was also used as leverage to secure additional competitive external funding (4:1).

4. Associated Knowledge Areas

KA Code	Knowledge Area
902	Administration of Projects and Programs

Outcome #3

1. Outcome Measures

Number of integrated research and extension projects increase

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Moving scientific results from the bench to the end user requires a thoughtful and defined process.

What has been done
We have developed a process that combines research and extension to best meet the needs of stakeholders.

Results
The number of projects that clearly integrate research and extension have increased.

4. Associated Knowledge Areas

KA Code	Knowledge Area
902	Administration of Projects and Programs

Outcome #4

1. Outcome Measures

Cultures of research and extension merge

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Research and the creation of new knowledge must have a robust mechanism to move the knowledge into the public domain.

What has been done
Defining a process for integrating research and extension is essential to moving knowledge from the creators to the users.

Results
As a result of the process that we have developed, research and extension is merging. This merging benefits end-users and stakeholders.

4. Associated Knowledge Areas

KA Code	Knowledge Area
902	Administration of Projects and Programs

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 Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

The tumultuous economy has had a negative effect on hiring new faculty and staff. Uncertain state budgets and budget cuts continue to have a negative effect on service delivery.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Pre-program and post-program testing indicated high stakeholder satisfaction with programming. Several training sessions on CELS CARES initiatives provided stakeholders with on-going education on administrative processes.

Key Items of Evaluation

Tjhere are no key items for NIFA attention is this program area.