

2014 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, Food and the Environment at the University of Massachusetts Amherst integrates research and applied research with public education and outreach in agriculture, food systems, natural resources and human development at the University of Massachusetts Amherst. The Center is the contemporary standard bearer of the university's land-grant origins and links the university to communities, citizens and businesses throughout the state. The Center is the organizational home of both UMass Extension and the Massachusetts Agricultural Experiment Station. The Center serves as a portal through which individuals, industries, and agencies connect with university 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 primarily within the College of Natural Sciences and several other colleges. The Experiment Station receives significant support through federally appropriated formula funds with competitive research grants from federal and state agencies and private sources serving as important additional sources of revenue.

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 that 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. UMass Extension addresses public concerns of high priority for the Commonwealth. Part of the national Cooperative Extension System, UMass Extension sponsors statewide programs in Agriculture and Landscape, Natural Resources and Environmental Conservation, Nutrition Education and the Massachusetts 4-H Youth Development. 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 National Institute of Food and Agriculture has specified five key areas which help us to organize the Center's work. These are: Global Food Security; Climate Change; Sustainable Energy; Food Safety; and Childhood Obesity. Center programs are also focused 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 must be conscious of energy use and greenhouse gas emissions as well as new opportunities for cultivating crops as alternative energy sources. Individuals, communities and

business must be prepared to adapt to unpredictable weather conditions and effectively address the many challenges posed by our changing climate. 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 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 estimated to be 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 - While childhood obesity rates may finally be declining, obesity remains a critical problem nationally and in Massachusetts. Many of the long-term health problems typically associated with obesity in childhood are reversible but can also lead to obesity in 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 with 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 more than 1,000 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.

Important Note Regarding Professional Extension FTEs in this Report - The number of professional Extension FTEs in this report has decreased dramatically in comparison to what was planned, as well as to what has been reported in previous years. This does not reflect real changes in our organization, but rather changes in our approach to reporting this information in response to recent guidance issued by NIFA. Specifically, we are reporting fewer Total Actual FTEs in the "Report Overview" because we are defining fewer individuals in our organization as professionals. We are also reporting fewer Professional Extension FTEs under each of the Planned Programs because we are now only reporting those FTEs

supported by Smith-Lever funds. The guidance we refer to is online at <http://nifa.usda.gov/resource/how-report-ftes-plan-work-and-annual-report> .

Total Actual Amount of professional FTEs/SYs for this State

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	110.7	0.0	28.0	0.0
Actual	67.5	0.0	32.0	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 research projects proceed through 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 that it is consistent with the priorities and goals of the Center and NIFA. Prospective investigators then develop a detailed research proposal that is reviewed and approved by the faculty member's academic department chair and three disciplinary peers who comment on the scientific merit. Any necessary revisions are incorporated and final approval of projects is made by the Director of the Agricultural Experiment Station.

Consistent with feedback received from NIFA officials who review our Plan of Work and Annual Report, recommendations have been made to change key aspects of our current procedures and establish a more rigorous and blind peer review process for research projects that receive Massachusetts Experiment Station funding. These recommendations have been endorsed by our administrative leadership team and our interim director. Implementation of these changes will be delayed until our permanent Director search is completed and the position is filled.

The Director of the Agricultural Experiment Station also solicits research initiatives in specific disciplinary areas or with other criteria, such as future potential for other external funding or integration with extension type work. For these opportunities, a brief pre-proposal is submitted and a committee composed of faculty and professional staff recommends the most promising ideas. 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 develop detailed assessment plans that will monitor and document the success of the project.

UMass Extension

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 to, and different from, others programs in New England. The four states have agreed to provide periodic formal and informal merit review and feedback for each state as a component of our partnership. The new system provides access to each state plan of work for all four states, allowing for easy sharing of ideas and opportunities for further collaboration.

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
- Targeted invitation to selected individuals from general public

Brief explanation.

In Fiscal Year 2012, the Center for Agriculture, Food and the Environment implemented a comprehensive process of soliciting input from internal and external stakeholders to identify organizational priorities and help us to structure our organization in ways that better serve constituents, while effectively integrating research and applied research with public education, outreach and extension. The process involved a survey administered to hundreds of individuals representing a broad range of citizens, communities organizations, agencies and professional associations. To obtain input from faculty stakeholders, the Center held a series of discussions with collaborating academic departments. The Center also created a process for professional staff and extension faculty to provide input on current organizational needs and future directions. This included sharing results from the stakeholder survey, facilitated planning sessions and the creation of a working group composed of representatives who synthesized information and issued specific recommendations.

In addition to the mechanisms described above, the center continues many of its previous activities designed to obtain input from stakeholders. The Center for Agriculture Advisory Board, consisting of individuals from key Agriculture and Natural Resource organizations across the state helped us to engage traditional stakeholders and develop new relationships, understand new perspectives and build new partnership opportunities. 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 continues its 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 on the board is specifically defined in the enabling legislation 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(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
- Needs Assessments

Brief explanation.

Three hundred sixty-five individuals were identified by program staff as potential respondents for our external stakeholder survey. Our intention was to assess internal and external stakeholders and specific attention was directed towards attempting to obtain feedback from individuals not previously engaged with the Center or extension programming. This approach was largely successful as the following breakdown of 203 survey respondents indicates:

- 14% UMass faculty, dean or department head
- 31% Center for Ag/UMass Extension staff
- 5% Other UMass staff or admin
- 7% Advisory Board Member
- 43% External Stakeholder, client or collaborator

For "external stakeholder, client or collaborator," 61% described their current involvement with the Center as "none or very little."

Center administrators contacted academic chairs to request time during regularly scheduled faculty meetings. The Center identified and met with those departments with the greatest potential to work in areas defined by our organizational mission as well as the priorities identified by the National Institute of Food and Agriculture. Those departments were: Environmental Conservation, Nutrition, Food Science and the Stockbridge School of Agriculture.

Invitations to participate in a facilitated planning session were sent to all professional staff and extension faculty, and to collaborating academic faculty and department heads. Approximately 70% of those who were invited attended the session. At the session, volunteers and nominations were solicited for individuals interested in continuing to provide input through participation in a working group dedicated to synthesizing information from previous stakeholder engagement efforts and issuing specific recommendations.

The Center continued previous activities designed to obtain input from stakeholders. Formal opportunities to obtain feedback occur during meetings of our Center for Agriculture Advisory Board and when UMass Extension convenes the Extension Board of Public Overseers. Members of the Center Advisory Board are selected to reflect a diverse array of stakeholder groups and state agencies with a shared interest in research and public education in areas related to our mission area. Members of the Extension Board of Public Overseers are specified by the original enabling legislation and approved by the Governor of the state.

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.

In the Fiscal Year 2012, we conducted a survey of internal and external stakeholders that was administered on-line. We had focused conversations with faculty from key collaborating academic departments and we also created a process for professional staff and extension faculty to provide input on current organizational needs and future directions. This included sharing results from the stakeholder survey, facilitated planning sessions and the creation of a working group composed of representatives who synthesized information and issued specific recommendations.

In addition to the activities described above, the Center continued previous activities designed to obtain input from stakeholders. Formal opportunities to obtain feedback occur when UMass Extension convenes the Extension Board of Public Overseers. While these interactions included organizational updates, they 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.

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.

The activities and methods used for obtaining input from stakeholders described above were components in a larger strategic planning and reorganization process for the Center for Agriculture, Food and the Environment that was designed to help us identify organizational priorities and structure the Center in ways that better serve constituents while effectively integrating research and applied research with public education, outreach and extension. Information obtained from the survey was disseminated broadly and served as the starting point for subsequent discussion with a variety of external stakeholder groups and internal staff. Survey results as well as insights gained from subsequent discussions with external stakeholder groups were combined with the significant

content generated by professional staff and faculty during planning activities and a working group was appointed to review the content and develop specific recommendations. Center administrators were charged with synthesizing the materials generated during this process and created a set of strategic principles and organizational values that served as foundational elements in a strategic plan for reorganizing the Center for Agriculture. A copy of the plan is available at: <http://extension.umass.edu/email-campaigns/Reorganization-Plan-CfA.pdf>

Brief Explanation of what you learned from your Stakeholders

A selection of questions and results from our stakeholder survey follows:

- 1) Aside from nationally recognized research and access to affordable student education, what do you think MA citizens expect from a high-quality state university? (top 3 responses)
 - tools and technologies
 - expert advice and consultation
 - diagnostic services
- 2) How can UMass Amherst best contribute to agriculture and food systems in Massachusetts? (top 3 responses)
 - conduct scientific investigations of agriculture and food systems
 - support sound environmental practices for Massachusetts agriculture
 - inform policy and legislation related to agriculture & food systems
- 3) How can UMass Amherst best contribute to environmental stewardship in Massachusetts? (top 3 responses)
 - conduct environmental science research
 - educate state or local officials, boards and environmental decision-makers
 - develop environmental assessment tools and technologies
- 4) How can UMass Amherst best contribute to the positive development of youth in Massachusetts? (top 3 responses)
 - Enrich science, technology, engineering and math education
 - Involve youth in local agriculture and food systems
 - Involve youth in environmental stewardship programs
- 5) How can UMass Amherst best contribute to the nutritional health and physical well-being of Massachusetts residents? (top 3 responses)
 - Conduct scientific investigations of nutritional health & physical well-being
 - Support farm to school programs
 - Inform Massachusetts health policy, regulation and legislation

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
2727963	0	2736705	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	2555888	0	2126170	0
Actual Matching	2727990	0	3821899	0
Actual All Other	5130783	0	12978894	0
Total Actual Expended	10414661	0	18926963	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	609080	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

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	11%		3%	
202	Plant Genetic Resources	0%		3%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		4%	
204	Plant Product Quality and Utility (Preharvest)	6%		0%	
205	Plant Management Systems	15%		8%	
206	Basic Plant Biology	0%		8%	
211	Insects, Mites, and Other Arthropods Affecting Plants	16%		5%	
212	Diseases and Nematodes Affecting Plants	16%		14%	
216	Integrated Pest Management Systems	26%		2%	
301	Reproductive Performance of Animals	0%		18%	
304	Animal Genome	0%		1%	
307	Animal Management Systems	5%		0%	
311	Animal Diseases	0%		10%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	0%		3%	
503	Quality Maintenance in Storing and Marketing Food Products	0%		4%	
504	Home and Commercial Food Service	0%		2%	
601	Economics of Agricultural Production and Farm Management	0%		5%	
604	Marketing and Distribution Practices	5%		0%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	0%		9%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	0%		1%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	14.0	0.0	12.0	0.0

Actual Paid	2.9	0.0	14.8	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
346407	0	610472	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
453443	0	1945566	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
302690	0	5571642	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Demonstrations
- Diagnostic Services
- Facilitated Group Meetings and Conferences
- Individual Consultations and Site Visits
- Presentation/Poster (Academic)
- Printed Materials
- Published Article (Academic)
- Research Project (Applied Research)
- Single day workshop, presentation or event
- Websites or Other Computer-based Delivery
- Workshop series or educational course

2. Brief description of the target audience

The 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

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	13490	330938	70	0

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

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	30	48	78

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Demonstrations

Year	Actual
2014	24

Output #2

Output Measure

- Diagnostic Services
- Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Facilitated Group Meetings and Conferences

Year	Actual
2014	6

Output #4

Output Measure

- Individual Consultations and Site Visits

Year	Actual
2014	1080

Output #5

Output Measure

- Printed Materials

Year	Actual
2014	24

Output #6

Output Measure

- Single day workshop, presentation or event

Year	Actual
2014	108

Output #7

Output Measure

- Websites or other computer-based delivery

Year	Actual
2014	208

Output #8

Output Measure

- Workshop series or educational course

Year	Actual
2014	6

Output #9

Output Measure

- Peer review publications

Year	Actual
2014	78

Output #10

Output Measure

- Applied Research Projects

Year	Actual
2014	25

Output #11

Output Measure

- Displays and Exhibits

Year	Actual
2014	5

Output #12

Output Measure

- Academic poster or presentation

Year	Actual
2014	6

Output #13

Output Measure

- Research, Grant or Policy Report

Year	Actual
2014	2

Output #14

Output Measure

- Survey, Needs Assessment or Other Data Collection

Year	Actual
2014	1

Output #15

Output Measure

- Published News, Professional or Trade Article

Year	Actual
2014	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Participants acquire knowledge and skills for practices that ensure economically viable food production.
2	Participants adopt practices that ensure economically viable food production
3	Participants acquire knowledge and skills for practices that ensure the environmentally sustainable food production
4	Participants adopt practices that ensure environmentally sustainable food production
5	Creation and synthesis of knowledge related to Global Food Security and Hunger
6	Food production enterprises in Massachusetts are more robust, diverse and economically viable

Outcome #1

1. Outcome Measures

Participants acquire knowledge and skills for practices that ensure economically viable food production.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	600

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Cranberry Growers in Massachusetts struggle to remain economically competitive and environmentally sustainable. The additional pressure of marketing fruit for export (foreign) markets that mandate restrictive thresholds for pesticide residues present yet another challenge. Growers must understand the biology of cranberry pests to properly utilize new management tactics. Additionally, they must contend with increasing urban pressure on the farm's margin as many parties compete for resources.

What has been done

257 growers attended the Annual Management Update meeting as well as a separate meeting on pesticide safety attended by 83 people. We published 8 issues of the Cranberry Station newsletter, which was distributed to 284 recipients. We continued our research work on phosphorus use in cranberry systems and its impact on water quality into scientific presentations and papers. Work continues on the use of automated irrigation for frost protection and irrigation. We published 4 refereed papers, 7 fact sheets and 11 abstracts.

Results

Our 2014 meetings allowed 278 attendees to obtain 1046 contact hours towards pesticide re-certification. Based on survey data obtained at our 2014 Update Management meeting growers got new information and/or got information they will likely use on their farm in the following areas: phosphorus loss management during harvest, targeting herbicide applications, poison ivy and moss management, fruit rot, adjuvant technology, nutrient management, frost cycling, cranberry fruitworm management and pollination. The relevant topics for the responses are in parenthesis.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #2

1. Outcome Measures

Participants adopt practices that ensure economically viable food production

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	600

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Fruit farms and vineyards provide open space and scenic vistas while the lands surrounding agricultural production provide buffer zones for native species of plants and animals and corridors for their movement or expansion. To remain a vital part of the Massachusetts economy, both new and established growers must learn to produce crops sustainably and to adapt production systems to market opportunities. Research on pest ecology and management informs approaches that optimize control and reduce chemical use.

What has been done

Thirty Research and Demonstration projects were carried out at the UMass Cold Spring Orchard and another three projects were conducted at a combined 25 cooperating grower sites. Outreach/Education activities included hosting and maintaining websites, producing publications (print and online), organizing and conducting day-long and multi-day conferences, delivering educational presentations and trainings, and one-on-one consultations with growers (by email, phone and in person).

Results

Fruit Growers adopted new methods, practices and technology to improve production efficiency and reduce preventable crop loss. These included high density planting, native pollinator conservation, soil health assessment, season extension, value-added production. Fruit Growers

diversified their operations with new crops or products so as to guard against crop or market failures. These included Asian pears, wine or table grapes, frozen/processed products and wine.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #3

1. Outcome Measures

Participants acquire knowledge and skills for practices that ensure the environmentally sustainable food production

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	3845

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
216	Integrated Pest Management Systems

Outcome #4

1. Outcome Measures

Participants adopt practices that ensure environmentally sustainable food production

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	3005

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Vegetable farming in Massachusetts and New England has remained vital in recent decades through constant and creative change: more direct marketing, diversification, selection of high value crops, and adoption of new technologies. The twenty thousand Massachusetts acres used to produce vegetables are a resource for food, open space, environmental quality, economic vitality, and quality of life. Vegetable farmers are essential to our national leadership role in wholesale local food distribution systems.

What has been done

We completed research trials for cucurbits and brassicas, generating reduced-risk management alternatives for growers. We continued our collaboration with NRCS regarding methods used to generate EQUIP contracts and IPM plans. We also continued our Commonwealth Quality program which now certifies fifty vegetable and fruit farms, and provides recognition and market access for products that are grown, harvested, and processed in Massachusetts, using practices that are safe, sustainable and don't harm the environment.

Results

Detailed records were kept for our collaborating partner farmers where we made hundreds of recommendations related to the implementation of environmentally sound management practices. About 80% of our recommended actions were taken by growers, either as recommended, or with some modification. About 81% of the recommendations that were implemented were judged by growers to have been "moderately" or "largely" successful. In addition surveys of growers revealed that 80% were able to reduce, limit, or change pesticide use; 75% were able to reduce or limit the damage or loss from diseases and pests; 71% were able to improve crop quality and 51% were able to improve crop yield.

4. Associated Knowledge Areas

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

Outcome #5

1. Outcome Measures

Creation and synthesis of knowledge related to Global Food Security and Hunger

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Food production enterprises in Massachusetts are more robust, diverse and economically viable

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	78

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

211	Insects, Mites, and Other Arthropods Affecting Plants
212	Diseases and Nematodes Affecting Plants
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management

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

Fruit Growers adopted new methods, practices and technology to improve production efficiency and reduce preventable crop loss. These included high density planting, native pollinator conservation, soil health assessment, season extension, value-added production. Fruit Growers diversified their operations with new crops or products so as to guard against crop or market failures. These included Asian pears, wine or table grapes, frozen/processed products and wine.

Our 2014 Cranberry outreach meetings allowed 278 attendees to obtain 1046 contact hours towards pesticide re-certification. Based on survey data obtained at our 2014 Update Management meeting growers got new information and/or got information they will likely use on their farm in the following areas: phosphorus loss management during harvest, targeting herbicide applications, poison ivy and moss management, fruit rot, adjuvant technology, nutrient management, frost cycling, cranberry fruitworm management and pollination. The relevant topics for the responses are in parenthesis.

Detailed records were kept for our collaborating partner farmers where we made hundreds of recommendations related to the implementation of environmentally sound management practices. About 80% of our recommended actions were taken by growers, either as recommended, or with some modification. About 81% of the recommendations that were implemented were judged by growers to have been ?moderately? or ?largely? successful. In addition surveys of growers revealed that 80% were able to reduce, limit, or change pesticide use; 75% were able to reduce or limit the damage or loss from diseases and pests; 71% were able to improve crop quality and 51% were able to improve crop yield.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Climate Change

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
111	Conservation and Efficient Use of Water	10%		0%	
112	Watershed Protection and Management	50%		0%	
131	Alternative Uses of Land	0%		10%	
132	Weather and Climate	40%		47%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		2%	
213	Weeds Affecting Plants	0%		41%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	1.2	0.0	1.0	0.0
Actual Paid	0.0	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
11644	0	15525	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
122031	0	91455	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	127835	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Basic and Applied Research
- Facilitated Group Meetings and Conferences
- Printed Materials
- Single day workshop, presentation or event
- Websites or Other Computer-based Delivery

2. Brief description of the target audience

General public, land owners, food producers, municipal officials, state agencies and regulators

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1169	390	90	0

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

Patent Applications Submitted

Year: 2014
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	1	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Applied Research Projects
Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Facilitated Group Meetings and Conferences

Year	Actual
2014	50

Output #3

Output Measure

- Printed Materials

Year	Actual
2014	2

Output #4

Output Measure

- Single day workshop, presentation or event

Year	Actual
2014	6

Output #5

Output Measure

- Websites or Other Computer-based Delivery

Year	Actual
2014	2

Output #6

Output Measure

- Peer review publications
Not reporting on this Output for this Annual Report

Output #7

Output Measure

- Analytic Tools and Techniques

Year	Actual
2014	1

Output #8

Output Measure

- Workshop series or educational course

Year	Actual
2014	4

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Participants acquire knowledge and skill to reduce or mitigate the effects or risks associated with future changes in climate or weather
2	Participants implement practices to reduce or mitigate the effects or risks associated with future changes in climate or weather
3	Creation and synthesis of knowledge related to future changes in climate or weather
4	Massachusetts Ecosystems are managed in ways that reduce or mitigate the effects or risks associated with future changes in climate or weather

Outcome #1

1. Outcome Measures

Participants acquire knowledge and skill to reduce or mitigate the effects or risks associated with future changes in climate or weather

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Despite the fact that the anthropogenic causes of climate change are global in nature and require solutions derived from grand scale international cooperative efforts, many of the effects are felt locally. A microcosm of the climate change problem can be found on the watershed scale as well, in the form of upstream causes and downstream effects. Understanding of the issues at hand can help forge good management decisions that help bolster resilience on the local level and alleviate damage to the watershed as a whole.

What has been done

Activities have focused on ecologically restorative flood prevention and remediation. We worked primarily with community agencies, facilitating discussions and developing and disseminating resources related to watershed management and flood resilience. We presented a variety of invited lectures and workshops and represented UMass Extension at meetings and conferences. We are in the process of creating a photo story documentation project for stakeholders who experienced major land changes as a result of Hurricane Irene.

Results

Our programs increased participants knowledge of the connection between water resources and climate change. This was true both for our direct stakeholders as well as the general public. We established the groundwork for assessment of wetland restoration success by providing a needed baseline soil-water metric. We experienced continued success in our efforts to create collaborative linkages between outreach and media focused groups and basic research scientists to maximize both the quality/quantity of data collected as well as its public impact.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
132	Weather and Climate

Outcome #2

1. Outcome Measures

Participants implement practices to reduce or mitigate the effects or risks associated with future changes in climate or weather

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
132	Weather and Climate

Outcome #3

1. Outcome Measures

Creation and synthesis of knowledge related to future changes in climate or weather

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Massachusetts Ecosystems are managed in ways that reduce or mitigate the effects or risks associated with future changes in climate or weather

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	50

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
132	Weather and Climate

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Our programs increased participants knowledge of the connection between water resources and climate change. This was true both for our direct stakeholders as well as the general public. We established the groundwork for assessment of wetland restoration success by providing a needed baseline soil-water metric. We experienced continued success in our efforts to create collaborative linkages between outreach and media focused groups and basic research scientists to maximize both the quality/quantity of data collected as well as its public impact.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Sustainable Energy

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
131	Alternative Uses of Land	0%		2%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		43%	
202	Plant Genetic Resources	0%		43%	
402	Engineering Systems and Equipment	30%		2%	
504	Home and Commercial Food Service	0%		3%	
511	New and Improved Non-Food Products and Processes	30%		7%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	40%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	0.6	0.0	4.0	0.0
Actual Paid	0.0	0.0	1.1	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
581	0	71366	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
49905	0	143421	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	2084413	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Applied Research
 Facilitated Group Meetings and Conferences
 Printed Materials
 Single day workshop, presentation or event

2. Brief description of the target audience

Growers, agricultural businesses, real estate developers, building managers, municipalities, public utilities, homeowners, institutional leaders and decision-makers

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	592	560	8	0

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

Patent Applications Submitted

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	1	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Applied Research Projects
Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Facilitated Group Meetings and Conferences
Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Printed Materials

Year	Actual
2014	1

Output #4

Output Measure

- Single day workshop, presentation or event

Year	Actual
2014	5

Output #5

Output Measure

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

Output #6

Output Measure

- Peer review publications
Not reporting on this Output for this Annual Report

Output #7

Output Measure

- Analytic Tools and Techniques

Year	Actual
2014	7

Output #8

Output Measure

- Demonstrations

Year	Actual
2014	1

Output #9

Output Measure

- Diagnostic Services

Year	Actual
2014	1

Output #10

Output Measure

- Grant Submission or Other Funding Proposal

Year	Actual
2014	3

Output #11

Output Measure

- Individual Consultations and Site Visits

Year	Actual
2014	36

Output #12

Output Measure

- Academic Poster or Presentation

Year	Actual
2014	1

Output #13

Output Measure

- Published News, Professional or Trade Article

Year	Actual
2014	2

Output #14

Output Measure

- Academic Article, Book or Chapter

Year	Actual
2014	3

Output #15

Output Measure

- Applied Research Project

Year	Actual
2014	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Creation and synthesis of knowledge related to environmentally sustainable energy resources
2	Target audiences adopt practices that increase energy efficiency
3	Target audiences increase knowledge and skill for practices that increase energy efficiency
4	Target audiences increase use of energy from renewable sources
5	Target audiences increase knowledge and skill for utilizing energy from renewable sources

Outcome #1

1. Outcome Measures

Creation and synthesis of knowledge related to environmentally sustainable energy resources

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Target audiences adopt practices that increase energy efficiency

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	400

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Businesses, government officials and individuals make decisions that impact energy use. UMass Extension conveys current energy efficiency, renewable energy, and building science information to stakeholders including those in the building trades, design professionals, agencies, building owners and occupants through workshops, web publication, and consulting. We seek to establish long-term and recurring energy savings statewide through information transfer to stakeholders and through consultations and integrated extension research projects.

What has been done

We worked extensively with towns on planning/renovating school buildings for low and net zero energy building design. In collaboration with Massachusetts we DOER, we organized and promoted a conference for 200 MA municipal officials to share information, best practices, and resources for clean energy projects. We also served the residential market through site visits, phone and email communications. In this manner we served 82 individuals over the past year representing approximately 290,000 square feet of building floor area.

Results

Mass DCR and EEOEA used an earlier result from our research to justify a pilot tree planting program. A plan we provided to a local Disability Services provider resulted in an energy cost reduction of 80%. In our work with the Food Bank of Western Massachusetts, we developed and provided operations engineering advice to dramatically reduce energy costs and food wastage. Data are preliminary, but changes implemented should reduce energy use by about 30%. Working with UMass collaborators, we secured a \$6 Million seed grant to create a Massachusetts Energy Extension Initiative. The Initiative provides Energy Extension service to municipalities and commercial enterprises through collaboration and applied research.

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #3

1. Outcome Measures

Target audiences increase knowledge and skill for practices that increase energy efficiency

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	1082

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #4

1. Outcome Measures

Target audiences increase use of energy from renewable sources

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment

Outcome #5

1. Outcome Measures

Target audiences increase knowledge and skill for utilizing energy from renewable sources

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	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
402	Engineering Systems and Equipment

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Public Policy changes
- Government Regulations

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Mass DCR and EEOEA used an earlier result from our research to justify a pilot tree planting program. A plan we provided to a local Disability Services provider resulted in an energy cost reduction of 80%. In our work with the Food Bank of Western Massachusetts, we developed and provided operations engineering advice to dramatically reduce energy costs and food wastage. Data are preliminary, but changes implemented should reduce energy use by about 30%. Working with UMass collaborators, we secured a \$6 Million seed grant to create a Massachusetts Energy Extension Initiative. The Initiative provides Energy Extension service to municipalities and commercial enterprises through collaboration and applied research.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Food Safety

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
311	Animal Diseases	0%		2%	
501	New and Improved Food Processing Technologies	20%		0%	
502	New and Improved Food Products	0%		36%	
504	Home and Commercial Food Service	0%		4%	
701	Nutrient Composition of Food	0%		13%	
702	Requirements and Function of Nutrients and Other Food Components	0%		2%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	20%		9%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	60%		24%	
723	Hazards to Human Health and Safety	0%		3%	
724	Healthy Lifestyle	0%		7%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	1.1	0.0	5.0	0.0
Actual Paid	0.8	0.0	6.9	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
53177	0	265376	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
76846	0	770362	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	1737572	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Basic and Applied Research
- Facilitated Group Meetings and Conferences
- Printed Materials
- Single day workshop, presentation or event
- Websites or Other Computer-based Delivery

2. Brief description of the target audience

- Food growers/producers
- Food Processors
- Food Retailers
- Food Service Managers
- Residential care facility staff
- School cafeteria workers
- General public
- Cosmetic and Pharmaceutical industries
- Farmers Markets

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	97	1552	0	0

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

Patent Applications Submitted

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	28	28

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Workshop series or educational course

Year	Actual
2014	2

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

Year	Actual
2014	1

Output #4

Output Measure

- Peer review publications

Year	Actual
2014	28

Output #5

Output Measure

- Analytic Tools and Techniques

Year	Actual
2014	3

Output #6

Output Measure

- Grant Submission or Other Funding Proposal

Year	Actual
2014	12

Output #7

Output Measure

- Individual Consultations and Site Visits

Year	Actual
2014	18

Output #8

Output Measure

- Printed Materials

Year	Actual
2014	2

Output #9

Output Measure

- Published News, Professional or Trade Article

Year	Actual
2014	1

Output #10

Output Measure

- Single day Workshop, Presentation or Event

Year	Actual
2014	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Creation and synthesis of knowledge related to the safety, and the functional and bioactive properties of food.
2	Participants acquire knowledge and skill to avoid food borne illness and control other food safety risks and hazards
3	Participants adopt practices to avoid food borne illness and control other food safety risks and hazards

Outcome #1

1. Outcome Measures

Creation and synthesis of knowledge related to the safety, and the functional and bioactive properties of food.

Not Reporting on this Outcome Measure

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
2014	722

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There are over 400,000 incidences of produce-related foodborne illnesses each year in Massachusetts. The estimated cost as a result of the illnesses is \$903 million. Food Safety Extension focuses on applied research and food safety education to support the food industry and a safe and sustainable food system. The program conducts and supports applied research and educational programming and offers other outreach opportunities that address the food safety needs of individuals and groups through short courses, on-line training and other outreach venues.

What has been done

We conducted a series of workshops for Massachusetts growers who produce ?Specialty Crops.? The workshops focused on helping growers interested in safe ?Value-Added Processing? for direct sales and marketing of products made from produce they grow. We continued to offer our Hazard Analysis of Critical Control Point training and certification programs. This year, we developed a publication for a Food Safety Magazine publication related to On-Farm Food Safety Challenges and Opportunities.

Results

All Better Process Control School participants received certification for successfully passing all exams pertaining to the material. Food industry professionals acquired skills and knowledge and made more safe decisions regarding their food products. Hazard Analysis of Critical Control Point Participants acquired the knowledge, skills and tools to create food safety management plans. And Better Process Control School participants increased their knowledge and skill for the safe and healthy production of value-added products from specialty crops.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
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 #3

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
2014	1558

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

All Better Process Control School participants received certification for successfully passing all exams pertaining to the material. Food industry professionals acquired skills and knowledge and made more safe decisions regarding their food products. Hazard Analysis of Critical Control Point Participants acquired the knowledge, skills and tools to create food safety management plans. And Better Process Control School participants increased their knowledge and skill for the safe and healthy production of value-added products from specialty crops.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Childhood Obesity

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
502	New and Improved Food Products	0%		7%	
703	Nutrition Education and Behavior	50%		76%	
704	Nutrition and Hunger in the Population	15%		0%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	10%		0%	
724	Healthy Lifestyle	25%		17%	
Total		100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	39.0	0.0	0.7	0.0
Actual Paid	2.4	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
5837	0	129352	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
185137	0	114228	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
2707034	0	187155	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

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

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

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	14999	90148	42401	37731

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

Patent Applications Submitted

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	4	2	6

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Demonstrations

Year	Actual
2014	128

Output #2

Output Measure

- Displays and Exhibits

Year	Actual
2014	247

Output #3

Output Measure

- Printed Materials
Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Single day workshop, presentation or event

Year	Actual
2014	298

Output #5

Output Measure

- Workshop series or educational course

Year	Actual
2014	2100

Output #6

Output Measure

- Peer review publications

Year	Actual
2014	6

Output #7

Output Measure

- Academic Poster or Presentation

Year	Actual
2014	4

Output #8

Output Measure

- Curricula/Instructional Materials

Year	Actual
2014	4

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Participants gain knowledge and skill to improve physical activity behaviors
2	Participants improve physical activity behaviors
3	Participants gain knowledge and skill to improve dietary behaviors
4	Participants improve dietary behaviors
5	Creation and synthesis of knowledge related to childhood obesity
6	Participants improve food resource management behaviors

Outcome #1

1. Outcome Measures

Participants gain knowledge and skill to improve physical activity behaviors

Not Reporting on this Outcome Measure

Outcome #2

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
2014	263

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. Families need guidance to get the most nutrition from their limited resources in order for their children to grow and thrive. Our Expanded Food and Nutrition Education Program's assists limited-resource families to acquire the knowledge, skills, attitudes, and changed behaviors necessary for nutritionally sound diets, and physical well-being.

What has been done

Four Professional staff and 15 paraprofessionals provided nutrition education programming to low-income adults and youth. A total of 1,691 adults and 1,425 youth were reached in FY 2014.

Results

Two hundred sixty-three EFNEP participants showed an increase in their level of physical activity.

4. Associated Knowledge Areas

KA Code Knowledge Area

724 Healthy Lifestyle

Outcome #3

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
2014	59

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

Outcome #4

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
2014	11046

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In Massachusetts, the medical cost for obesity is estimated at over 1 billion dollars per year and affects nearly 1 out of every 3 individuals ages 10 - 17. Obesity is associated with increased long-term risk for many chronic diseases, yet many of the most dangerous health problems associated with obesity are largely preventable. UMass Extension SNAP-Ed is part of a national nutrition education effort funded to provide nutrition education programs and activities that help adults and youth establish healthy eating habits.

What has been done

Staff in five field offices (Boston, Lawrence, Raynham, Springfield, and Worcester) and one subcontractor site (Barnstable County) reached 43,387 adult and youth participants with direct education, making a total of 156,251 direct nutrition education contacts in FY 2014. A total of 191,865 individuals were reached through indirect nutrition education methods (displays, farmers' market food demonstrations, leave-behind enrichment activities for school staff to use with children, newsletters, blog, and telephone Tip Line) in FY 2014.

Results

As a result of our efforts:

Approximately 500 grade 3-8 youth participating in a series of SNAP-Ed workshops ate fruit more often.

Approximately 550 grade 3-8 youth participating in a series of SNAP-Ed workshops ate vegetables more often.

Approximately 150 grade 6-8 youth participating in a series of SNAP-Ed workshops drank sweetened drinks less often.

Approximately 180 grade 6-8 youth participating in a series of SNAP-Ed workshops chose foods made with whole grain more often

4. Associated Knowledge Areas

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

Outcome #5

1. Outcome Measures

Creation and synthesis of knowledge related to childhood obesity

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
2014	1092

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Two hundred sixty-three EFNEP participants showed an increase in their level of physical activity. As a result of our UMass Extension SNAP-Ed program:

- Approximately 500 grade 3-8 youth participating in a series of SNAP-Ed workshops ate fruit more often.
- Approximately 550 grade 3-8 youth participating in a series of SNAP-Ed workshops ate vegetables more often.
- Approximately 150 grade 6-8 youth participating in a series of SNAP-Ed workshops drank sweetened drinks less often
- Approximately 180 grade 6-8 youth participating in a series of SNAP-Ed workshops chose foods made with whole grain more often

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Economic Development

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		0%	
111	Conservation and Efficient Use of Water	15%		10%	
133	Pollution Prevention and Mitigation	10%		0%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		27%	
204	Plant Product Quality and Utility (Preharvest)	6%		0%	
205	Plant Management Systems	22%		0%	
211	Insects, Mites, and Other Arthropods Affecting Plants	11%		27%	
212	Diseases and Nematodes Affecting Plants	11%		13%	
511	New and Improved Non-Food Products and Processes	0%		13%	
601	Economics of Agricultural Production and Farm Management	10%		0%	
605	Natural Resource and Environmental Economics	0%		2%	
723	Hazards to Human Health and Safety	5%		0%	
801	Individual and Family Resource Management	0%		5%	
802	Human Development and Family Well-Being	0%		3%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	13.0	0.0	3.0	0.0
Actual Paid	5.4	0.0	2.9	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
618221	0	92254	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
504302	0	414263	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
586021	0	1155191	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Applied Research
- Demonstrations
- Diagnostic Services
- Displays and Exhibits
- Facilitated Group Meetings and Conferences
- Individual Consultations and Site Visits
- Presentation/Poster (Academic)
- Printed Materials
- Published Article (Academic)
- Published Article (news, professional, trade Research, Grant, or Policy Report
- Single day workshop, presentation or event
- 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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	7870	1048936	0	0

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

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	12	12

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Demonstrations
 Not reporting on this Output for this Annual Report

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
2014	23

Output #4

Output Measure

- Individual Consultations and Site Visits

Year	Actual
2014	2719

Output #5

Output Measure

- Printed Materials

Year	Actual
2014	64

Output #6

Output Measure

- Published Articles (New, Professional and Trade)

Year	Actual
2014	0

Output #7

Output Measure

- Single day workshop, presentation or event

Year	Actual
2014	30

Output #8

Output Measure

- Websites or other computer-based delivery

Year	Actual
2014	71

Output #9

Output Measure

- Workshop series or educational course

Year	Actual
2014	1

Output #10

Output Measure

- Applied Research Projects

Year	Actual
2014	2

Output #11

Output Measure

- Diagnostic Services

Year	Actual
2014	1275

Output #12

Output Measure

- Academic Presentation/Poster
Not reporting on this Output for this Annual Report

Output #13

Output Measure

- Peer review publications

Year	Actual
2014	12

Output #14

Output Measure

- Research, grant or policy report
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	Participants acquire knowledge and skills that enhance the environmental sustainability of agricultural businesses.
2	Participants adopt practices that enhance the environmental sustainability of agricultural businesses.
3	Participants acquire knowledge and skills that enhance the economic viability of agricultural businesses
4	Participants adopt practices that enhance the economic viability of agricultural businesses
5	Creation and synthesis of knowledge related to the environmentally sustainable and economic viability agricultural businesses

Outcome #1

1. Outcome Measures

Participants acquire knowledge and skills that enhance the environmental sustainability of agricultural businesses.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	9953

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Pesticides are vital tools for controlling pests and maintaining an adequate food supply. If used improperly, pesticides can also threaten human health and the natural environment. Inexperienced applicators, accidents, inadequate protection and equipment are areas of concern that increase the potential for negative personal and environmental impacts from pesticide exposure. The Pesticide Education Project educates pesticide users about safe application, state regulation and proper use of pesticides in Massachusetts.

What has been done

Approximately 3600 pesticide exam study manuals were distributed by the UMass Extension Bookstore to approximately 1300 individuals preparing for the state administered pesticide exams. The Pesticide Education program conducted twenty two-day workshops to help individuals prepared for the Massachusetts state pesticide license exams. The program also offered 14 pesticide re-certification training workshops to individuals that currently have pesticide licenses and certifications.

Results

Individuals who participated in our Pesticide Education workshops continue to pass the MA state exam at a higher rate than those who did not take the workshop. Seventy-four percent of the individuals who took the workshop passed the exam compared to a passing rate of 62% for non-participants. This represents a 17% difference in the passing rate between the two groups. Of the 1052 individuals who completed evaluations, 65% indicated that they increased their knowledge, "very much" and 58% indicated that they would "very much" use the information/techniques that they learned.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Diseases and Nematodes Affecting Plants

Outcome #2

1. Outcome Measures

Participants adopt practices that enhance the environmental sustainability of agricultural businesses.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	2013

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
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Diseases and Nematodes Affecting Plants

Outcome #3

1. Outcome Measures

Participants acquire knowledge and skills that enhance the economic viability of agricultural businesses

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	130

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The greenhouse industry consists of wholesale growers and retailers, as well diversified farms that are adding greenhouse crops. Plant production is also the basis for many associated horticultural industries. These companies have significant economic and environmental impacts for Massachusetts. Sustainable greenhouse management requires solutions to problems of energy, pest management, trained labor, water quality, production practices and plant nutrition for a diverse range of crops and complex agricultural and environmental issues.

What has been done

Activities included: grower consultations; educational workshops and conferences; articles, publications and newsletters; maintaining up-to-date information on websites; email message updates and the development and dissemination of education videos on a variety of greenhouse production subjects via youtube.

Results

Based on workshop evaluations, 20 growers are better able to diagnose diseases using on-site test kits 55 growers learned about managing aphids, thrips and mites in greenhouses and how to better use plant growth regulators and used that information to make important business decisions. 45 growers intend to use learned information regarding biological control in their greenhouses. Forty growers received one-to-one assistance with diagnosing a problem with their greenhouse crop and followed advice. One hundred thirty eight growers earned pesticide re-certification credit.

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)

205	Plant Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #4

1. Outcome Measures

Participants adopt practices that enhance the economic viability of agricultural businesses

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Creation and synthesis of knowledge related to the environmentally sustainable and economic viability agricultural businesses

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

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Individuals who participated in our Pesticide Education workshops continue to pass the MA state exam at a higher rate than those who did not take the workshop. Seventy-four percent of the individuals who took the workshop passed the exam compared to a passing rate of 62% for non-participants. This represents a 17% difference in the passing rate between the two groups. Of the 1052 individuals who completed evaluations, 65% indicated that they increased their knowledge, "very much" and 58% indicated that they would "very much" use the information/techniques that they learned.

Individuals who participated in our Pesticide Education workshops continue to pass the MA state exam at a higher rate than those who did not take the workshop. Seventy-four percent of the individuals who took the workshop passed the exam compared to a passing rate of 62% for non-participants. This represents a 17% difference in the passing rate

between the two groups. Of the 1052 individuals who completed evaluations, 65% indicated that they increased their knowledge, "very much" and 58% indicated that they would "very much" use the information/techniques that they learned.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Youth Development

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
802	Human Development and Family Well-Being	20%		0%	
806	Youth Development	80%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	15.0	0.0	0.0	0.0
Actual Paid	8.6	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
819754	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
244076	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
514870	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- 4-H Clubs
- Community Service Project
- Curricula/Instructional materials
- Facilitated Group Meetings and Conferences
- 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

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	2424	6055	30564	2108

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

Patent Applications Submitted

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- 4-H Clubs

Year	Actual
2014	233

Output #2

Output Measure

- Community Service Projects

Year	Actual
2014	45

Output #3

Output Measure

- Curricula/Instructional Materials

Year	Actual
2014	4

Output #4

Output Measure

- Facilitated Group Meetings and Conferences

Year	Actual
2014	131

Output #5

Output Measure

- Printed Materials

Year	Actual
2014	222

Output #6

Output Measure

- Single day workshop, presentation or event

Year	Actual
2014	90

Output #7

Output Measure

- Websites or other computer-based delivery

Year	Actual
2014	1

Output #8

Output Measure

- Workshop series or educational course

Year	Actual
2014	1128

Output #9

Output Measure

- Displays and Exhibits

Year	Actual
2014	190

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Youth acquire skills that will help them succeed academically and in the workplace
2	Youth demonstrate skills that will help them succeed academically and in the workplace
3	Youth are effective team members, communicators, and leaders
4	Youth increase knowledge and skill and interest in science, engineering and technology
5	Youth engage in community service
6	Youth acquire citizenship skills
7	Adults acquire knowledge of the effects of deployment on military youth
8	Youth adopt behaviors that will help them succeed academically and in the workplace

Outcome #1

1. Outcome Measures

Youth acquire 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
2014	2117

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

An area of national and local need that has been identified by the National Association of State Universities and Land-Grant Colleges, National 4-H Council and UMass Extension 4-H is Science, Technology, Engineering, and Math education (STEM). Education in the STEM disciplines is critical for preparing a globally and regionally competitive workforce. Engaging UMass students and young people in the city of Springfield in the out of school time hours will provide both educational enrichment and promote life skills development.

What has been done

Ten UMass undergraduates provided weekly science instruction at two community sites resulting in 910 contact hours for the year with middle school students. In addition, a UMass graduate student facilitated a course for the ten UMass students which supported and enhanced project impacts. The two-semester course examined how race, class and a variety of historical forces shape students' access to quality education.

Results

Testimonials obtained from middle school youth demonstrated that participants increased their overall degree of excitement for math and science and experienced increases in their confidence for learning and applying concepts in science and technology.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #2

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #3

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
2014	1849

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

More than 22% of the population of Massachusetts is under age 18. These young people are the future workforce and leaders of our state and our nation. The healthy development of these youth cannot be left to chance. Since 1919, the Massachusetts 4-H Program has provided support, resources and educational opportunities to Massachusetts youth. The mission of Massachusetts 4-H is to prepare youth to become independent and contributing members of society by providing them with the tools they need to be successful.

What has been done

The Massachusetts 4-H Program continues to focus on helping youth develop life and work skills. Nearly 1,000 youth participated in the 4-H Visual Presentation program which enables them to develop and practice public speaking skills. 4-H conducted a statewide community service project again this year collecting and donating nearly 50,000 pounds of food along with cash donations to 96 pantries and shelters across the state. This year 4-H also reached 7388 youth through short term programs such as our statewide Babysitter Training.

Results

Youth improved their leadership and life skills and communication. Testimonies obtained from 4-H youth demonstrated that participants increased their skill and confidence in verbal

communication. Individuals also increased their confidence levels in school along with improved study habits. 4-H members also developed other important life skills such as decision making, team work and cooperation. The Tufts Study of Positive Youth Development found that 4-H members are three times as likely as non 4-H members to contribute to their communities. Massachusetts 4-H is helping to develop the community leaders of tomorrow.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #4

1. Outcome Measures

Youth increase knowledge and skill and interest in science, engineering and technology

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	2117

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

An area of national and local need that has been identified by the National Association of State Universities and Land-Grant Colleges, National 4-H Council and UMass Extension 4-H is Science, Technology, Engineering, and Math education (STEM). Education in the STEM disciplines is critical for preparing a globally and regionally competitive workforce. Engaging UMass students and young people in the city of Springfield in the out of school time hours will provide both educational enrichment and promote life skills development.

What has been done

Ten UMass undergraduates provided weekly science instruction at two community sites resulting in 910 contact hours for the year with middle school students. In addition, a UMass graduate student facilitated a course for the ten UMass students which supported and enhanced project impacts. The two-semester course examined how race, class and a variety of historical forces shape students' access to quality education.

Results

Testimonials obtained from middle school youth demonstrated that participants increased their overall degree of excitement for math and science and experienced increases in their confidence for learning and applying concepts in science and technology.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #5

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
2014	2604

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 #6

1. Outcome Measures

Youth acquire citizenship skills

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	94

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

UMass Extension helps young people to become well-informed, engaged citizens who are prepared to contribute to their communities. The primary focus of the Massachusetts Envirothon program is working with the school teachers and youth leaders who guide high school age youth teams in community-based science learning. With our help, these teachers can offer a multiplier effect in reaching additional youth in their schools and communities.

What has been done

Program participation represented significant diversity and the number of youth teams appears to be growing again. This year our focus was on Sustainable Local Agriculture. Mass Envirothon organized four events ? three workshops for teams and coaches and one final competition, with 346 young people and 43 coaches representing 36 Massachusetts schools participating. We estimate that more than 90 additional young people were involved back at school for a total involvement of 436 youth. We also maintained positive working relationships with our site sponsors.

Results

The 2014 evaluation focused on the team members? learning experiences: 89% of team members reported the Envirothon experience had increased their knowledge of sustainable local agriculture while 100% of coaches saw an increase ?to a moderate or great extent? in their teams? knowledge of sustainable local agriculture. 84% of team members reported that their ?familiarity with outdoor places and ecosystems in their communities? had increased by a moderate or great extent. 80% of team members believed that their Envirothon preparation had increased their ability to work with others as a team to a moderate or great extent. More than half of the competing teams (17 of 31) completed the rigorous requirements to receive the Community Research Award.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #7

1. Outcome Measures

Adults acquire knowledge of the effects of deployment on military youth

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	390

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A frequently overlooked consequence of American military involvement is the children who experience the deployment and reintegration of a family member. The 4-H Military Project (OMK) connects children ages 5-18 with educational, recreational and social activities before, during and after the deployment of a parent. The project provides direct assistance to military children and families and educates the broader community on the effects of deployment on children to ensure that all Massachusetts military youth are safe, healthy, and supported.

What has been done

This past year we engaged 179 community volunteers who provided 5,012 hours of service to OMK initiatives. We educated 121 members of the community through three "Ready, Set, Go!" trainings on the impact of deployment on military youth and their families. Trainings help community members to develop plans for providing support to youth. A total of 16 community planning meetings were held with 90 community members attending.

Results

Participating adults report that OMK informational sessions and activities increased their knowledge of the effects of deployment on military youth.

4. Associated Knowledge Areas

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

Outcome #8

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
2014	581

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

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Testimonials obtained from middle school youth demonstrated that participants increased their overall degree of excitement for math and science and experienced increases in their confidence for learning and applying concepts in science and technology.

The 2014 Massachusetts Envirothon evaluation focused on the team members' learning experiences: 89% of team members reported the Envirothon experience had increased their knowledge of sustainable local agriculture while 100% of coaches saw an increase "to a moderate or great extent" in their teams' knowledge of sustainable local agriculture. 84% of team members reported that their "familiarity with outdoor places and ecosystems in their communities" had increased by a moderate or great extent. 80% of team members believed that their Envirothon preparation had increased their ability to work with others as a team to a moderate or great extent. More than half of the competing teams (17 of 31) completed the rigorous requirements to receive the Community Research Award.

75% of all team members felt that their "understanding of how decisions about the environment and natural resources are made in your community" had increased to a moderate or great extent. 78% reported an increase to a moderate or great extent in their "ability to find and talk to people with knowledge about the environment". From the coaches' perspective, teams saw large gains in their "community research skills", with their greatest learning gains in "knowledge of sustainable local agriculture" (100% to a moderate or great extent). About 82% of team members reported a moderate or great increase in their interest in "taking action for the environment in your community". 90% of responding coaches saw a moderate to great increase in their teams' "engagement with their community". 13 out of 31 competing teams engaged in an action project to the point of meeting the requirements to qualify for the Mass Envirothon Community Action Award. 87% of participating youth reported that their interest in reducing their environmental impact (ecological footprint) had increased to a moderate or great extent as a result of their Envirothon participation, up from 74% in 2013. 80% of team members reported that their Envirothon involvement had increased their interest in spending time outdoors.

Participating adults report that Operation Military Kids (OMK) informational sessions and

activities increased their knowledge of the effects of deployment on military youth.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Environmental Stewardship

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		3%	
111	Conservation and Efficient Use of Water	0%		4%	
112	Watershed Protection and Management	5%		9%	
123	Management and Sustainability of Forest Resources	24%		0%	
124	Urban Forestry	10%		0%	
131	Alternative Uses of Land	2%		0%	
133	Pollution Prevention and Mitigation	2%		17%	
135	Aquatic and Terrestrial Wildlife	10%		9%	
136	Conservation of Biological Diversity	14%		0%	
211	Insects, Mites, and Other Arthropods Affecting Plants	8%		16%	
212	Diseases and Nematodes Affecting Plants	8%		0%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	0%		36%	
216	Integrated Pest Management Systems	2%		0%	
307	Animal Management Systems	0%		1%	
311	Animal Diseases	0%		2%	
605	Natural Resource and Environmental Economics	0%		3%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890

Plan	14.0	0.0	2.4	0.0
Actual Paid	3.1	0.0	2.5	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
240239	0	186953	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
500432	0	304322	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
841738	0	1979828	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Analytic Tools and Techniques
- Basic and Applied Research
- Diagnostic Services
- Displays and Exhibits
- Facilitated Group Meetings and Conferences
- Printed Materials
- Published Article (Academic)
- Published Article (news, professional, trade)
- Research, Grant, or Policy Report
- 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

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	10894	193644	0	0

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

Patent Applications Submitted

Year: 2014

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	9	14	23

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Analytic Tools and Techniques

Year	Actual
2014	1007

Output #2

Output Measure

- Diagnostic Services

Year	Actual
2014	20400

Output #3

Output Measure

- Facilitated Group Meetings and Conferences

Year	Actual
2014	6

Output #4

Output Measure

- Printed Materials

Year	Actual
2014	4

Output #5

Output Measure

- Published Articles (News, Professional and Trade)

Year	Actual
2014	28

Output #6

Output Measure

- Single day workshop, presentation or event

Year	Actual
2014	89

Output #7

Output Measure

- Survey or needs assessment

Year	Actual
2014	328

Output #8

Output Measure

- Websites or other computer-based delivery

Year	Actual
2014	64

Output #9

Output Measure

- Workshop series or educational course

Year	Actual
2014	42

Output #10

Output Measure

- Applied Research Projects

Year	Actual
2014	4

Output #11

Output Measure

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

Output #12

Output Measure

- Peer review publications

Year	Actual
2014	9

Output #13

Output Measure

- Research, Grant or Policy Report

Year	Actual
2014	1

Output #14

Output Measure

- Curricula/Instructional Materials

Year	Actual
2014	1

Output #15

Output Measure

- Individual Consultations and Site Visits

Year	Actual
2014	1512

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Participants acquire knowledge and skill to promote, implement or participate in practices or programs that protect natural resources and ecosystems
2	Participants promote, implement or participate in practices or programs that protect natural resources and ecosystems
3	Creation and synthesis of knowledge related to the protection of natural resources and ecosystems
4	Increase in the number of MA forest acres that are sustainably managed

Outcome #1

1. Outcome Measures

Participants acquire knowledge and skill to promote, implement or participate in practices or programs that protect natural resources and ecosystems

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	4900

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Massachusetts faces expanding development and increasing pressure on water resources. How land resources are managed have broad implications for water quality, property values, energy consumption, greenhouse gas mitigation, the safety of youth and adults, and the economic viability of businesses and communities. UMass Extension endeavors to develop, research, gather, and share knowledge that will enable turf managers to practice economically viable and environmentally sound turf management with emphasis on natural resource protection.

What has been done

Activities focused on newly proposed statewide nutrient regulations. We coordinated a statewide review of the proposed regulations and provided testimony at public hearings. We served as UMass representative and technical expert regarding nutrients and fertilizers during listening sessions and we provided training for about 140 fertilizer applicators as part of their required certification process at Nantucket's Spring Training for Lawn and Landscape Professionals.

Results

Through a combination of seminars, workshops, courses, educational presentations and site consultations, complemented by online content and communications, thousands of professionals and businesses, in or related to various aspects of turf and grounds management, learned information that will better enable them to protect and enhance water resources and environmental quality through the use of Integrated Pest Management, as well as sustainable turf best management practices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management

- 123 Management and Sustainability of Forest Resources
- 133 Pollution Prevention and Mitigation
- 135 Aquatic and Terrestrial Wildlife
- 136 Conservation of Biological Diversity

Outcome #2

1. Outcome Measures

Participants promote, implement or participate in practices or programs that protect natural resources and ecosystems

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	8920

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The rate of land consumption in Massachusetts is steadily increasing far out of proportion to its population growth. Haphazard growth has impacted water resources, natural resource-based enterprises, open space, wildlife habitat, and community character. UMass Extension addresses these concerns through related initiatives that focus on habitat loss and fragmentation, establishing priorities for ecological restoration and mitigating development impacts on wildlife and ecosystems.

What has been done

1) CAPS - a computer software-based approach to prioritizing land for conservation; 2) The River & Stream Continuity Project - focuses on the impact of road-stream crossings on fish and other aquatic organism passage; 3) Wildlife Conservation - information, educational materials and programs based on current research to promote wildlife conservation, and 4) Wetlands Regulations and Protection - provides training and information to municipal officials in the implementation of the Massachusetts Wetlands Protection Act.

Results

Groups are using methods developed as part of the River and Stream Continuity Project to assess bridges and culverts and set priorities for restoring river and stream continuity in targeted watersheds in five of the six New England states. Our Crossing Standards continue to inform policy at both the state and federal level. Multiple references to the Massachusetts River and Stream Crossing Standards and Road-Stream Crossing Assessment protocols were included in

the Massachusetts Department of Transportation's handbook "Design of Bridges and Culverts for Wildlife Passages at Freshwater Streams. MassDEP is requiring applicants for large variance projects under the MA Wetlands Protection Act to incorporate our field assessment protocols and analysis tools into monitoring plans for the projects.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity

Outcome #3

1. Outcome Measures

Creation and synthesis of knowledge related to the protection of natural resources and ecosystems

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Increase in the number of MA forest acres that are sustainably managed

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	1921

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

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

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Thousands of professionals and businesses, in or related to various aspects of turf and grounds management, learned information that will better enable them to protect and enhance water resources and environmental quality through the use of Integrated Pest Management, as well as sustainable turf best management practices.

Groups are using methods developed as part of the River and Stream Continuity Project to assess bridges and culverts and set priorities for restoring river and stream continuity in targeted watersheds in five of the six New England states. Our Crossing Standards continue to inform policy at both the state and federal level. Multiple references to the Massachusetts River and Stream Crossing Standards and Road-Stream Crossing Assessment protocols were included in the Massachusetts Department of Transportation's handbook "Design of Bridges and Culverts for Wildlife Passages at Freshwater Streams." MassDEP is requiring applicants for large variance projects under the MA Wetlands Protection Act to incorporate our field assessment protocols and analysis tools into monitoring plans for the projects.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Massachusetts Center for Agriculture Administration

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
901	Program and Project Design, and Statistics	20%		0%	
902	Administration of Projects and Programs	60%		50%	
903	Communication, Education, and Information Delivery	20%		50%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	8.6	0.0	0.2	0.0
Actual Paid	3.0	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
460028	0	754872	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
591818	0	38282	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
178430	0	135258	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 UMass farms facilities
 Website and Other Computer-based delivery
 Printed Material
 Program planning and assessment
 Strategic Planning and communication

2. Brief description of the target audience

citizens
 communities
 organizations
 businesses
 government agencies
 policy-makers

3. How was eXtension used?

When individuals contact Center for Agriculture, Food and the Environment Administration with questions in an area where we lack current capacity, eXtension is sometimes used a source for resources and referral.

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	150	150	0	0

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

Patent Applications Submitted

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	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

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

VI. National Outcomes and Indicators

1. NIFA Selected Outcomes and Indicators

Childhood Obesity (Outcome 1, Indicator 1.c)	
2386	Number of children and youth who reported eating more of healthy foods.
Climate Change (Outcome 1, Indicator 4)	
0	Number of new crop varieties, animal breeds, and genotypes with climate adaptive traits.
Global Food Security and Hunger (Outcome 1, Indicator 4.a)	
0	Number of participants adopting best practices and technologies resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources.
Global Food Security and Hunger (Outcome 2, Indicator 1)	
0	Number of new or improved innovations developed for food enterprises.
Food Safety (Outcome 1, Indicator 1)	
0	Number of viable technologies developed or modified for the detection and
Sustainable Energy (Outcome 3, Indicator 2)	
0	Number of farmers who adopted a dedicated bioenergy crop
Sustainable Energy (Outcome 3, Indicator 4)	
0	Tons of feedstocks delivered.