

2011 University of Massachusetts Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

The Center for Agriculture at the University of Massachusetts Amherst integrates the research, applied education and outreach work in agriculture, food systems and natural resources at the University of Massachusetts Amherst. The Center is the contemporary standard bearer of the university's land-grant origins and provides a link to communities, citizens and businesses throughout the state. It brings together programs from UMass Extension and the Massachusetts Agricultural Experiment Station. The Center is a portal through which individuals, industries, and agencies connect with scientists and educators.

The Massachusetts Agricultural Experiment Station is the principal agricultural research unit at the University. The experiment station supports the scientific research of nearly 100 faculty members located within the College of Natural Sciences. While it is supported in part by a federal appropriation, the primary sources of revenue for the experiment station's activities are competitive research grants from federal, state and private sources.

UMass Extension addresses public concerns of high priority for the Commonwealth. Part of the national Cooperative Extension System, UMass Amherst, in collaboration with Barnstable and Plymouth counties sponsors statewide programs in Agriculture and Landscape, Natural Resources & Environmental Conservation, Nutrition Education and the Massachusetts 4-H Youth Development Program. These programs, often in partnerships with other organizations, offer research and educational opportunities including workshops, conferences, distance education, training events, consultations, and applied research.

The Extension Agriculture and Landscape Program works with agricultural producers, the green industry, governments, and citizens around issues of an environmentally sustainable, economically viable food system.

The Extension Natural Resources and Environmental Conservation Program brings together scientists, natural resource professionals, conservationists, and educators to provide educational programs focused on natural resource conservation.

The Extension Nutrition Education Program works with low-income families, parenting teens, children and elderly at high risk of poverty, and professionals in agencies serving high need populations to improve health and nutritional status.

The Massachusetts 4-H Program, a community-based and supported program of UMass Extension, builds the strengths of youth, ages five to eighteen. 4-H provides them with support and resources to gain important life skills (such as self-esteem, citizenship and leadership) through learning about animal science, gaining communications skills (such as public speaking) and carrying out community service work.

The mission of UMass Extension is to improve the health, well-being and security of youth, families and communities; conserve and enhance natural resources; and strengthen agriculture and food systems. We fulfill our mission by utilizing the research and teaching capacity of the University of Massachusetts Amherst to generate and communicate knowledge while creating approaches, methods, and tools for solving problems. UMass Extension links the Massachusetts land grant university with a larger community of people in collaborative partnerships to address issues of fundamental importance to the people of Massachusetts, New England, and the nation.

The National Institute of Food and Agriculture (NIFA), the USDA agency that provides the Center's core funding, specifies five key areas in which the Center works. These are: Global food security; Climate change; Sustainable energy; Food safety; and Obesity. Center programs also work in three additional

areas: Agricultural economic development; Youth development; and Environmental stewardship.

Food Security - Massachusetts is a leader in creating sustainable, local food production capacity. Expanding demand for direct sales, organic production, specialty crops, value-added products and community supported farms reflect interest and increasing commitment to local agriculture. At the same time, many residents of the state, especially those with low incomes, have difficulty taking advantage of fresh foods. The Center addresses food security in Massachusetts and the region through research and public education focusing on new production techniques and marketing strategies that protect natural resource systems while ensuring a healthy, fresh and stable supply of food and by providing research-based nutrition education in communities with higher food insecurity.

Climate Change - Massachusetts growers must meet the formidable challenges posed by the increasing demand for locally produced food against the backdrop of a changing climate. Local crop and animal agricultural systems will need to reduce greenhouse gas emissions, adapt to unpredictable weather conditions and effectively balance new competitive pressures that arise from cultivating crops as alternative energy sources. The Massachusetts Center for Agriculture will play a key role in generating research and education to sustain a vital agricultural sector and take advantage of emerging benefits and opportunities related to climate change.

Sustainable Energy - Minor variations in the supply and demand for energy can affect agricultural production with significant implications for the health and sustainability of our regional economy. The cost of energy profoundly influences farming practices, management decisions, products and profitability. The Center for Agriculture is an important resource for stimulating innovation in alternative and renewable energy sources. Research and education programs enable consumers to save money and make environmentally sound choices, while minimizing the financial vulnerability of agricultural businesses.

Food Safety - Food borne pathogens account for millions of illnesses and thousands of deaths in the United States each year. The annual medical cost of food borne illness in Massachusetts alone is over \$200 million. Federal agencies have established guidelines for workers and managers in food retail establishments, residential facilities, schools and child care settings. The Massachusetts Center for Agriculture helps growers and businesses meet federal standards. Scientific research, education and certification programs improve practices in all sectors of the food system to ensure the safety of food grown, processed and consumed in Massachusetts.

Childhood Obesity - Childhood obesity is reaching unprecedented levels nationally and in Massachusetts. Fortunately, the long-term health problems typically associated with obesity in childhood are reversible but can lead to obesity as adults. The Massachusetts Center for Agriculture conducts research and community outreach to inform policies and create programs that increase access to local produce, teach families about healthy foods choices, and help children develop more active lifestyles. Nutrition education programs are delivered to families with limited resources through a state wide network of community collaborators, so that healthy habits are established during childhood, reducing the most harmful effects of obesity and leading to healthier and more productive lives.

Agricultural Economic Development - Agricultural businesses provide employment opportunities, income, products and services that support our local economies and meet the diverse needs of our citizens. The long-term vitality of this sector of our economy relies on an educated and competent workforce. The Massachusetts Center for Agriculture supports agricultural economic development through applied research and educational programs that help individuals operate businesses and manage landscapes in ways that are economically sound and environmentally sustainable.

Youth Development - Massachusetts citizens are concerned about preparing youth for the challenges of the 21st century. Young people can only reach their full potential in environments that offer safety, caring adults, and authentic experiences. A state wide network of 1,600 4-H volunteers provide leadership training, life-skills development, recreation and community service opportunities for youth during out of school time that are engaging and educational. Longstanding clubs and camps are complemented by innovative program that respond to a national 4-H mandate for educational enrichment in science and technology.

Environmental Stewardship - There is a critical need to better understand current threats to water

resources, biodiversity and ecosystem integrity. Land use policies that recognize the vulnerability of natural resources as well as our reliance upon them are also essential. The Center for Agriculture plays a critical role in the development and deployment of innovative approaches and tools that are based on our evolving understanding of ecological and human systems. Scientific investigations are closely interwoven with educational resources that advance disciplinary knowledge, inform policy decisions and promote management practices that protect terrestrial, wetland, aquatic and coastal ecosystems.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	102.3	0.0	30.0	0.0
Actual	111.4	0.0	22.7	0.0

II. Merit Review Process

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

- Internal University Panel
- External University Panel
- External Non-University Panel
- Expert Peer Review

2. Brief Explanation

Massachusetts Agricultural Experiment Station

Proposals for funded projects proceed through a number of different levels of review. In some cases, prospective faculty investigators collaborate with academic department chairs to propose project ideas. Brief descriptions are sent to the Director of the Agricultural Experiment Station who reviews the basic concept to ensure the proposed investigation is consistent with the priorities and goals of both the Massachusetts Center for Agriculture and the National Institute of Food and Agriculture, our federal partner and primary funder. After this initial review, the prospective investigator develops a detailed research proposal that is reviewed and approved by the faculty member's academic department chair. The prospective investigator then identifies three reviewers, at least two of whom are disciplinary peers. Depending on the specific nature of the investigation that is proposed, the third reviewer may be associated with a related industry sector, community organization or state agency. These individuals provide a written review of the project, including comments on the scientific merit. Necessary revisions are incorporated and final approval of projects is made by the Director of the Agricultural Experiment Station.

In certain cases, the Director of the Agricultural Experiment Station will solicit research initiatives in specific disciplinary areas or with other specific criteria (e.g. including an extension component that targets underserved groups). For these opportunities, a brief pre-proposal is submitted to the Director, describing intended activities, how it is relevant to the priorities and goals of the Massachusetts Center for Agriculture, National Institute of Food and Agriculture and various public constituencies. A committee composed of faculty and professional staff select and recommend to the Director the most promising ideas and to solicit full proposals. Prospective investigators develop a detailed proposal and identify reviewers. The Director

will ensure that changes recommended by reviewers are incorporated and will provide funding at the Director's discretion. Funded projects will develop a detailed assessment plan that will monitor the success of the project over a period of three years.

UMass Extension

External University Panel - University of Massachusetts Extension has entered into a formal agreement with Extension in Maine, Vermont, and New Hampshire to develop and implement a four-state web-based planning and reporting system. Through the on-line system, program staff and administrators can access the content of plans in all four states at the organizational level, the team level and for individuals. Extension administrators from each the four states utilize the system to review work that is occurring across the region. Ongoing monthly telephone meetings with the four states are an opportunity for each of the states to provide feedback on specific programs or on the statewide goals and initiatives. The process of developing this shared system has also resulted in discussions around regional programs, opportunities for multistate work, sharing staff resources and a much better understanding of how each of our unique programs are similar and different than others in New England.

External Non-University Review Panel - The Massachusetts legislature established a Board of Public Overseers to provide advice and oversight to UMass Extension. This 15 member board, comprised of representatives of constituent organizations, meets quarterly to review and advise UMass Extension and the Chancellor the UMass Amherst. Annual review of budgets, activities, outcomes and goals is a major function of this board.

III. Stakeholder Input

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

- 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

Brief explanation.

Including stakeholders in the planning and design of programs ensures relevant research, effective outreach and strengthens the overall link between the University and citizens. Our organizational mission and goals provide a framework for ongoing interaction with stakeholders and helps to ensure broad value to the entire population of the state and the region.

The Massachusetts Center for Agriculture has strong, long-standing relationships with diverse individuals and organizations representing stakeholders from throughout Massachusetts and the region. The Center is also working actively to promote new relationships that will result in new opportunities and innovations that respond to changing social, political environmental and economic conditions. These include professional associations, advocacy and community groups and state agencies. A partial list includes: Massachusetts Department of Agricultural Resources, Massachusetts Tree Fruit Growers, Cape Cod Cranberry Growers Association, Golf Course Superintendent's Association of New England, Massachusetts Vegetable and Berry Growers Association, Massachusetts Flower Growers Association, Massachusetts Arborists Association, New England Sports Turf Managers Association, the Massachusetts Nursery and Landscape Association, Community In Support of Agriculture, New England Small Farms Institute, Massachusetts Natural Organic Farmers Association. Representative of these groups have frequent, ongoing contact with our program staff, researchers and organizational leaders though a

variety of planned and informal meetings, events and listening sessions. These activities and ongoing interactions inform the research and outreach programs and priorities of both the Massachusetts Agricultural Experiment Station and UMass Extension.

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
- Open Listening Sessions

Brief explanation.

Since UMass Extension merged with the Massachusetts Agricultural Experiment station under the UMass Center for Agriculture, a new advisory body was created for the purpose of identifying key issues and helping to facilitate the development of partnerships and programs in collaboration with a variety of groups and individuals across the state. The Center for Agriculture Advisory Board consists of individuals from diverse organizations across the state and reflects our effort to engage both traditional stakeholders and develop new relationships, understand new perspectives and build new partnership opportunities. In the past year, individuals serving on the Center for Agriculture Advisory Board represented the following agencies, organizations and groups: Massachusetts State Farm Service Agency; Massachusetts Natural Resources Conservation Service; American Farmland Trust; The Nature Conservancy; Massachusetts Farm Bureau Federation, USDA Office of Rural Development; Massachusetts 4-H Foundation; Massachusetts Department of Transitional Assistance; and three individuals representing small-scale, family-owned-and-operated farms and landscape businesses. Also participating on the board this year were UMass Amherst faculty and department heads from the department of Plant and Soil Sciences, Environmental Conservation, and Food Science.

Additional stakeholder groups and advisory bodies that provide input for the activities of the Center have been established by other means. Because the Center for Agriculture resides within the College of Natural Sciences the advisory board of the college also serves in an advisory capacity, primarily regarding the conduct of scientific research funded by the Massachusetts Agricultural Experiment Station. UMass Extension maintains a close association with an Extension Board of Public Overseers. As directed by the enabling legislation, UMass Extension meets with the board four times per year and membership of the board is specific and appointed by the governor. In the past year, individuals serving on the Extension Board of Public Overseers represented the following agencies, organizations and groups: Massachusetts Farm Bureau; MA 4-H Foundation; Massachusetts Farm Bureau; UMass Donahue Institute; Massachusetts Audubon Society; Massachusetts Arborists Association; Massachusetts State Department of Agricultural Resources; Massachusetts Forest Land Owner Association; Massachusetts Nutrition Board; Massachusetts State 4-H Advisory Council.

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
- Meeting specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public

Brief explanation.

Merging UMass Extension with The Massachusetts Agricultural Experiment station within The Center for Agriculture has allowed for an increasing integration of the two units with regard to primary goals, functions and activities. Methods to collect stakeholder input are increasingly focused on obtaining information that informs both research and extension outreach activities.

Formal opportunities to obtain feedback occur during bi-annual meetings of our Center for Agriculture Advisory Board and when UMass Extension convenes the Extension Board of Public Overseers (4 times in FY 11). During the past year, when each of these bodies met, the leadership from both UMass Extension and the Massachusetts Agricultural Experiment Station were present. While these agendas included organizational updates and recent developments, these meetings are designed largely as opportunities for listening to our stakeholders who provide feedback on budgets, activities, outcomes and goals, and future directions. Significant input is also routinely collected at the level of individual projects and specific programs. These include formal opportunities for collecting feedback on specific programs through focus groups, interviews, stakeholder meetings, written or web-based surveys as well as many informal opportunities that transpire during the course of regular meetings, conferences events and presentations.

The priorities for the POW are reexamined every year taking into account the totality of the stakeholder input. In addition, the critical issues identified by UMass Extension are continuously modified based on stakeholder input and this provides a cross-check to insure that the research programs of the Massachusetts Agricultural Experiment Station are directed towards areas that will have the maximum impact on the citizens of the state and the region.

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 Action Plans

Brief explanation.

Teams composed primarily of professional program staff, with some participation by extension administrators and academic faculty previously developed broad organizational plans. These plans are focused in in key areas reflected in our federal planned program areas and continue background information, the specification of priorities and the identification of desired impacts. Information obtained from our stakeholder engagement processes are reviewed and used by Extension team leaders to update these plans, reviewing goals and outcomes and identifying new priorities within each of the issue areas. Attending conferences, participating in multistate research projects, and interacting with both disciplinary peers and external stakeholders informs our understanding of emerging issues and helps us to plan directions for future research and extension activities. Proposed research projects are evaluated through the review process that examines their relevance to the plan of work.

Brief Explanation of what you learned from your Stakeholders

Our stakeholders are dynamic and continually evolving. Synthesis of information obtained

through our stakeholder engagement efforts over the past year reveals input that is often clear but not always consistent. Our goal is to balance diverse and often competing interests of our stakeholders, maintain or expand existing relationships, cultivate new partners and continually re-engage.

Feedback solicited from stakeholders over the past year was organized according to several key questions.

What critically important emerging issues should the Center should be considering?

Stakeholder responses most consistently emphasized the following ideas and themes: Effects of climate change and extreme weather; food security and local food systems; workforce training; energy efficiency; education for understanding the importance food, farming and the environment; nutrition and healthy lifestyle choices; next generation farmers; watershed planning and conservation; and environmental safety education for agriculture.

What do citizens expect from a state land-grant university?

Stakeholder responses most consistently emphasized the following ideas and themes: participation in the legislative process; leveraged expertise for the state's benefit; set an example by "buying local"; information and resources to answer citizens' questions; linkages to national networks; transparency and visibility; and an objective source of expertise and information.

How can UMass Amherst best establish a presence in towns and communities across the state?

Stakeholder responses most consistently emphasized the following ideas and themes: Collaborate with local groups and coalitions; education/orientation for legislative and town officials; innovative use of technology and media; leverage external funding for community programs; involve university students in community programs; improve branding and marketing of university supported, community-based programs.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
2636897	0	2665800	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	2427331	0	1828089	0
Actual Matching	2427331	0	2485507	0
Actual All Other	7694378	0	9630291	0
Total Actual Expended	12549040	0	13943887	0

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

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Global Food Security and Hunger
2	Climate Change
3	Sustainable Energy
4	Food Safety
5	Childhood Obesity
6	Economic Development
7	Youth Development
8	Environmental Stewardship
9	Massachusetts Center for Agriculture Administration

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		3%	
202	Plant Genetic Resources	0%		5%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		6%	
205	Plant Management Systems	20%		11%	
206	Basic Plant Biology	10%		4%	
211	Insects, Mites, and Other Arthropods Affecting Plants	0%		5%	
212	Pathogens and Nematodes Affecting Plants	0%		13%	
216	Integrated Pest Management Systems	20%		0%	
301	Reproductive Performance of Animals	0%		17%	
303	Genetic Improvement of Animals	0%		10%	
307	Animal Management Systems	0%		3%	
311	Animal Diseases	0%		7%	
501	New and Improved Food Processing Technologies	0%		2%	
502	New and Improved Food Products	0%		7%	
601	Economics of Agricultural Production and Farm Management	20%		1%	
604	Marketing and Distribution Practices	20%		2%	
609	Economic Theory and Methods	0%		2%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	0%		2%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890

Plan	12.7	0.0	7.5	0.0
Actual Paid Professional	13.7	0.0	11.2	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
333084	0	958591	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
794399	0	1239800	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1031103	0	4680563	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Basic and applied research
- Demonstrations
- Diagnostic Services
- Facilitated Group Meetings and Conferences
- Individual Consultations and Site Visits
- Printed Materials
- Published Articles (News, Professional and Trade)
- Single day workshop, presentation or event
- Websites or Other Computer-based delivery
- Workshop series or educational course

2. Brief description of the target audience

A primary audience for this plan are Massachusetts growers and food production-related businesses. This includes established producers as well as new, immigrant, part-time, conventional and organic growers. Others audiences include government agencies, non-profit and community-based organizations, including food banks and pantries, that serve low-income families. The broader scientific community involved in basic and applied research related to all aspects of food production is another key audience.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	9652	83284	878	312

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

Year: 2011
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	4	26	30

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Demonstrations

Year	Actual
2011	79

Output #2

Output Measure

- Diagnostic Services

Year	Actual
2011	51

Output #3

Output Measure

- Facilitated Group Meetings and Conferences

Year	Actual
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2011 4

Output #4

Output Measure

- Individual Consultations and Site Visits

Year	Actual
2011	344

Output #5

Output Measure

- Printed Materials

Year	Actual
2011	109

Output #6

Output Measure

- Published Articles (News, Professional and Trade)

Year	Actual
2011	4

Output #7

Output Measure

- Single day workshop, presentation or event

Year	Actual
2011	112

Output #8

Output Measure

- Websites or other computer-based delivery

Year	Actual
2011	52

Output #9

Output Measure

- Workshop series or educational course

Year	Actual
2011	27

Output #10

Output Measure

- Peer review publications

Year	Actual
2011	30

Output #11

Output Measure

- Curricula/Instructional materials

Year	Actual
2011	4

Output #12

Output Measure

- Applied Research Project

Year	Actual
2011	75

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Participants acquire knowledge and skill to ensure the economic viability of food production
2	Participants adopt practices that ensure the economic viability of food production
3	Participants acquire knowledge and skill to adopt environmentally sustainable food production practices
4	Participants adopt environmentally sustainable food production practices

Outcome #1

1. Outcome Measures

Participants acquire knowledge and skill to ensure the economic viability of food production

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	608

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A relatively new focus in this area is on commercial aquaculture. Commercial aquaculture is a growing global industry. Aquaculture can provide farmers with alternative income sources and opportunities for capital investment. Growing fish for food is difficult, as Massachusetts farmers must compete with international and US growers who produce on a very large scale. We are seeking to support this industry across the state by training growers in the fundamentals of aquaculture.

What has been done

Educational materials and resources provided an effective introduction to the basics of aquaculture for small farmers, inspiring an interest in aquaculture and to helping educators to teach aquaculture to their students. Our demonstration systems provide training for students in aquaculture procedures. They also provide fish for UMass educational programs, are used for classroom experiments, and they provide a platform for the development and testing of research ideas. In 2011, we took a lead role in developing a regional fish health program for 2011, working with other extension specialists throughout the region to compile a list of diseases and other health hazards and are working towards HACCP-style guidelines

Results

Participants increased their knowledge of aqua cultural practices. There were also advancements and technical enhancements to aquaculture research and production facilities. We developed 400-gallon, recirculating aquaculture system and a 400-gallon, swirl filter, double-drain system. We also designed and constructed a small-scale aquaponics system for tilapia.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
216	Integrated Pest Management Systems
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #2

1. Outcome Measures

Participants adopt practices that ensure the economic viability of food production

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	165

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Massachusetts agricultural sector includes many types of revenue generating businesses that make meaningful contributions to our state's economy. Our residents share an interest in maintaining the productivity and the profitability of these enterprises that provide community character, locally food resources and manage land in environmentally sustainable ways

What has been done

Our cranberry program held a series of meetings attended by 264 growers and more than 135 samples were processed through the Cranberry Diagnostic and Management Recommendations Services. Research continued on phosphorus use in cranberry systems and its impact on water quality. Insecticide, fungicide, and herbicide residue work was conducted on commercial farms aiming to limit residues at harvest. The impact of old and new chemistries on bee activity were also monitored.

Results

Cranberry growers increased skills and knowledge for a variety of management techniques that include: flame cultivation, weed management practices, disease management, scald conditions, plant physiology, insect management and nutrient management. Growers adopted canopy

management strategies, such as sanding and pruning and irrigation management, to enhance crop production and pest management and implemented practices that maintain health and productivity of their farms in a cost-effective way.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
206	Basic Plant Biology
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #3

1. Outcome Measures

Participants acquire knowledge and skill to adopt environmentally sustainable food production practices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	361

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In Massachusetts, over 900 farmers use 18,000 acres to produce vegetable crops and potatoes. At an average crop value of \$4500 per acre, the value of the vegetable industry is \$81,000 million, equivalent to a retail value of \$202,500 million. The Commonwealth has a wide diversity of landscapes from rural to urban in which farmers grow and market vegetables. These farms provide valuable open space as well as fresh, high quality produce to local communities and to the food distribution system throughout the state. Vegetable farmers offer the most direct contact that Massachusetts' consumers have with land and people who provide their food supply.

What has been done

Staff engaged with growers throughout Massachusetts provided comprehensive education on environmentally sustainable vegetable production. Many growers received personal attention as staff diagnosed problems and made recommendations by email, telephone and on-site. Extensive personal contacts were supplemented with a variety of materials and resources disseminated either in print form or via the internet. Programs focused in areas related to new farmers, IPM, world crops and winter production and sales.

Results

Growers learned about practices that increase crop health and environmental quality. Growers learned about practices that reduce potentially negative impacts of pesticides. Growers learned about practices that conserve and protect soil or water.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
216	Integrated Pest Management Systems

Outcome #4

1. Outcome Measures

Participants adopt environmentally sustainable food production practices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1090

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Fruit farms provide a highly desirable source of local food that contributed significantly to the quality of life in Massachusetts. The land devoted to fruit production often provides buffer zones for native species of plants and animals and corridors for their movement or expansion. To remain a vital part of the Massachusetts food systems, new and established growers must learn to produce fruit in environmentally sustainable ways.

What has been done

Staff engaged with growers throughout Massachusetts provided comprehensive education on environmentally sustainable fruit production. Many growers received personal attention as staff diagnosed problems and made recommendations by email, telephone and on-site. Extensive personal contacts were supplemented with a variety of materials and resources disseminated either in print form or via the internet.

Results

Participants adopted environmental best management practices related to integrated crop management as outlined in the New England Small Fruit Pest Management Guide, New England Small Fruit BMP manual, the New England Crop Profiles and USDA Pest Management Strategic Plans. Participants also used more reduced-risk pesticides and safer handling practices when mixing, loading and applying pesticides.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
216	Integrated Pest Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The Global Food Security and Hunger Planned Program is actually a composite of projects and initiatives. Projects within the planned program employ a range of different evaluation strategies that vary in their degree of formality and rigor. Standard evaluation components may be employed routinely or annually that reflect the mandated requirement for specific, leveraged funding sources. Formal evaluations are not typically conducted every year for every project, but approaches are tailored based on available resources, leadership and the timing of expected outcomes. Evaluation methods include web-based

or written surveys, administered at strategic time points, as well as checklists, interviews and reviews of third-party data. Formal evaluations are further supplemented by anecdotal reports, case studies, testimonies and simple observations, typically of the types of changes or practices that serve as the anticipated project impacts.

A general summary of all results reported by staff include the following:

- Participants acquired knowledge and skill to ensure the economic viability of food production
- Participants adopted practices that ensure the economic viability of food production
- Participants acquired knowledge and skill to adopt environmentally sustainable food production practices
- Participants adopted environmentally sustainable food production practices

Post program participant surveys were completed by 157 individuals who attended programs hosted by our cranberry researchers and educators. A range of practices were assessed and between 60% to 75% of individuals indicated they gained knowledge and planned to implement environmentally sustainable practices in the following areas: flame cultivation; weed management; disease management; scald conditions; insect management; weevil management; insecticide residues; managing tipworm; pollinator practices; and nutrient management practices.

The following evaluation results reported under Global Food Security and Hunger are those associated with our Expanded Food and Nutrition Education program (EFNEP). The inputs and outputs for EFNEP are reported under the Child Obesity planned program, but some aspects of the program are clearly focused on the goals and priorities of the Global Food Security and Hunger planned program, so they are reported here. Data was taken from EFNEP Behavior Checklist.

In FY 2011, EFNEP paraprofessional nutrition educators based in five field offices reached 2,199 adults:

1013 - EFNEP participants will show improvement in one or more food resource management practices related to planning meals: comparing prices, not running out of food, and using a grocery shopping list (data from EFNEP Behavior Checklist)

Key Items of Evaluation

A web-survey was conducted of 450 individuals who have been receiving resources and education associated with our Sustainable Vegetable Production project over the past several years. Responses reveal that a significant proportion have adopted a range of specific practices for producing vegetables that are environmentally sustainable and that collectively define an integrated pest management system. Individuals were presented with the questions "As a result of information provided by UMass Extension through meetings, newsletters, websites, or other means, have you done any of the following?" The proportion of those responding affirmatively for selected items appears below:

- Scouted for an insect or disease - 58.6%
- Sprayed only when a pest threshold was met - 32.3%
- Used fewer pesticide applications in a crop - 30.1%
- Switched to a pesticide with a lower toxicity rating - 25.7%

Respondents were also asked if the practices that changed have effected different

areas of concern. The proportion of those responding affirmatively for selected items appears below:

Health of growers and other farm-workers - 19.9%

Water quality - 19.8%

Air quality - 20.4%

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Climate Change

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
131	Alternative Uses of Land	0%		8%	
133	Pollution Prevention and Mitigation	0%		12%	
511	New and Improved Non-Food Products and Processes	0%		80%	
	Total	0%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	2.0	0.0
Actual Paid Professional	0.0	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
0	0	34734	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	66847	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	157815	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Basic research
Policy analysis

2. Brief description of the target audience

Academic Researchers
Policy Makers

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	0	3	3

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer review publications

Year	Actual
2011	3

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Literature review which provided an overview of the wide body of scientific frameworks typically used for climate change mitigation and adaptation as relevant to local, regional, and state land use planners.

Outcome #1

1. Outcome Measures

Literature review which provided an overview of the wide body of scientific frameworks typically used for climate change mitigation and adaptation as relevant to local, regional, and state land use planners.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Public Policy changes

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The planned program Climate change was exclusively a research program in FY 11. We expect that extension components will be added in the near future and the impact of those components will be assessed.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Sustainable Energy

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
123	Management and Sustainability of Forest Resources	0%		3%	
402	Engineering Systems and Equipment	0%		14%	
501	New and Improved Food Processing Technologies	0%		12%	
511	New and Improved Non-Food Products and Processes	0%		31%	
605	Natural Resource and Environmental Economics	0%		2%	
902	Administration of Projects and Programs	0%		19%	
903	Communication, Education, and Information Delivery	0%		19%	
	Total	0%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	2.1	0.0
Actual Paid Professional	0.0	0.0	2.3	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	407673	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	227777	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	157815	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Basic and applied research
 Policy analysis and education

2. Brief description of the target audience

Academic Reseachers
 Policy Makers
 Municipal Officials

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	0	5	5

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer review publications

Year	Actual
2011	5

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Accurate research on increased use of biomass fuels.

Outcome #1

1. Outcome Measures

Accurate research on increased use of biomass fuels.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Public Policy changes
- Government Regulations

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The planned program for Sustainable Energy was exclusively a research program in FY 11. We expect that extension components will be added in the near future and the impact of those components will be assessed.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Food Safety

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
311	Animal Diseases	0%		41%	
502	New and Improved Food Products	0%		31%	
503	Quality Maintenance in Storing and Marketing Food Products	10%		0%	
702	Requirements and Function of Nutrients and Other Food Components	0%		11%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	10%		0%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	80%		17%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	0.0	2.1	0.0
Actual Paid Professional	0.5	0.0	2.2	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
60411	0	103867	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	249675	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	935464	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Basic and applied research
 Workshop series or educational course
 Displays and Exhibits
 Websites or Other Computer-based delivery

2. Brief description of the target audience

Food growers/producers
 Food Processors
 Food Retailers
 Residential care facility staff
 School cafeteria workers
 General public

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	361	50	0	0

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

Year: 2011
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	0	8	8

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Workshop series or educational course

Year	Actual
2011	10

Output #2

Output Measure

- Displays and Exhibits
 Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Websites or Other Computer-based delivery
 Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Peer review publications

Year	Actual
2011	8

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Participants adopt practices to avoid food borne illness and control other food safety risks and hazards
2	Participants acquire knowledge and skill to avoid food borne illness and control other food safety risks and hazards
3	Proportion of participants who adopt practices to avoid food borne illness and control other food safety risks and hazards
4	Proportion of participants who acquire knowledge and skill to avoid food borne illness and control other food safety risks and hazards
5	Accurate creation of processes add nutrients and help prevent disease.

Outcome #1

1. Outcome Measures

Participants adopt practices to avoid food borne illness and control other food safety risks and hazards

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	834

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Centers for Disease Control estimates that foodborne diseases cause approximately 76 million illnesses, 325,000 hospitalizations, and more than 5,000 deaths each year in the United States. The highest rates are among young children, adults who have a weakened immune system, older adults, and pregnant women. These illnesses also cost the United States billions of dollars in health care costs as well as significant losses in worker productivity.

What has been done

In 2011, 233 individuals participated in trainings on "Good Agricultural Practices." The Massachusetts Commonwealth Quality Seal, which certifies that farmers are following specific environmental and food safety guidelines, was launched in 2011. The checklist that farmers complete in order to gain certification was developed by the Vegetable and Fruit teams. A joint Vegetable and Fruit educational program provided training to 108 farmers on the practices required for Commonwealth Certification.

Results

Growers adopted practices that the reduce risk of food-borne illness.

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products
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

Participants acquire knowledge and skill to avoid food borne illness and control other food safety risks and hazards

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	734

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Centers for Disease Control estimates that foodborne diseases cause approximately 76 million illnesses, 325,000 hospitalizations, and more than 5,000 deaths each year in the United States. The highest rates are among young children, adults who have a weakened immune system, older adults, and pregnant women. These illnesses also cost the United States billions of dollars in health care costs as well as significant losses in worker productivity.

What has been done

In 2011, 233 individuals participated in trainings on ?Good Agricultural Practices.? The Massachusetts Commonwealth Quality Seal, which certifies that farmers are following specific environmental and food safety guidelines, was launched in 2011. The checklist that farmers complete in order to gain certification was developed by the Vegetable and Fruit teams. A joint Vegetable and Fruit educational program provided training to 108 farmers on the practices required for Commonwealth Certification.

Results

Growers increased knowledge and skills regarding practices that reduce risk of food-borne illness.

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from

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

Outcome #3

1. Outcome Measures

Proportion of participants who adopt practices to avoid food borne illness and control other food safety risks and hazards

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Proportion of participants who acquire knowledge and skill to avoid food borne illness and control other food safety risks and hazards

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Accurate creation of processes add nutrients and help prevent disease.

Not Reporting on this Outcome Measure

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

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The following evaluation results reported under the Food Safety planned program are those associated with our Expanded Food and Nutrition Education program (EFNEP). The inputs and outputs for EFNEP are reported under the Child Obesity planned program, but some aspects of the program are clearly focused on the goals and priorities of the food safety planned program, so they are reported here. Data was taken from EFNEP Behavior Checklist.

In FY 2011, EFNEP paraprofessional nutrition educators based in five field offices reached 2,199 adults:

734 - EFNEP participants showed improvement in one or more safe food handling practices related to storing meat and dairy foods and thawing frozen foods

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Childhood Obesity

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
501	New and Improved Food Processing Technologies	0%		23%	
702	Requirements and Function of Nutrients and Other Food Components	0%		49%	
703	Nutrition Education and Behavior	40%		28%	
704	Nutrition and Hunger in the Population	20%		0%	
724	Healthy Lifestyle	40%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	46.6	0.0	0.0	0.0
Actual Paid Professional	44.3	0.0	0.8	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
1929	0	92745	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	73158	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
3518939	0	303517	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Basic and applied research
- Demonstrations
- Displays and Exhibits
- Printed Materials
- Single day workshop, presentation or event
- Workshop series or educational course

2. Brief description of the target audience

Youth and families from limited-resource communities, specifically those who are eligible for federal food assistance (Supplemental Nutrition Assistance Program); school teachers, social service organizations

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	27128	65284	49156	97731

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

Patent Applications Submitted

Year: 2011
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	0	2	2

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Demonstrations

Year	Actual
2011	262

Output #2

Output Measure

- Displays and Exhibits

Year	Actual
2011	454

Output #3

Output Measure

- Printed Materials

Year	Actual
2011	6

Output #4

Output Measure

- Single day workshop, presentation or event

Year	Actual
2011	678

Output #5

Output Measure

- Workshop series or educational course

Year	Actual
2011	6042

Output #6

Output Measure

- Peer review publications

Year	Actual
2011	2

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Participants gain knowledge and skill to improve dietary behaviors
2	Participants improve dietary behaviors
3	Participants gain knowledge and skill to improve physical activity behaviors
4	Participants improve physical activity behaviors
5	Participants gain knowledge and skill to improve food resource management behaviors
6	Participants improve food resource management behaviors
7	Proportion of participants who gain knowledge and skill to improve dietary behaviors
8	Proportion of participants who use effective nutrition education resources and materials

Outcome #1

1. Outcome Measures

Participants gain knowledge and skill to improve dietary behaviors

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	115

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Participants improve dietary behaviors

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2435

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Participants gain knowledge and skill to improve physical activity behaviors

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Participants improve physical activity behaviors

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	372

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #5

1. Outcome Measures

Participants gain knowledge and skill to improve food resource management behaviors

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Participants improve food resource management behaviors

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1013

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Rates of obesity and poor nutrition continue to increase for both adults and children in the United States. This is especially prevalent among low-income populations, as parents frequently turn to calorie-dense but low-nutrient foods when family food resources are limited. Families need guidance to get the most nutrition from their limited resources in order for their children to grow and thrive.

What has been done

Sixteen paraprofessional nutrition educators based in five field offices (Brockton, Fall River, Lawrence, Springfield and Worcester) reached 2,199 adults (with a total of 6,470 household members) and 1,245 youth with nutrition education activities in FY2011.

Results

Participants showed improvement in one or more food resource management practices related to planning meals: comparing prices, not running out of food, and using a grocery shopping list

4. Associated Knowledge Areas

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

Outcome #7

1. Outcome Measures

Proportion of participants who gain knowledge and skill to improve dietary behaviors

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Proportion of participants who use effective nutrition education resources and materials

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	201

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The Child Obesity Planned Program is a composite of projects that include 2 major national initiatives: The Expanded Food and Nutrition Education program and the SNAP-Ed program. These two programs must comply with specific evaluation practices required by the Federal Food and Nutrition Service.

The following data was taken from EFNEP Behavior Checklists and Summaries. In FY 2011, EFNEP paraprofessional nutrition educators based in five field offices reached 2,199 adults:

- 364 EFNEP participants showed an increase in the level of physical activity
- 1407 EFNEP participants showed a positive change in dietary intake for at least one food group
- 976 EFNEP participants showed improvement in one or more nutrition practices related to planning meals: making healthy food choices, preparing foods without added salt, reading nutrition labels, and having children in the family eat breakfast

SNAP-Ed has been one of our most consistently and rigorously assessed programs. After several years of documenting positive behavioral changes in patterns of food consumption and physical activity that resulted from school-based education programs, evaluation in 2011 proceeded towards investigating new project components (farmers market food demonstrations)and supplemental materials that are designed to enhance teacher education and extend the potential impacts of the program. Results of brief interviews that were recorded revealed that 97.4% (648 of 665) of participants attending a farmers' market food demonstration reported that they tried and liked the featured recipe. Furthermore, 87.8% (303 of 345) of administrators and teachers receiving the Nutrition Tip of the Day Calendar reported that they used it in their schools or classrooms.

Key Items of Evaluation

SNAP-Ed has been one of our most consistently and rigorously assessed programs. After several years of documenting positive behavioral changes in patterns of food consumption and physical activity that resulted from school-based education programs, evaluation in 2011 proceeded towards investigating new project components (farmers market food demonstrations)and supplemental materials that are designed to enhance teacher education and extend the potential impacts of the program. Results of brief interviews that were recorded revealed that 97.4% (648 of 665) of participants attending a farmers' market food demonstration reported that they tried and liked the featured recipe. Furthermore, 87.8% (303 of 345) of administrators and teachers receiving the Nutrition Tip of the Day Calendar reported that they used it in their schools or classrooms.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Economic Development

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
111	Conservation and Efficient Use of Water	10%		0%	
133	Pollution Prevention and Mitigation	10%		0%	
204	Plant Product Quality and Utility (Preharvest)	10%		0%	
205	Plant Management Systems	10%		0%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%		5%	
216	Integrated Pest Management Systems	20%		0%	
304	Animal Genome	0%		14%	
312	External Parasites and Pests of Animals	0%		45%	
511	New and Improved Non-Food Products and Processes	0%		13%	
601	Economics of Agricultural Production and Farm Management	20%		0%	
605	Natural Resource and Environmental Economics	10%		2%	
724	Healthy Lifestyle	5%		16%	
801	Individual and Family Resource Management	0%		3%	
802	Human Development and Family Well-Being	0%		2%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	14.2	0.0	4.0	0.0
Actual Paid Professional	13.5	0.0	2.4	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
626275	0	110682	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
481634	0	259224	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
808704	0	1276104	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Basic and applied research
- Demonstrations
- Displays and Exhibits
- Facilitated Group Meetings and Conferences
- Individual Consultations and Site Visits
- Printed Materials
- Published Articles (New, Professional and Trade)
- Single day workshop, presentation or event
- Survey or needs assessment
- Websites or other computer-based delivery
- Workshop series or educational course

2. Brief description of the target audience

- Farmers
- Landowners
- Resource Managers
- Horticultural Green Industry businesses and personnel
- Professional Organizations and Industry Groups
- Natural Resource Agencies
- Municipalities

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	17341	266967	0	0

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

Year: 2011
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	0	5	5

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Demonstrations

Year	Actual
2011	5

Output #2

Output Measure

- Displays and Exhibits
- Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Facilitated Group Meetings and Conferences

Year	Actual
2011	14

Output #4

Output Measure

- Individual Consultations and Site Visits

Year	Actual
2011	750

Output #5

Output Measure

- Printed Materials

Year	Actual
2011	36

Output #6

Output Measure

- Published Articles (New, Professional and Trade)

Year	Actual
2011	33

Output #7

Output Measure

- Single day workshop, presentation or event

Year	Actual
2011	25

Output #8

Output Measure

- Survey or needs assessment
Not reporting on this Output for this Annual Report

Output #9

Output Measure

- Websites or other computer-based delivery

Year	Actual
2011	74

Output #10

Output Measure

- Workshop series or educational course

Year	Actual
2011	41

Output #11

Output Measure

- Diagnostic Services

Year	Actual
2011	21010

Output #12

Output Measure

- Peer review publications

Year	Actual
2011	5

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Participants acquire knowledge and skill in environmentally sustainable practices for operating agricultural green industry businesses
2	Participants adopt environmentally sustainable practices for operating agricultural green industry businesses
3	Participants acquire the knowledge and skill to lower the risk from and exposure to pesticides and fertilizers
4	Participants adopt practices that lower the risk from and exposure to pesticides and fertilizers
5	Participants acquire the knowledge and skill to reduce the risk of exotic pests, diseases and invasive species
6	Participants adopt practices that reduce the risk of exotic pests, diseases and invasive species
7	Participants acquire the knowledge and skills for practices that increase the economic viability of agricultural green industry businesses
8	Participants adopt practices that that increase the economic viability of agricultural green industry businesses
9	Accurate research on Animal Diseases
10	Accurate research on natural resource policies produced and disseminated

Outcome #1

1. Outcome Measures

Participants acquire knowledge and skill in environmentally sustainable practices for operating agricultural green industry businesses

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	3592

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In the highly populated northeastern United States, managed grass covered surfaces (utility turf, lawns, parklands, sports fields, etc) collectively comprise an integral part of our communities. Turf management practices have broad implications for water resources, property values, energy consumption, greenhouse gas mitigation, safety of youth and adult sports participants, and the economic viability of businesses and communities. In addition, turf management materials present potential risks from human and non-target exposure.

What has been done

The UMass Extension Sustainable Turf Management Project helps turf managers and other interested individuals, organizations and communities meet environmental and business challenges by providing research-based information disseminated through a comprehensive array of workshops, courses, information streams, a website, educational presentations, field days, and site consultations, as well as through active participation in various professional turf organizations.

Results

Activities serve to convene state and regional partners to focus on building the skills and knowledge that are needed for maintaining and enhancing turf landscapes, with emphasis on protecting human health and conserving water and other natural resources.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
133	Pollution Prevention and Mitigation

205	Plant Management Systems
601	Economics of Agricultural Production and Farm Management
605	Natural Resource and Environmental Economics

Outcome #2

1. Outcome Measures

Participants adopt environmentally sustainable practices for operating agricultural green industry businesses

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Participants acquire the knowledge and skill to lower the risk from and exposure to pesticides and fertilizers

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1381

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Plant and Soil Diagnostic Services provide accurate identification of pest, disease, and weed problems. The program also provides analysis of soil and tissue nutrient levels. These provide valuable services to individuals and green industry businesses while helping to reduce unnecessary or superfluous use of pesticides and fertilizers that pose risks to both human health and the environment

What has been done

We continue to serve green industry professionals and the general public by providing information vital to their economic and environmental sustainability. The diagnostic lab has processed more than 1000 plant specimens, performed regulatory tests for Massachusetts Department of Agricultural Resources, participated in national surveys for select agents, and served as a source of information for professional and amateur growers.

Results

Growers manage plant disease problems with cultural techniques and base pest management decisions on accurate diagnoses of problems.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
216	Integrated Pest Management Systems
724	Healthy Lifestyle

Outcome #4

1. Outcome Measures

Participants adopt practices that lower the risk from and exposure to pesticides and fertilizers

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	300

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
216	Integrated Pest Management Systems
724	Healthy Lifestyle

Outcome #5

1. Outcome Measures

Participants acquire the knowledge and skill to reduce the risk of exotic pests, diseases and invasive species

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1036

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
216	Integrated Pest Management Systems

Outcome #6

1. Outcome Measures

Participants adopt practices that reduce the risk of exotic pests, diseases and invasive species

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Participants acquire the knowledge and skills for practices that increase the economic viability of agricultural green industry businesses

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1655

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

According to the Massachusetts Department of Agricultural Resources, nursery and greenhouse production is ranked first among the state's agricultural commodities. UMass Extension conducts research and delivers educational resources for best management and sustainable practices for greenhouse production in Massachusetts. The program helps to maintain the economic viability of the "Agricultural Green Industries" while reducing environmental impacts

What has been done

Activities included: grower consultations; participation in educational conferences such as the Northeast Greenhouse Conference; workshops such as Grower to Grower on Biological Control in Greenhouses; one day educational programs such as Winter Grower Program and Employee Training for Garden Retailers and Summer Field Day. Presentations by Extension Faculty and Professional Staff included High Tunnel Production of Cut Flowers, Perennials in the Landscape, Greenhouse Best Management Practices and IPM.

Results

As a result of our greenhouse and Floriculture program activities, 19 growers gained considerable knowledge about growing cut flowers in high tunnels compared to knowledge before the program; 44 growers learned considerable knowledge about disease management and biological control versus knowledge prior to these sessions, 40 growers were more prepared to implement biological control following workshops/demonstration on Biological Control in Greenhouses versus prior to attending.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water

205	Plant Management Systems
601	Economics of Agricultural Production and Farm Management
605	Natural Resource and Environmental Economics

Outcome #8

1. Outcome Measures

Participants adopt practices that that increase the economic viability of agricultural green industry businesses

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Accurate research on Animal Diseases

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

Accurate research on natural resource policies produced and disseminated

Not Reporting on this Outcome Measure

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

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The Economic Development Planned Program is actually a composite of projects and initiatives. Projects within the planned program employ a range of different evaluation strategies that vary in their degree of formality and rigor. Standard evaluation components may be employed routinely or annually that reflect the mandated requirement for specific, leveraged funding sources. Formal evaluations are not typically conducted every year for every project, but approaches are tailored based on available resources, leadership and the timing of expected outcomes. Evaluation methods include web-based or written surveys, administered at strategic time points, as well as checklists, interviews and reviews of third-party data. Formal evaluations are further supplemented by anecdotal reports, case studies, testimonies and simple observation, typically of the types of changes or practices that serve as the anticipated project impacts.

A general summary of all results reported by staff include the following:

- Participants acquired knowledge and skill in environmentally sustainable practices for operating agricultural green industry businesses

- Participants adopted environmentally sustainable practices for operating agricultural green industry businesses

- Participants acquired the knowledge and skill to lower the risk from and exposure to pesticides and fertilizers

 - Participants adopted practices that lower the risk from and exposure to pesticides and fertilizers

- Participants acquired the knowledge and skill to reduce the risk of exotic pests, diseases and invasive species

- Participants adopted practices that reduce the risk of exotic pests, diseases and invasive species

Formal assessments included post program surveys that asked participants to rate their level of knowledge and skills compared to their knowledge and skills prior to attending Extension greenhouse and floriculture program activities reveal the following: Results include the following

- 19 growers increased knowledge and skills for growing cut flowers in high tunnels compared to knowledge before the program;

 - 44 growers increased knowledge and skills about disease management and biological control

- 40 growers were more prepared to implement biological control following workshops/demonstration on Biological Control

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Youth Development

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: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	11.6	0.0	0.0	0.0
Actual Paid Professional	15.8	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
518621	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
481596	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
695369	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

4-H Clubs

- Community Service Project
- Curricula/Instructional Materials
- Displays and Exhibits
- Facilitated Group Meetings and Conferences
- Individual Consultations and Site Visits
- Printed Materials
- Single day workshop, presentation or event
- Websites or other computer-based delivery
- Workshop series or educational course

2. Brief description of the target audience

- Youth from all backgrounds
- Adults from all backgrounds (volunteers, parents, collaborating organization staff)
- Youth Serving Organizations and Programs from diverse communities (including K-12, Home Schooled youth, and Camps)
 - Community Coalitions
 - UMass Amherst Faculty
 - Faculty from other colleges and universities

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	5662	31000	32098	0

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

Patent Applications Submitted

Year: 2011
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- 4-H Clubs

Year	Actual
2011	360

Output #2

Output Measure

- Community Service Project

Year	Actual
2011	194

Output #3

Output Measure

- Curricula/Instructional Materials
- Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Displays and Exhibits

Year	Actual
2011	124

Output #5

Output Measure

- Facilitated Group Meetings and Conferences

Year	Actual
2011	115

Output #6

Output Measure

- Individual Consultations and Site Visits

Year	Actual
2011	206

Output #7

Output Measure

- Printed Materials

Year	Actual
2011	164

Output #8

Output Measure

- Single day workshop, presentation or event

Year	Actual
2011	111

Output #9

Output Measure

- Websites or other computer-based delivery

Year	Actual
2011	1

Output #10

Output Measure

- Workshop series or educational course

Year	Actual
2011	1030

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Youth are effective team members, communicators, and leaders
2	Youth increase knowledge and skill in science, engineering and technology
3	Youth engage in community service
4	Youth adopt behaviors that will help them succeed academically and in the workplace
5	Youth develop knowledge and skills to be effective team members, communicators and leaders
6	Youth acquire knowledge and skills that will help them succeed academically and in the workplace

Outcome #1

1. Outcome Measures

Youth are effective team members, communicators, and leaders

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1284

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Communication and leadership skills are essential in preparing the next generation to become productive, responsible adults who will make positive contributions to their communities

What has been done

4-H Youth Development Program reached a total of 22,955 youth through 4-H clubs, short term special interest and school enrichment programs. Direct service to youth was provided by 2252 4-H volunteers and collaborators. Programs focused on the mission mandate content areas of Science, Engineering and Technology (SET) and Citizenship.

Results

Six hundred forty-five youth demonstrated their public speaking skills by competing at Visual Presentation events held across the state. Six hundred thirty-nine youth improved their record keeping skills and submitted 4-H records for formal evaluation. Six undred ten youth served in leadership roles as club officers, junior leaders and board members.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #2

1. Outcome Measures

Youth increase knowledge and skill in science, engineering and technology

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	676

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Our programs engage young people in the city of Springfield, MA in the out-of-school time hours to provide educational enrichment and promote life skills development. Education in the STEM disciplines is critical for preparing a globally and regionally competitive workforce.

What has been done

Our 4-H Program partnered with UMass undergraduate students to deliver science enrichment for Springfield youth. Youth participated in a variety of fun and skill building activities that included: building and launching rockets; making polymers; building rubber band and balloon powered cars, learning about physics by building a model roller coaster.

Results

Participating youth increase in self-reported levels of interest in science and technology. Youth expressed greater interest in attending college. Youth workers reported an increase in observed youth communication skills.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #3

1. Outcome Measures

Youth engage in community service

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2280

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Service has always been a key component of the 4H Youth Program. Service activities offer youth the opportunity to make a positive contribution to their communities while building critical life skills that enhance their self-worth and their future potential

What has been done

State teams delivered 85 programs reaching 2991 military youth and 3915 adults. Five hundred fifty-four Hero Packs were delivered to youth experiencing the deployment of a loved one. All branches of the service were reached. Team members trained 210 community volunteers who provided 600 hours of service to the effort. Solicited donations exceeded \$75000 in supplies for Hero Packs and family events and \$1700 in cash.

Results

Adults report that Operation Military Kids informational sessions increased their knowledge of the effects of deployment on military youth. While military youth indicated the hero packs they received have helped them to feel supported.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

Youth adopt behaviors that will help them succeed academically and in the workplace

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	116

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #5

1. Outcome Measures

Youth develop knowledge and skills to be effective team members, communicators and leaders

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	870

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

It is essential to plan for and prepare the next generation of environmentally literate citizens and professionals through programs that stress the interdependence of human and natural systems and emphasizes hands-on, team-oriented problem solving and community involvement.

What has been done

Envirothon teams representing schools and community organizations prepare through the year for a statewide event in May that tests their knowledge of current environmental issues. Massachusetts Envirothon offers opportunities throughout the school year, including resource materials for use in the classroom, workshops geared to both teachers and students, and opportunities to encounter environmental professionals in action.

Results

Participating youth who increased their understanding of current issues of environment and development in Massachusetts communities. Eighty percent of participating teams met the standards for the Mass Envirothon Community Action Award. Participating youth reporting an increase their knowledge and skills related to natural resource management.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #6

1. Outcome Measures

Youth acquire knowledge and skills that will help them succeed academically and in the workplace

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
-------------	---------------

2011

1278

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

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

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The Youth Development Planned is composed primarily of our state 4H Youth Development program and several additional grant funded programs. Projects employ a range of different evaluation strategies that vary in their degree of formality and rigor. Standard evaluation components may be employed routinely or annually that reflect the mandated requirement for specific, leveraged funding sources. Formal evaluations are not typically conducted every year for every project, but approaches are tailored based on available resources, leadership and the timing of expected outcomes. Evaluation methods include web-based or written surveys, administered at strategic time points, as well as checklists, interviews and reviews of third-party data. Formal evaluations are further supplemented by anecdotal reports, case studies, testimonies and simple observation, typically of the types of changes or practices that serve as the anticipated project impacts.

A general summary of all results reported by staff include the following:

Youth develop knowledge and skills to be effective team members, communicators, and leaders
Youth are effective team members, communicators, and leaders
Youth increase knowledge and skill in science, engineering and technology
Youth engage in community service
Youth adopt behaviors that will help them succeed academically and in the workplace
Youth acquire knowledge and skills that will help them succeed academically and in the workplace

Examples of formal evaluations include assessment of our Massachusetts 4-H Science, Engineering and Technology Adventures program. The program employed participant surveys completed by youth, before and after the attending the program, as well as an observational checklist completed by undergraduate students who participated in the program as youth mentors. Results include the following:

A self-reported increase by youth in the following areas:

- levels of interest in science and technology
- confidence in their ability to succeed academically
- interest in attending college

In addition Youth workers report an increase in observed youth communication skills

Key Items of Evaluation

Examples of formal evaluations include assessment of our Massachusetts 4-H Science, Engineering and Technology Adventures program. The program employed participant surveys completed by youth, before and after the attending the program, as well as an observational checklist completed by undergraduate students who participated in the program as youth mentors. Results include the following:

A self-reported increase by youth in the following areas:

- levels of interest in science and technology
- confidence in their ability to succeed academically
- interest in attending college

In addition Youth workers report an increase in observed youth communication skills

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Environmental Stewardship

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	0%		27%	
112	Watershed Protection and Management	5%		12%	
123	Management and Sustainability of Forest Resources	15%		0%	
124	Urban Forestry	0%		1%	
131	Alternative Uses of Land	15%		0%	
133	Pollution Prevention and Mitigation	15%		5%	
135	Aquatic and Terrestrial Wildlife	15%		8%	
136	Conservation of Biological Diversity	15%		0%	
211	Insects, Mites, and Other Arthropods Affecting Plants	0%		24%	
212	Pathogens and Nematodes Affecting Plants	0%		13%	
605	Natural Resource and Environmental Economics	0%		5%	
608	Community Resource Planning and Development	15%		0%	
609	Economic Theory and Methods	0%		5%	
723	Hazards to Human Health and Safety	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	8.8	0.0	2.6	0.0
Actual Paid Professional	16.5	0.0	3.0	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
170785	0	119225	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
534021	0	359752	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1109671	0	2109739	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Basic and applied research
- Analytic Tools and Techniques
- Diagnostic Services
- Facilitated Group Meetings and Conferences
- Printed Materials
- Published Articles (News, Professional and Trade)
- Single day workshop, presentation or event
- Survey or needs assessment
- Websites or other computer-based delivery
- Workshop series or educational course

2. Brief description of the target audience

- Natural Resource Agencies
- Regional Planning Authorities
- Development and Planning Agencies
- Municipalities
- Conservation Organizations
- Landowners and Land Managers
- Business/Industry

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	6761	348876	0	0

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

Patent Applications Submitted

Year: 2011
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	0	15	15

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Analytic Tools and Techniques

Year	Actual
2011	4

Output #2

Output Measure

- Diagnostic Services

Year	Actual
2011	1

Output #3

Output Measure

- Facilitated Group Meetings and Conferences

Year	Actual
2011	32

Output #4

Output Measure

- Printed Materials

Year	Actual
2011	19

Output #5

Output Measure

- Published Articles (News, Professional and Trade)

Year	Actual
2011	1

Output #6

Output Measure

- Single day workshop, presentation or event

Year	Actual
2011	126

Output #7

Output Measure

- Survey or needs assessment
Not reporting on this Output for this Annual Report

Output #8

Output Measure

- Websites or other computer-based delivery

Year	Actual
2011	26

Output #9

Output Measure

- Workshop series or educational course

Year	Actual
2011	33

Output #10

Output Measure

- Peer review publications

Year	Actual
2011	15

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Participants acquire knowledge and skill to protect and enhance natural resources and ecosystems
2	Participants adopt practices that protect and enhance natural resources and ecosystems
3	Participants acquire knowledge and skill for strategic land conservation programs that protect natural resources and ecosystems
4	Participants implement strategic land conservation programs that protect natural resources and ecosystems
5	Participants acquire knowledge and skill to implement land-use plans and programs that accommodate development in a manner that protects natural resources and ecosystems
6	Participants implement land-use plans and programs that accommodate development in a manner that protects natural resources and ecosystems
7	Participants have the knowledge and skills to promote environmental sustainability through planning and regulation
8	Participants promote environmental sustainability through planning and regulation
9	Participants acquire the knowledge and skills to implement pest management practices that minimize the impact on human health
10	Participants implement pest management practices that minimize the impact on human health
11	Accurate research to promote Water Quality
12	Accurate Research on understanding and assessing the functions of open space in the landscape

Outcome #1

1. Outcome Measures

Participants acquire knowledge and skill to protect and enhance natural resources and ecosystems

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	5268

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Sixty-two percent of Massachusetts is forested. A large majority (79%) of Massachusetts forests are privately owned. Our efforts put into place in each community the people that can deliver accurate information at crucial decision making times and support them with internet resources, so that Massachusetts forests are preserved and properly managed.

What has been done

An important initiative has been the development of the "Your Land, Your Legacy" publication which has served as the cornerstone for workshops, webinars, and web based outreach. The Forest Conservation program is a founding partner in the Family Forest Research Center, a partnership of UMass Amherst and the U.S.D.A. Forest Service. The project included hosting a summit at Yale University. The results of this project were turned into a policy guidance document for American Forest Foundation.

Results

There has been an increase in the number of landowners who participate in Forest Conservation programs or speak to a participant of a program understand their land management options. In addition, landowners and community leaders increasingly understand the options for beginning the estate planning process and conserving land.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources

131	Alternative Uses of Land
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
608	Community Resource Planning and Development

Outcome #2

1. Outcome Measures

Participants adopt practices that protect and enhance natural resources and ecosystems

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Participants acquire knowledge and skill for strategic land conservation programs that protect natural resources and ecosystems

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	4212

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources

Outcome #4

1. Outcome Measures

Participants implement strategic land conservation programs that protect natural resources and ecosystems

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Participants acquire knowledge and skill to implement land-use plans and programs that accommodate development in a manner that protects natural resources and ecosystems

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Participants implement land-use plans and programs that accommodate development in a manner that protects natural resources and ecosystems

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Participants have the knowledge and skills to promote environmental sustainability through planning and regulation

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	3720

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The vast majority of the 351 cities and towns in Massachusetts have volunteer planning boards and zoning boards of appeal. These boards have significant decision-making power over zoning, development, natural resource protection, and other important land use issues. With the complexity of changing state regulations and without dedicated professional staff, many board members struggle to stay informed of new developments, and the tools and techniques that can promote better decisions or avoid unnecessary or costly appeals.

What has been done

During 2011, we provided direct training to over 500 Massachusetts residents, the vast majority being members of municipal Planning and Zoning Appeals Boards. Educators provided training to this audiences who were responsible for implementing sustainable land use strategies on topics such as "Zoning for Smart Growth", "Water Conservation", and "Cluster Development".

Results

Board members increased their understanding of development impacts and the balancing of development with resource protection and sustainability.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
605	Natural Resource and Environmental Economics
609	Economic Theory and Methods

Outcome #8

1. Outcome Measures

Participants promote environmental sustainability through planning and regulation

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Participants acquire the knowledge and skills to implement pest management practices that minimize the impact on human health

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	760

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
723	Hazards to Human Health and Safety

Outcome #10

1. Outcome Measures

Participants implement pest management practices that minimize the impact on human health

Not Reporting on this Outcome Measure

Outcome #11

1. Outcome Measures

Accurate research to promote Water Quality

Not Reporting on this Outcome Measure

Outcome #12

1. Outcome Measures

Accurate Research on understanding and assessing the functions of open space in the landscape

Not Reporting on this Outcome Measure

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

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The Environmental Stewardship Planned Program is actually a composite of projects and initiatives. Projects within the planned program employ a range of different evaluation strategies that vary in their degree of formality and rigor. Standard evaluation components may be employed routinely or annually that reflect the mandated requirement for specific, leveraged funding sources. Formal evaluations are not typically conducted every year for every project, but approaches are tailored based on available resources, leadership and the timing of expected outcomes. Evaluation methods include web-based or written surveys, administered at strategic time points, as well as checklists, interviews and reviews of third-party data. Formal evaluations are further supplemented by anecdotal reports, case studies, testimonies and simple observation, typically of the types of changes or practices that serve as the anticipated project impacts.

A general summary of all results reported by staff include the following:

Participants acquired knowledge and skill to protect and enhance natural resources and ecosystems

Participants adopted practices that protect and enhance natural resources and ecosystems

Participants acquired knowledge and skill for strategic land conservation programs that protect natural resources and ecosystems

Participants implemented strategic land conservation programs that protect natural resources and ecosystems

Participants acquired knowledge and skill to implement land-use plans and programs that accommodate development in a manner that protects natural resources and ecosystems

Participants implemented land-use plans and programs that accommodate development in a manner that protects natural resources and ecosystems

Participants gained knowledge and skills to promote environmental sustainability through planning and regulation

Participants promoted environmental sustainability through planning and regulation

Participants acquired the knowledge and skills to implement pest management practices that minimize the impact on human health

The key goals of our forest conservation program are to establish networks of forest landowners and train individuals who can serve as peer educators that will make referrals or direct individuals to educational or professional resources. The ultimate goal is to ensure that landowners make informed decision about the management of forests. Identified impact indicators frequently focus on measuring the nature or frequency of interactions that characterize these networks. Some of these assessments can be made by monitoring the use of web resources associated with the project. Recent assessments of forest landowners reveal the following:

1126 landowners were referred to a land trust or conservation based estate planning information

1790 Participants in Forest Conservation programs learned how to find a local forest service or private forester to advise them

664 landowners who began the estate planning process or took steps to conserve their land

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Massachusetts Center for Agriculture Administration

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
901	Program and Project Design, and Statistics	20%		0%	
902	Administration of Projects and Programs	50%		80%	
903	Communication, Education, and Information Delivery	30%		20%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	7.3	0.0	1.5	0.0
Actual Paid Professional	9.6	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
716226	0	572	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
135681	0	9274	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
530592	0	9274	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Administration of Extension and Experiment Station Projects and Programs
 Administration and oversight at the farms
 Website and Other Computer-based delivery
 Printed Material
 Planning and Integration

2. Brief description of the target audience

Center for Agriculture staff and administrators
 UMass faculty
 Stakeholder groups
 Collaborating organizations
 Program participants
 General Public

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Administrative Initiatives, Systems and Procedures
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	Massachusetts Center for Agriculture projects and initiatives are sustained and advanced, consistent with organizational expectations and stakeholder needs

Outcome #1

1. Outcome Measures

Massachusetts Center for Agriculture projects and initiatives are sustained and advanced, consistent with organizational expectations and stakeholder needs

Not Reporting on this Outcome Measure

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

V(I). Planned Program (Evaluation Studies)

Evaluation Results

No evaluation was conducted

Key Items of Evaluation