2012 University of Connecticut - Storrs Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

Connecticut is a state of extraordinary disparity. Some of the wealthiest communities in the United States are located in Connecticut. Less than one hour away, are cities and communities with some of the highest unemployment rates in the nation. The state is home to a strong and vibrant agricultural sector but also faces challenges to providing safe, reliable, healthy food supplies to many urban residents.

Research and Extension programs at the University of Connecticut's College of Agriculture and Natural Resources (CANR) are committed to addressing these challenging disparities by investigating new areas relevant to agriculture, food, forestry, the environment, and human health. CANR is also the academic home for UCONN Extension faculty and staff members who work to deliver science-based tools and technologies to help citizens, communities, and businesses prosper.

UCONN Extension programs disseminated CANR's research results through 150 formal outreach programs. A key component to the Extension program is the training of volunteers who became trainers themselves, leveraging the federal-state financial partnership in UCONN Extension. There is no county government in Connecticut; the state also provides support for local programming and staffing. Our program efforts are far reaching, serving citizens through direct and indirect contacts via e-mail, webinars, websites managed/contributed by UCONN Extension, fact sheets, consultations, public workshops, and training sessions.

The Storrs Agricultural Experiment Station manages the capacity research funding provided through the federal-state partnership and is responsible for facilitating CANR's research efforts. Competitive funds are obtained from a variety of federal and non-federal sources through the independent initiative of CANR's faculty and staff. We encourage fundamental and applied research, as well as multidisciplinary collaborations to gain knowledge and implement results to advance national goals established by the United States Department of Agriculture National Institute of Food and Agriculture (USDA NIFA).

An essential part of the CANR research mission is to provide a framework for graduate student training, preparing the next generation of scientists for solving the state's, region's and nation's challenges. In 2012, formula funds provided support for over 130 student researchers.

Scholarly productivity for clientele and peers was used to develop and enhance high quality outreach education programs through the publishing or development of two books, over 150 peer-reviewed journal articles and 191 published conference proceedings. Additionally, other scholarly works were prepared including newspaper, popular magazine, and newsletter articles to disseminate information, results, and impacts to large and diverse audiences of clientele and peers. Five faculty served on federal peer review committees, and five served on national/international peer review committees.

This Report of Accomplishments highlights our Extension programs and formula funded research projects. FTE's are reported lower than projected in our 2012 Plan of Work. Extension reports 61.4 FTE's and research reports 39.1 FTE's. This is reduced from projected 82 and 78 respectively in the 2012 POW. The reduction in FTE's in due to the elimination of EFNEP and administrative positions that were

previously included in our FTE calculations. Also, in the individual Planned Programs sections, per the Guidance for reporting FTE's, we are reporting only FTE's that were funded by the four formula funds. These numbers are lower than the 2012 Plan FTE numbers because the Plan estimated FTE's from all funding sources.

The information in this report is organized into five planned program areas: Food Safety, Climate Change, Childhood Obesity, Food Security and Global Hunger, and Youth, Families and Communities. We are not reporting on previously planned programs in Sustainable Energy. Summaries of these activities are reported below.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	82.0	0.0	78.0	0.0
Actual	61.4	0.0	39.1	0.0

II. Merit Review Process

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

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

2. Brief Explanation

The merit review process for the University of Connecticut continues to be based on the seven part test of guiding characteristics for an engaged institution as reported in the 1999 Kellogg Commission Report on The Engaged Institution. The 2006 ECOP Criteria of Excellence in Cooperative Extension also serves as a major standard for merit review. In brief, the process includes: planning by all faculty and staff by departments and focused issue groups; review of planning at the campus level; periodic reviews by peer institutions, and a review by stakeholders. The College Advisory Group of stakeholders provided overall direction for research, education and Extension. Specifically, peer review for Hatch, McIntire-Stennis, and Animal Health Projects continues to ensure that quality research projects, consistent with identified priorities, are approved. Review involves the objective opinion of other scientists, and/or administrators within the University of Connecticut, and users of research results, when appropriate, to research proposals or completed projects. Peer review ensures that every project receives a rigorous and systematic evaluation for appropriateness and quality. The process was conducted within the framework of predetermined criteria whose objective was to assess whether each Storrs AES research project (1) is guided by state, regional, and national priorities, (2) is of high scientific merit and quality, (3) incorporates a state-of-the-art scientific approach (4) is likely to successfully meet the goals of the project, and (5) whether it is completed and prepared according to the Storrs AES guidelines. The peer review process provided principal investigator with additional counsel on research direction and implementation. Department Heads participated in the peer review process by suggesting qualified reviewers. The Director of the Storrs AES/the Associate Dean distributed projects to qualified reviewers and approved edited projects once they were critically reviewed.

III. Stakeholder Input

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

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

Brief explanation.

The college-wide stakeholder input process continued to include considerations for both research and extension. Regular consultation with the recently assembled College Advisory Board, the state-wide Farm Risk Management Advisory Committee comprised of farmers, producers, public and private agricultural agency service providers, and private agricultural-related businesses provided a continuous view of the needs in the state as well as emerging trends and concerns. State-wide reports, prepared by other agencies and organizations (several of whom have Extension faculty on boards/commissions), such as the state of Connecticut's Voices of Children report, and the Connecticut Food Policy Council's annual report on food insecurity in the state, continued to be important sources of input, accessing information from potential stakeholders. Increased use of web-based needs assessments, the participation of faculty and staff on state boards, commissions and councils, and on-going input from County Extension Councils, resulted in stakeholder participation. The Dean continued discussions with key stakeholders, members of the legislature and clientele.

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

1. Method to identify individuals and groups

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

Brief explanation.

Progress continues in soliciting and receiving increased stakeholder input. The State Extension Partner's Council meets at least twice a year and is comprised of representatives of County Extension Councils and other affiliated organizations such as 4-H camp boards, IFYE, and the Master Gardener Association. Greater rotation of participant representatives has been encouraged. Each Extension Partners group or organization is expected to conduct a general public needs assessment for statewide programming, involving Connecticut residents who are not members of the specific partners' group or organization. Periodic Dean's updates sent to all faculty and staff via e-mail/web, reports on his conversations with stakeholders and clientele. Use of on-line tools to solicit input from potential and current clientele and stakeholders continues to increase. The

Dean's College Advisory Board addresses the broad needs of Connecticut in their meetings.

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

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Survey of the general public

Brief explanation.

Traditional stakeholders such as vegetable producers and town officials provided input through end-of-session evaluations of programs with suggestions for improvements, as well as current and future needs. The CANR Journal, a periodic newspaper available via e-mail/web page, highlighted research and extension efforts and is available to the public, with comments solicited. The Sea Grant program collected input from aquaculture producers and town officials that directed change in programming focus and direction. Meetings with state boards such as the Food Policy Council and Farm Services Agency staff provided additional stakeholder input. The Farm Risk Management Advisory Group, comprised of more than 40 agriculture-related stakeholders from both traditional and non-traditional perspectives, provided input on a regular basis through facilitated discussions at meetings. Increased use of the Internet, both e-mail and the Web, is provided input from a wide range of current and potential clientele.

3. A statement of how the input will be considered

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

Brief explanation.

Input was used to redesign programs, to initiate new programs, as the basis for grant proposals, and as a means for acquiring diverse perspectives when the College considers restructuring programs. Implementing the College Strategic Plan required input from stakeholders. College administration met regularly with stakeholders, the legislature and agency heads to both listen to and discuss stakeholder input.

Brief Explanation of what you learned from your Stakeholders

Agricultural stakeholders continued to be concerned about federal agricultural programs that require significant paperwork, and those that are not available in Connecticut. Small scale producers feel at a disadvantage.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
2145240	0	1248457	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	1623021	0	781404	0
Actual Matching	1623021	0	781404	0
Actual All Other	3750114	0	4047857	0
Total Actual Expended	6996156	0	5610665	0

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

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Food Safety

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
206	Basic Plant Biology	0%		4%	
211	Insects, Mites, and Other Arthropods Affecting Plants	8%		4%	
212	Pathogens and Nematodes Affecting Plants	0%		4%	
215	Biological Control of Pests Affecting Plants	23%		4%	
216	Integrated Pest Management Systems	23%		10%	
307	Animal Management Systems	8%		4%	
311	Animal Diseases	15%		52%	
315	Animal Welfare/Well-Being and Protection	0%		10%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	15%		4%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	8%		4%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	11.6	0.0	11.8	0.0
Actual Paid Professional	3.5	0.0	0.5	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**
303575	0	163733	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
303575	0	163733	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
604738	0	851955	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Producing safe, reliable, and healthy foods is a major focus of research and extension programs at UCONN. The Center for Disease Control estimates that each year roughly 1 in 6 Americans (or 48 million people) gets sick, 128,000 are hospitalized, and 3,000 die of foodborne diseases. In 2012, two cases of food poisoning reported in Connecticut were tied to recalled food items. However, countless other cases of food borne illnesses either went unreported or were due to unspecified causes. Our Extension programs are primarily focused on food producers and handlers. These programs involve development of Best Management Practices (BMPs) for food safety, Good Agricultural Practices (GAP training) for producers, and Hazard Analysis and Critical Control Point (HACCP) for seafood harvesters and processors. UCONN also conducted research efforts that were aimed at developing new diagnostic tests to identify foodborne pathogens in poultry. Across these programs we focus on prevention of foodborne illnesses through education of producers and consumers. UCONN has developed approximately 20 research and extension programs to address food safety. We highlight four of our Extension programs in the state defined outcomes section of this report. In addition, 3 research projects are summarized below.

Project, "Detection and Control of Porcine Reproductive and Respiratory Syndrome Virus and Emerging Viral Diseases of Swine," studies classical swine fever and African swine fever; any outbreak of foreign diseases in the U.S. impacts exports of both animals and animal products and huge net losses in capital directly affecting agriculture and consumers in Connecticut. This research project focused on the mechanisms of disease and new biological tools that can be used to reduce occurrence and length of time of the disease. Three new recombinant vaccines resulted from this research and a new diagnostic test was developed.

Project, "Mastitis Resistance to Enhance Dairy Food Safety," studied and developed new techniques for the detection of mastitis pathogens in milk. Since the cost for production for dairy herds has increased by at least 30 percent in the past 2-3 years, it is imperative that dairy farmers be knowledgeable about improving efficiency and insurance programs, since the increased milk price is not enough to make up for the increased production costs.

Project, "Control of Emerging and Re-emerging Poultry Respiratory Diseases in the United States," studies the identification of reservoirs of infectious respiratory disease agents in wild birds and poultry, and the development of improved diagnostic capabilities including real-time PCR as well as other rapid on-farm tests for economically important respiratory diseases. Researchers developed a reverse transcription loop-mediated isothermal amplification (RT-LAMP) assay to detect the H3 subtype AIV visually. The RT-LAMP assay is a simple, sensitive, and rapid. Consequently, LAMP is cost-effective nucleic acid amplification

method that does not require any specialize equipment..

2. Brief description of the target audience

Consumers
Farmers/producers - produce, meat and poultry, cider/juices, cheeses; seafood
Agency and organizations (staff) that serve or handle food at: camps; food pantries and soup kitchens; schools; day care centers, Head Start, senior centers, etc.
Food related businesses - processors, farmers' market masters and vendors, etc. Seafood industry: seafood processors, dealers, harvesters, importers, and regulatory personnel.
Researchers, state, regional, national and internationally.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	9166	39597	129	25

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

Patent Applications Submitted

Year:	2012
Actual:	2

Patents listed
1.USPTO Patent # 8,133,495. Title: Live attenuated antigenically marked classical swine fever virus.
2.USPTO Patent #8,114,852. Title: N-linked glycosylation alteration in E1 glycoprotein of classical swine fever virus and novel classical swine fever virus vaccine.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	24	13	37

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Face to face general group education sessions (workshops, etc.)

Year	Actual
2012	86

Output #2

Output Measure

- New or updated web page(s)

Year	Actual
2012	9

Output #3

Output Measure

- Diagnostic tests conducted

Year	Actual
2012	94247

Output #4

Output Measure

- Individual consultations (in person, via e-mail, etc.)

Year	Actual
2012	4739

Output #5

Output Measure

- Training conferences or sessions hosted or conducted
  Not reporting on this Output for this Annual Report

Output #6

Output Measure

- Fact sheets, bulletins and newsletters written or edited

Year	Actual
2012	49

Output #7

Output Measure

- Undergraduate and Graduate Students Supervised

Year	Actual
2012	141

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of consumer gaining basic food safety knowledge
2	Consumers (%) adopting appropriate food safety practices.
3	Number of organizations/businesses serving food adopting appropriate food safety practices.
4	Increased adoption (%) of recommnended BMP by consumers.
5	Increased adoption (%)of recommeneded BMP by growers.
6	Adoption of GAP by growers (%)
7	Provide Seafood HACCP Training
8	New poultry diagnostic tests and approaches developed

Outcome #1

1. Outcome Measures

Number of consumer gaining basic food safety knowledge

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Consumers (%) adopting appropriate food safety practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	63

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The trend toward eating more locally grown and/or producing more produce in a home garden, driven either by economics or the desire to have more control over personal food supplies, has led to greater and continued interest in learning more about home food preservation techniques.

What has been done
In the program year, 7/2011 through 6/2012, 145 persons attended home food preservation workshops in 5 Connecticut Extension Centers. Workshops included one or more of the following topics: canning, freezing, dehydration, or cold storage of fruits and vegetables. Three articles were written for a newspaper column printed in 4 newspapers

Results
Sixty-three percent of the program attendees responded that they are planning to adopt/change food preservation practices as a result of knowledge gained at the food preservation workshop.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Number of organizations/businesses serving food adopting appropriate food safety practices.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Increased adoption (%) of recommnended BMP by consumers.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Increased adoption (%)of recommeneded BMP by growers.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	77

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Educating farmers in sustainable, profitable and environmentally-sound, food production practices helps to maintain a safe and secure food source. Knowledge of effective IPM practices helps

prevent excess application of pesticides. These practices decrease production costs for growers and also decrease the risk of food supplies being contaminated by excess pesticides.

What has been done

The Commercial Vegetable Crops Program helps keep Connecticut's producers current on some of the latest and most innovative ideas and technology, helps keep their farms profitable, and has a positive impact on their farms, families, products and the environment. The objective of this program is to provide Connecticut and New England vegetable farmers with cutting-edge solutions to their pest management and crop production problems and to help keep them competitive on the local, regional and national level.

Results

The Commercial Vegetable Crops Program provided workshops, conferences and individual consultation and other events to teach growers about pest management and production solutions to improve vegetable farm profitability and sustainability. Outputs include: 1,654 attendance at the jointly planned New England Vegetable & Fruit Conference (NEVFC) and Trade Show: 175 growers attended the annual CT Vegetable & Small Fruit Grower's Conference, 494 growers attended 5 talks/workshops in CT, MA, and NH. Over 1,500 copies of the updated 2012-2013 New England Vegetable Management Guide were sold and the guide is available free on the web (www.nevegetable.org). Seventy-seven percent of Growers that responded to the New England Vegetable & Fruit Conference (NEVFC) post conference survey reported that they would adopt a new practice.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
311	Animal Diseases
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

Outcome #6

1. Outcome Measures

Adoption of GAP by growers (%)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	75

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Federal and state regulatory agencies published guidance documents recommending the adoption of Good Agricultural Practices (GAP) to address the recent increase in food borne disease outbreaks attributed to fresh produce. Industry, retailers and produce distributors are requiring produce suppliers to adopt GAP and submit to third party audits. To remain competitive, Connecticut specialty crop farmers need to develop GAP food safety plans.

What has been done
The Extension GAP School conducted the following GAP training programs for CT farmers in FY2012; 5 GAP "Lite" short workshops, 1 GAP School and 1 GAP plan writing workshop for farmers needing to participate in a 3rd party audit. On-farm visits were provided to farmers prior to audits to review and make suggestions for improving GAP food safety plans and practices. Two hour GAP presentations were presented to 3 Master Gardener classes, reaching approximately 145 new Master Gardeners.

Results
Ninety-one percent of the GAP "Lite" workshop participants reported an increase in their knowledge of safe food handling practices and 75% reported they will adopt recommended practices. Six farms prepared food safety plans in preparation for third party audits. Three percent of the writing workshop participants report they are prepared to write GAP food safety plans.

4. Associated Knowledge Areas

KA Code	Knowledge Area
206	Basic Plant Biology
216	Integrated Pest Management Systems
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 #7

1. Outcome Measures

Provide Seafood HACCP Training

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	360

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
A 1997 FDA regulation requires all seafood processors to meet a HACCP training requirement. The impetus for the regulation was concern about the increasing number of outbreaks of foodborne illness related to seafood, and the need to protect consumers by assuring that all domestic fish and fishery products are processed and handled in the safest manner possible.

What has been done
A regional training partnership between Connecticut and Rhode Island Sea Grant Extension / Cooperative Extension was established to: a) ensure that industry members in southern New England have regular access to the required training; b) provide pertinent, timely HACCP and food safety-related information post-training through print and electronic newsletters.

Results
The low cost and regular access to our courses enables many companies to seek training for more than a minimum number of staff, or to send staff for periodic refresher training. In 2012, 360 shellfish growers attended a mandatory refresher training. Since 2001, 195 high school students received this training and 7% report they applied their understanding of HACCP principles in jobs with shellfish farms, seafood markets or restaurants. Two aquaculture teachers took the training and now work with their students to operate seafood retail and wholesale operations. Extension staff reviewed and commented on two drafts of company-developed HACCP plans and the Connecticut shellfish industry learned how to implement Vibrio control plans into their HACCP programs.

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4. Associated Knowledge Areas

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

Outcome #8

1. Outcome Measures

New poultry diagnostic tests and approaches developed

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Prompt and proper diagnosis of avian diseases in backyard poultry, commercial egg and meat bird flocks, and pet birds is essential. Connecticut has over 3.5 million commercial laying hens flocks and a large number of backyard poultry that produce a large number of eggs and poultry meat for human consumption. It is important to protect the poultry industry against devastating infectious diseases such as avian influenza, exotic Newcastle disease and other viral and bacterial infections to keep a constant supply of poultry products.

What has been done
Poultry and pet bird diseases diagnosis and control program maintains a diagnostic pathology laboratory and examines poultry and pet birds submissions, trains intern student pathologists and recommends control, treatment and vaccination programs against poultry disease. The program of testing for the presence of Salmonella enteritidis (SE) in laying hens has contributed to more than 250 SE free flocks in the State of Connecticut. For the past few years no SE egg-borne outbreaks in human were traced back to Connecticut poultry laying hens.

Results
Four new poultry diagnostic tests and approaches were developed. Prompt diagnosis of disease outbreaks in poultry, commercial and backyard flocks made it possible to allow the best and on time treatment and control, and the control of spread of disease to other poultry flocks in the area and region. Constant surveillance of poultry diseases provides a nearly disease-free area for the production of quality poultry products in Connecticut.

4. Associated Knowledge Areas

KA Code	Knowledge Area

307	Animal Management Systems
311	Animal Diseases
315	Animal Welfare/Well-Being and Protection

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Through a variety of evaluation tools including pre-testing, time series and post-testing Extension Educators surveyed participants utilizing both written and internet based methods. Participants reported changed in attitude and increased knowledge following completion of programs.

Key Items of Evaluation

The Commercial Vegetable Crops Program conducted post event evaluations of New England Vegetable & Fruit Conference (NEVFC) and Trade Show in Manchester, NH. Total attendance was 1,654 people and 248 (15%) completed post-conference evaluations. 72% attended all three days of the conference. Of the respondents, 94% rated the educational sessions as excellent or good, and 93% said the trade show was excellent or good. Of the respondents, 92% said that the information they obtained at the conference would help them improve cultural farming practices, 94% said it would improve pest management, 86% said it would improve soil and nutrient management, 70% said it would help improve farm profitability, and 52% said it would improve marketing or business management. A new source of information was obtained by 88% of respondents, and 77% said they would adopt a new practice in the following year as a result of attending the conference. Pesticide re-certification credits were offered in 30 out of 36 sessions and 324 New England farmers and service providers received pesticide re-certification credits and Certified Crop Advisor credits. A 254-page conference proceedings summarizing 101 presentations was published and posted on the web (www.newenglandvfc.org/).

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
102	Soil, Plant, Water, Nutrient Relationships	10%		14%	
103	Management of Saline and Sodic Soils and Salinity	0%		3%	
104	Protect Soil from Harmful Effects of Natural Elements	3%		3%	
111	Conservation and Efficient Use of Water	6%		3%	
112	Watershed Protection and Management	27%		14%	
123	Management and Sustainability of Forest Resources	6%		18%	
124	Urban Forestry	0%		3%	
131	Alternative Uses of Land	0%		3%	
132	Weather and Climate	0%		3%	
135	Aquatic and Terrestrial Wildlife	0%		6%	
136	Conservation of Biological Diversity	0%		6%	
205	Plant Management Systems	3%		6%	
213	Weeds Affecting Plants	0%		3%	
216	Integrated Pest Management Systems	3%		3%	
403	Waste Disposal, Recycling, and Reuse	0%		3%	
605	Natural Resource and Environmental Economics	0%		3%	
608	Community Resource Planning and Development	24%		6%	
903	Communication, Education, and Information Delivery	18%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890

Plan	11.6	0.0	13.4	0.0
Actual Paid Professional	2.3	0.0	0.4	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
197858	0	129368	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
197858	0	129368	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1075562	0	1108649	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

We have approximately 30 ongoing research and extension programs at the University of Connecticut that address components of climate change. Many of these programs focus on helping communities become more resilient to the extreme climate related events impacting the state. Programs focus on promoting buffer strip planning and adoption for rivers and coastlines. Training focuses on the benefits of buffers and their critical role in protecting water quality and shoreline health. Nutrient management work by UCONN Extension focuses on creating economic opportunities for producers and protecting soil and water quality. UCONN Extension also is providing training on geospatial technologies that are critical to community planning and enhancing community resilience to extreme events. In this report, we highlight five extension activities in the state defined outcomes section of this report that address adaptation to changing climate. In addition 2 research projects are summarized below.

Climate extremes have become more frequent in many parts of the world and thus expected to disrupt many socio-economic activities. Hatch research project, "Climate extremes, climate change and agriculture in the Northeast United States," utilized high-resolution regional climate model data, generated under the North America Regional Climate Change Assessment Program (NARCCAP) to develop a comprehensive framework for analyzing impacts of climate extremes and future climate projections on Northeastern United States agricultural production. Study results will be used to refine strategies for climate change projections/scenarios and impact assessments on agricultural production.

Research project, "Potential of forest residue to offset coal use in co-fired coal power plants in the Northeastern United States," used Geographic Information Systems (GIS) to estimate the potential quantity of coal that could be offset by forest residue in the eastern US. Study analysis suggests that the use of forest residue in coal power plants has the potential to substantially reduce emissions from coal consumptions. Assuming an 80 km transport distance, data analysis found that forest residue has the potential to reduce coal consumption by 22.3 million tons per year, greenhouse gas emissions would be reduced by 58 million tons per year, and NOx and SOx emissions would be reduced by 69.3 and 122.6 thousand tons respectively.

:

2. Brief description of the target audience

Elected municipal officials, municipal staff and volunteers, citizens, Soil Science Society of America, research scientist in the envionment field of study, arborists, urban forest managers, silviculture foresters, New England fisheries stakeholders, fisheries managers, conservation biologist and forest land owners.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	10385	23248	683	514

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	27	14	41

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Face to face general group education sessions (workshops, etc.)

Year	Actual
2012	108

Output #2

Output Measure

- New or updated web page(s)

Year	Actual
2012	33

Output #3

Output Measure

- Training conferences or sessions hosted or conducted.
  Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Fact sheets, bulletins and newsletters written or edited.

Year	Actual
2012	38

Output #5

Output Measure

- Individual Consultations

Year	Actual
2012	5137

Output #6

Output Measure

- Undergraduate and Graduate Students Supervised

Year	Actual
2012	80

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Acres of land permanently protected and managed.
2	Adoption and/or revision of land use public policies by governmental agencies.
3	Consumers become knowledgeable about recommended environmental practices relating to forests, water quality and conservation, lawn care, well and septic systems, and/or shoreline buffers.
4	Understanding of basic forest ecology.
5	Increased use (%) of GIS and other technologies by local officials in making land use and other environmental decisions.
6	Increased awareness of recommended BMP by nursery industry, landscape architects and consumers.
7	Number of agricultural nutrient management plans adopted
8	Number trained in geospatial technologies
9	Number of students achieving pesticide certification.

Outcome #1

1. Outcome Measures

Acres of land permanently protected and managed.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Adoption and/or revision of land use public policies by governmental agencies.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Consumers become knowledgeable about recommended environmental practices relating to forests, water quality and conservation, lawn care, well and septic systems, and/or shoreline buffers.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Protection and management of riparian buffers are a proven method to protect and/or improve water quality. Riparian corridor protection and restoration is a climate change adaptation strategy. Buffers slow water runoff and increase filtration, trap pollutants and sediment, stabilize soil, and reduce bank erosion. Other benefits include storage of flood waters, increased aesthetics, wildlife habitat for terrestrial animals, as well as maintaining habitat for aquatic animals, and protection of sensitive coastal habitats.

What has been done
The Riparian Corridors in CT program, prepared numerous presentations on riparian corridors for CT municipalities. These presentations included town specific riparian corridor analyses showing changes in land cover between 1985 and 2006 within a 300 ft riparian corridor. Several plant lists were developed to encourage native plantings within riparian corridors and funding was secured to develop coastal riparian plant lists and cross sections to show homeowners and municipalities how these areas could be planted.

Results
Several towns incorporate language on the importance of riparian corridor protection in their POCD's. A grad student in UConn's Dept of PS/LSA and the Project Director developed a riparian corridor template for an inland pond site that could be used in numerous inland situations. The Town of Lebanon embraced the template and plans to proceed with on site work in 2013. Over 500 people downloaded the Coastal Planting Guide http://web2.uconn.edu/seagrant/publications/coastalres/CTCoastal_planting.pdf post Tropical Storm Irene. This guide encourages the planting of native plants and indicates which plants have soil salt or salt spray tolerances.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
132	Weather and Climate
135	Aquatic and Terrestrial Wildlife
205	Plant Management Systems
608	Community Resource Planning and Development
903	Communication, Education, and Information Delivery

Outcome #4

1. Outcome Measures

Understanding of basic forest ecology.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Increased use (%) of GIS and other technologies by local officials in making land use and other environmental decisions.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Increased awareness of recommended BMP by nursery industry, landscape architects and consumers.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	25

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The nursery industry is losing important ornamental crops due to emerging issues with invasiveness and plant bans. The nursery industry needs a broadened palette of versatile and adaptable native plants to meet the growing desire of landscapers and consumers to utilize native plants. The identification and development of new native plants for growers will help replace lost sales from invasive plants, and may generate sales beyond the levels produced by invasive shrubs. The identification and development of new native plants for growers will help replace lost sales from invasive plants, and may generate sales beyond the levels produced by invasive shrubs. New plant products are a major profit driver for the green industry.

What has been done
A combined extension and research program is developing native plants for the green industry. Eight Connecticut native shrub species were evaluated for landscape suitability. Propagation protocols were developed to allow nursery growers to efficiently propagate new native shrubs to add to their product line. Native plant education was provided to nursery professionals, landscape architects, and consumers through conference presentations, a native shrub column in the Home and Garden news, publications, and individual consultations.

Results
Five novel CT native shrub species were identified that can be used to directly replace invasive plants in landscapes. Three additional novel CT native shrub species were propagated at a rate similar to already successful native shrub crops that are widely grown by the green industry, indicating that these new natives can be propagated in sufficient quantities to serve the green industry. Twenty-five program participants report an increased awareness of recommended BMP approaches and ten reported they adopted recommended BMP approaches.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
131	Alternative Uses of Land
136	Conservation of Biological Diversity
205	Plant Management Systems
903	Communication, Education, and Information Delivery

Outcome #7

1. Outcome Measures

Number of agricultural nutrient management plans adopted

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Farmers are under increasing pressure to adopt BMP to improve their operations and protect the environment. Research has shown that manure and fertilizer applications can cause fields to become saturated with phosphorus (P.) When this happens P becomes soluble and can move with rain runoff in to streams, causing increased algae blooms and eutrophication of surface water. Also, in 2013 larger farms in Connecticut will need Nutrient Management Plans to comply with CT DEEP's General Permit for Concentrated Animal Feeding Operations.

What has been done
Five Farms recorded baseline crop management data, then were presented with BMP to manage crop nutrients to meet the agronomic needs of the crop while minimizing the risk of environmental pollution. Plans consisted of field by field recommendations for nutrient applications, including timing of application or in cases where the fields already have sufficient nutrients to grow the crop, a prohibition on applying more nutrients, or to move manure off the farm; either because the farm doesn't need the nutrients, or because the farm chooses not to haul the manure to distant fields that could make use of the nutrients.

Results
The program was evaluated by measuring results. Detailed field by field records of actual nutrient applications, crop yield and soil test results were maintained by the farms. This allows comparison of actual nutrient applications to planned applications and calculates what fraction of the fields is being managed according to the plan. We were successful in proving to farmers that hauling liquid manure in tank trailers is cheaper than using the traditional solid manure spreader behind a tractor; 5,827 tons of solid manure and 13,499,867 gallons of liquid manure were applied according to the plans on 5,046 acres of cropland. Farms spent 8,703 dollars hauling manure, 3,429 miles ($2.54 per mile), 57.9% of crop field exceeded yield goals even with summer heat and drought, and spring's extremely wet conditions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
112	Watershed Protection and Management
136	Conservation of Biological Diversity
403	Waste Disposal, Recycling, and Reuse
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development
903	Communication, Education, and Information Delivery

Outcome #8

1. Outcome Measures

Number trained in geospatial technologies

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	350

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The use of Geospatial technologies, geographic information systems (GIS), global positioning system (GPS), remote sensing and internet mapping technologies can be immensely powerful tools for individuals, communities, researchers, and outreach professionals for local land use planning. Land use change influences a wide variety of issues critical to Connecticut residents and communities, including impacts on economic viability, community character, and natural resource health.

What has been done
The Geospatial Training Program (GTP),conducted 7 GIS trainings and 5 specialized web mapping courses for over 210 participants on GPS and related technologies. In collaboration with the CT Department of Energy and Environmental Protection (DEEP), the CT Environmental Conditions Online (CT ECO) website was deployed to serve GIS maps and geographic data to the public. Additionally, GTP worked with the CT Sea Grant program to develop and deploy the CT Shellfisheries Mapping Atlas.

Results
More than 200 individuals were trained by the GTP in hands-on workshops in multiple states. More than 150 additional participants were exposed to geospatial technology via webinars. Post-training participant surveys indicated that 100% of participants would recommend the training to their colleagues. Survey results and follow-up communications have resulted in a large number of requests for additional training workshops throughout the country.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
136	Conservation of Biological Diversity
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development
903	Communication, Education, and Information Delivery

Outcome #9

1. Outcome Measures

Number of students achieving pesticide certification.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	9

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Turfgrass managers and landscapers are faced with the challenge of providing high quality turf while utilizing the least amount of inputs; including water, pesticides and fertilizers. In addition, Connecticut law prohibits the use of pesticides on public and private K through 8th grade school athletic fields, and when needed pesticide applicators must have a valid license to apply products. Turf managers need low input alternatives to maintain quality turfgrass in a non-pesticide environment.

What has been done
UCONN's turfgrass industry program conducted 3 educational seminars for 425 industry professionals, students and the public on BMP approaches to maintain sustainable, safe playing surfaces and quality turfgrass systems, while reducing pesticides, and fertilizer. Over 850 contacts were made through face to face meetings, telephone, e-mail, and written communication. A collaborative effort between the New England Universities developed a New England Weed Control Guide, and 19 individual site consultations help establish BMP programs.

Results
Turf managers and school boards throughout Connecticut have turned to UConn for information on how best to grow and maintain quality turf. A collaborative effort between the Connecticut Department of Energy and Environmental Protection (DEEP) and the University of Connecticut Turfgrass Science program was established to offer students the opportunity to take their pesticide applicators license, in school, before they enter the workforce; 39 students have received their pesticide certification over the last five years; 9 received certification this reporting period.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
104	Protect Soil from Harmful Effects of Natural Elements
111	Conservation and Efficient Use of Water
205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Through a variety of evaluation tools including pre-testing, time series and post-testing Extension Educators surveyed participants utilizing both written and internet based methods. Participants reported changed in attitude and increased knowledge following completion of programs.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 3

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
701	Nutrient Composition of Food	0%		29%	
702	Requirements and Function of Nutrients and Other Food Components	0%		43%	
703	Nutrition Education and Behavior	57%		14%	
724	Healthy Lifestyle	43%		14%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	14.2	0.0	13.0	0.0
Actual Paid Professional	0.4	0.0	0.3	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
36610	0	200290	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
36610	0	200290	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
395596	0	942272	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Population data from the most recent survey of Connecticut indicate a population of approximately 3.5 million with 22.9% of that population under the age of 18. Data from the Center for Disease Control show that 14.5% of adolescents were overweight and 10.4% were obese. Additionally, data for children age 2-5 show that 14.9% were overweight and 15.8% were obese. UCONN research and extension programs are directly addressing this issue by focusing on healthy lifestyles, nutrition education, and fitness and nutrition clubs for young people. Fourteen research and extension faculty and staff are involved in programs that address nutrition and wellness - with a strong emphasis on improved nutrition and wellness for young people. We are highlighting three of these extension programs in the state defined outcomes section of this report. In addition, Hatch and Hatch Multistate formula funds provided resources to 13 research projects that address nutrition and wellness. Two research projects are summarized below.

A UCONN research investigator participated multi-state project, W1005, "An integrated approach to prevention of obesity in high risk families," to implement a childhood obesity prevention project, All 4 Kids, for low-income preschool age children and their families. Over 100 children were reached during the program within the state of Connecticut and at least 100 parents or caregivers participated in 3 family events which involved tasting novel foods, participating in new dances with their children and receiving nutrition education materials about how to eat smart, be active and accept others no matter what their size. As a result of the implementation of the All 4 Kids program, preschool children significantly improved their ability to identify healthy snacks and indicated that they would prefer the healthy snack over a less desirable snack.

Hatch research project, "Variation in oral sensation and dietary risk of cardiovascular disease and obesity," generated new knowledge and actions for improving health through optimal diets related to variation in chemosensory function and food preference. Through research connecting oral sensation with chronic disease risk through food preference, a food liking survey was designed and tested. The food liking survey is a rapid, feasible, and valid screening tool for fruit and vegetable consumption in children and a screening tool for assessing dietary behaviors that increase the risk of obesity and/or cardiovascular risk in children and adults. The food liking survey was tested through collaborations with community-based preschools, Connecticut Children's Medical Center, psychologists at the University of Birmingham in the UK, and researchers at Yale University.

2. Brief description of the target audience

Low income youth and families, State agency personnel, policy makers, teachers, food service staff, camp personnel, health care personnel, researchers, policy makers, advocacy groups. food industry personnel, marketing professionals and students in health and nutrition fields.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	7016	152602	15219	91655

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	5	30	35

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Face to face general group education sessions (workshops, etc)

Year	Actual
2012	100

Output #2

Output Measure

- New or updated web page(s)

Year	Actual
2012	33

Output #3

Output Measure

- Individual consultations (in person, e-mail, etc.)

Year	Actual

2012	5137

Output #4

Output Measure

- Training Conferences or sessions hosted or conducted
  Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Fact sheets, bulletins and newsletters written or edited.

Year	Actual
2012	67

Output #6

Output Measure

- Undergraduate and Graduate Students Supervised

Year	Actual
2012	43

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increased understanding (%) of the principles of good nutrition for families and children.
2	Increased use (%)of fruits and vegetables.
3	Decreased consumption (%) of high sugar foods.
4	Decreased consumption (%) of high fat foods.
5	Increased understanding of basic metabolic processes related to obesity, weight and health. (new research findings)
6	Increased number of children receiving nutrition education.
7	Number of people reducing levels of obesity

Outcome #1

1. Outcome Measures

Increased understanding (%) of the principles of good nutrition for families and children.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	90

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Children from low-income households are at greater risk for developing obesity given their high calorie, poor quality diets and limited opportunities for physical activity. Poor diet quality and lack of physical activity over a lifetime also places adults at a much greater risk for multitude of chronic diseases such as cancer, hypertension, cardiovascular disease and diabetes.

What has been done
The Nutrition, Fitness and Healthy Lifestyles Extension program reached 80 youth through nutrition and fitness programs conducted in afterschool programs in Hartford and New Britain; 200 families attended educational workshops on feeding infants and young children; and low-income senior citizen in Hartford and New Britain received training on food budgeting, healthy eating and food safety.

Results
Youth participating in the nutrition and fitness programs increased their fitness levels by 50% from baseline testing. Ninety percent of participating youth reported increased knowledge regarding nutritional food choices. Seniors attending nutrition and food safety workshops increased knowledge and awareness of food budgeting and good food safety practices. Ninety percent of the parents that attended the child nutrition workshops adopted better feeding strategies.

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior

Outcome #2

1. **Outcome Measures**

   Increased use (%)of fruits and vegetables.

   Not Reporting on this Outcome Measure

Outcome #3

1. **Outcome Measures**

   Decreased consumption (%) of high sugar foods.

   Not Reporting on this Outcome Measure

Outcome #4

1. **Outcome Measures**

   Decreased consumption (%) of high fat foods.

   Not Reporting on this Outcome Measure

Outcome #5

1. **Outcome Measures**

   Increased understanding of basic metabolic processes related to obesity, weight and health. (new research findings)

   Not Reporting on this Outcome Measure

Outcome #6

1. **Outcome Measures**

   Increased number of children receiving nutrition education.

2. **Associated Institution Types**

   - 1862 Extension
   - 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Only 2% of children in the U.S. eat enough fruits and vegetables, and the percentage of overweight and obese children has tripled over the past 30 years. This crisis discriminates against some children more than others; 50% of children of color are expected to develop diabetes during their lifetimes. Schools should provide a healthy food environment, where children will learn what healthy food is, how it grows, where it comes from, and will have access to it every day.

What has been done
A national service program called FoodCorps was launched in 2010, and Connecticut was invited to participate in fall 2011. College graduates invest a year of service creating healthy food environments for children in schools through three pillars of service: nutrition education, school gardens, and farm-to-cafeteria programs.

Results
The University of Connecticut's Cooperative Extension FoodCorps CT is under development. One FoodCorps service member will provide at least 80 educational activities (classroom lessons, cafeteria taste tests, garden meetings, etc.), and serve approximately 500 children.

4. Associated Knowledge Areas

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

Outcome #7

1. Outcome Measures

Number of people reducing levels of obesity

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2078

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Obesity is increasing in youth and in high risk populations. According to the reports published on the "Let's Move" government website,"Over the past three decades, childhood obesity rates in America have tripled. Today, almost one in every three children in our nation is overweight or obese." Healthy Lifestyles programming, as part of a multi-faceted effort to help address the childhood obesity epidemic, and outreach in behavioral and environment factors will be essential in reducing the risk of disease.

What has been done
Connecticut Fitness and Nutrition Clubs in Motion, is a 4-H Afterschool program designed to reduce obesity rates in children ages 9 to 14, through sustainable interventions surrounding food and fitness. 4-H Teen Mentors are trained to deliver the program, in partnership with University of Connecticut (UCONN)4-H Program Staff, UCONN Department of Kinesiology Staff and Graduate Students, UCONN Master Gardener volunteers, as well as parents and community partners.

Results
In addition to afterschool programs focusing on student and family fitness, nutrition, community gardening, and life skills, 14 Family Nights were conducted which included exergame technology demonstrations and healthy lifestyle information. Non-traditional exercise was introduced by community instructors, including yoga, karate and Latin dance, and Zumba. Four hundred and forty-four (440) one time contacts were conducted in New Haven via special community health fair events. A website was designed and launched, and Facebook and Twitter accounts were established. Sustaining-There are 24 sustained clubs including 2 Wii Dance Clubs and 2 Walking (Mileage)

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Through a variety of evaluation tools including pre-testing, time series and post-testing Extension Educators surveyed participants utilizing both written and internet based methods. Participants reported changed in attitude and increased knowledge following completion of programs.

Key Items of Evaluation

Team leaders reviewed the programs for educational value to ensure the programs remained significant and relevant to their intended goals.

The Food Corp CT program is using the Fruit & Vegetable Neophobia scale to measure change in attitudes toward fruits and vegetables. The program will also apply an intensive monitoring and evaluation program, including site visits, interviews, as well as use of the AmeriCorps' "AmeriLearns" log and monitoring tools.

The Connecticut Sustainable Community project conducted 103 data sets evaluation for participating youth assessing changes in strength , flexibility and endurance. In addtion, questionnaires were used to collect date to determine nutrition and finess awareness, knowledge and attitudes. Questionnaire results reported 2,078 youth and family reduced levels of obesity and 2,114 people increased their knowledge of basic dietary processes.

V(A). Planned Program (Summary)

Program # 4

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	0%		2%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		2%	
202	Plant Genetic Resources	4%		4%	
205	Plant Management Systems	29%		9%	
206	Basic Plant Biology	4%		2%	
216	Integrated Pest Management Systems	4%		2%	
301	Reproductive Performance of Animals	0%		4%	
303	Genetic Improvement of Animals	0%		6%	
304	Animal Genome	0%		4%	
305	Animal Physiological Processes	4%		11%	
306	Environmental Stress in Animals	4%		4%	
307	Animal Management Systems	8%		7%	
311	Animal Diseases	0%		2%	
315	Animal Welfare/Well-Being and Protection	4%		7%	
503	Quality Maintenance in Storing and Marketing Food Products	0%		4%	
601	Economics of Agricultural Production and Farm Management	17%		9%	
604	Marketing and Distribution Practices	0%		2%	
605	Natural Resource and Environmental Economics	4%		11%	
607	Consumer Economics	14%		4%	
704	Nutrition and Hunger in the Population	4%		4%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Extension	Research

Year: 2012	1862	1890	1862	1890
Plan	13.0	0.0	29.3	0.0
Actual Paid Professional	5.5	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**
426369	0	288013	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
426369	0	288013	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
571866	0	1144981	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Food security begins at the local level. UCONN research and extension activities in the College of Agriculture and Natural Resources are tackling the problems of food security and hunger head-on in Connecticut. The Governor's Council for Agricultural Development has set a goal of increasing the amount of locally grown food consumed in Connecticut from 1% to 5%. Achieving this goal requires improvements and expansion in food production, greater connection between local production and availability/consumption, and improvements in food distribution.

Currently, UCONN research and extension programs are addressing these issues through community food security (CFS): a relatively new concept with roots in such disciplines as community nutrition, nutrition education, public health, sustainable agriculture, hunger prevention and community development. In the broadest terms, community food security supports the development and enhancement of sustainable, community-based strategies to improve access of low-income households to healthful nutritious food, to increase the self-reliance of communities in providing for their own food needs and to promote comprehensive responses to local food, farm and nutrition issues. Specific efforts address topics such as sustainable food production in greenhouses, the cost of production of milk in Connecticut, farm risk management tools and training, and deep zone tillage technology to enhance sustainable production.

Overall, UCONN has more than 30 research and extension programs focused on food security and hunger. In this report, we highlight six Extension efforts related to these topics in the state defined outcomes section. In addition, 2 research projects are summarized below.

Consumer demand for local, sustainably produced food and ornamental plants has led to increased interest in certified organic production for greenhouse crops. Hatch research project, "Organic fertilization for greenhouse crops," compared the effect of different organic fertilizer formulations on growth of

seedlings of lettuce, tomato and mizuna. The results support several noteworthy conclusions. Fertilizer sources affected both growth and appearance of seedlings. In general, seedling growth did not respond to preplant incorporated fertilizers (PPIF) rates greater than about 0.3 g/L. Combinations of PPIF and liquid fertilizers (LF) were superior to either alone. The leaching trials showed that organic PPIF did support sustained release of nutrients, as EC, ammonium-N and phosphate-P were rapidly depleted. Study results will be used to provide a basis for recommendations for fertilization of plants grown in greenhouse production systems compliant with the USDA National Organic Program.

Greenhouse growers in the northeast identified water issues, including concern over water use restrictions and regulations, as one of the greatest challenges to grower expansion, yet only 6% currently recycle irrigation water, due to concerns over the spread of disease. The Hatch Multistate project, "Commercial greenhouse production: component and system development," studied water use efficiency (WUE) of containerized greenhouse crops. WUE under closed, sub-irrigation improves when containers are only partially saturated (PS) at each irrigation rather than fully saturated (FS). Management challenges in sub-irrigation include controlling media saturation, and managing water-borne disease and ion accumulation especially when raw water is of poor quality such as high salinity. Research shows that PS management suppresses root-rot disease even when disease titer is high and restricts plant growth. Results from these studies contribute to more efficient water and nutrient management practices for greenhouse crops.

2. Brief description of the target audience

Producers, researchers, consumers, agencies and organizations dealing with the food supply, meat science community, poultry producers and researchers, animal reproductive scientists, government officals, dairy farmers, stem cell research community, and students in agriculture fields of study.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	18711	488633	255	10

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	16	58	74

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Face to face general group education sessions (workshops, etc.)

Year	Actual
2012	1095

Output #2

Output Measure

- New or updated web page(s)

Year	Actual
2012	36

Output #3

Output Measure

- Individual consultations (in person, via e-mail, etc.)

Year	Actual
2012	10191

Output #4

Output Measure

- Training conferences or sessions hosted or conducted.
  Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Fact sheets, bulletins and newsletters written or edited.

Year	Actual
2012	173

Output #6

Output Measure

- Undergraduate and Graduate Students Supervised

Year	Actual
2012	139

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increased adoption (%) of recommended BMP by growers or producers.
2	New understanding of animal growth processes developed.
3	Increased understanding (%) of food management practices by consumers.
4	Adoption of recommended food management practices by consumers.
5	Number of new or strengthened partnerships with governmental agencies, NGOs or corporations resulting from Extension programmatic activities in the area of economics, marketing and policy.
6	Adoption of recommended risk management strategies
7	Number of growers made aware of deep zone tillage crop yield advantages
8	Increased understanding of proper poultry management

Outcome #1

1. Outcome Measures

Increased adoption (%) of recommended BMP by growers or producers.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	30

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Greenhouses are an important part of diversified farms in CT. In addition, many farmers in southern New England have added greenhouse crops and or structures to their businesses to increase income and year round cash flow. Farmers wishing to adopt sustainable greenhouse productions face many critical issue such as prevention of cultural pest problems, early diagnosis, early intervention and crop production issues including energy conservation, labor management, nutrient management and business competitiveness.

What has been done
The Extension Sustainable Greenhouse Integrated Pest Management Program provided intensive hands on educational training at participating greenhouse growers and retailers. Additional growers were reached via email, and on site trouble shooting visits to their operation. Information was also disseminated to growers by presentations, twilight meetings, conferences, articles in national trade journals and posts on the New England Greenhouse Update website (www.negreenhouseupdate.info) and the UCONN IPM website (www.hort.uconn.edu/ipm)

Results
Seven out of the nine businesses (77%) in the Sustainable Greenhouse IPM training program used biological controls such as beneficial nematodes, biological fungicides, and biological control agents thereby reducing pesticide use, improving worker safety, increasing plant quality and reducing environmental pollution. Twenty seven acres of intensive production were directly impacted. Six hundred growers and retailers increased their knowledge on the use of biological controls, and best management practices. And 30% report adopting recommended BMP approaches.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
206	Basic Plant Biology
216	Integrated Pest Management Systems
315	Animal Welfare/Well-Being and Protection
601	Economics of Agricultural Production and Farm Management

Outcome #2

1. Outcome Measures

New understanding of animal growth processes developed.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	800

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Farmers of small ruminant animals produce meat, dairy and fiber products. Overuse of chemical de-wormers is causing worm resistance to the de-wormers, exposing small ruminants to the dangers of the barberpole worm (internal parasite). Poor animal performance and mortality of susceptible animals may cause Farmers to abandon the production of lamb, goat meat and fiber products.

What has been done
The Improving Parasite Control in Small Ruminants program conducted 11 workshops and 100 one-on-one consultations to educate over 800 farmers about the presence of the barber pole worm. Farmers were instructed on scoring their animals for body conditions as well as anemia to determine which animals to treat for barber pole worm. Fecal samples were collected before and 14 days after deworming to test for resistance to the de-wormer used by the farmer.

Results

In 2012, ten sheep and goat farmers in Connecticut learned how to score their 118 animals for condition and anemia (FAMACHA). Accurate body weights were measured before deworming and fecal sampling for future egg counting and parasite culture to confirm the worm species. One farm resampled for fecal eggs after 10 days, discovered that the dewormer only reduced the egg count by 43%, therefore labeled as ineffective in controlling the parasites. In a one year follow up survey, 78% of respondents reported adopting IPM practices towards control of the barber pole worm, including FAMACHA and body condition scoring, fecal egg counts, drug resistance testing, quarantining of new animals, oral dosing of dewormer rather than injection.

4. Associated Knowledge Areas

KA Code	Knowledge Area
303	Genetic Improvement of Animals
304	Animal Genome
305	Animal Physiological Processes
311	Animal Diseases
315	Animal Welfare/Well-Being and Protection

Outcome #3

1. Outcome Measures

Increased understanding (%) of food management practices by consumers.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Adoption of recommended food management practices by consumers.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Number of new or strengthened partnerships with governmental agencies, NGOs or corporations resulting from Extension programmatic activities in the area of economics, marketing and policy.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Connecticut Public Act 09-229 directs the Commissioner of Agriculture to provide payments to farmers when the federal milk pay price drops below a sustainable monthly cost of production (COP).

What has been done
Production and cost data for 2011 was collected from 39 CT dairy farms in order to produce a representative estimate of CT COP for milk in 2011. The average COP for CT milk in 2011 was estimated at $31.52/cwt. This estimate was then used to provide monthly estimates of the CT COP for milk in 2012.

Results
The average COP for milk is observed to increase with farm-size signaling the importance of economies of scale in dairy production. Data and analysis were generated to aid in the implementation of Connecticut Public Act 09-229 that directs the Commissioner of Agriculture to provide payments to farmers when the federal milk pay price drops below a sustainable monthly cost of production (COP).

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

Outcome #6

1. Outcome Measures

Adoption of recommended risk management strategies

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	109

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Risk Management is an often overlooked strategy that can be the difference between success and failure of farm businesses. Like all successful businesses, farmers should develop goals to guide and expand their farm businesses. Developing a set of business goals and a strategy to attain those goals is the first step in any farm risk management plan.

What has been done
The Connecticut Farm Risk Management and Crop Insurance Program, a cooperative effort between the University of Connecticut and the CT Department of Agriculture conducted 5 one-on-one advising sessions and 3 farm tours. In collaboration with the CT Farm Bureau, CT WAgN, CT Greenhouse Growers Assoc., CT Nursery and Landscape Assoc., City Seed, American Farmland Trust, CT NOFA and the Community Farm of Simsbury, crop insurance and risk management programs were developed to provide farmers and agribusinesses information to improve farm financial management and reduce risk.

Results
Approximately 4,400 participants learned about and understood the applicability of risk management tools; 2,260 participants evaluated crop insurance and other risk management tools for implementation in specific situations; 381 participants reported developing crop insurance and risk management strategies; 2,168 participants checked for new risk management information on the CT Risk Management website (www.ctfarmrisk.uconn.edu); and 109 participants report that they plan to implement one or more risk management strategies.

4. Associated Knowledge Areas

KA Code	Knowledge Area
604	Marketing and Distribution Practices
605	Natural Resource and Environmental Economics
607	Consumer Economics

Outcome #7

1. Outcome Measures

Number of growers made aware of deep zone tillage crop yield advantages

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	6513

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Reduced-tillage systems, such as deep zone tillage (DZT), help to minimize field preparation costs; reduce energy use; eliminate soil, nutrient and pesticide runoff; help restore soil health and fertility; provide farmers access to open space; reduce irrigation demands. DZT provides the ultimate climate change tool for a region that is forecast to become warmer and wetter.

What has been done
In an effort to spread the word about deep zone tillage (DZT), reduced-tillage, soil health, cover crops, and crop rotation, Extension educations partnered with growers/educators to conduct 9 DZT presentations in 4 states (CT, ME, MA, NH)and Nova Scotia, and published 1 magazine, 3 proceedings and 3 newsletter articles (1 DZT farm case study). One Extension Fact Sheet, "Getting Started with DZT," was written and published, and a technical report to the CT legislature highlighted progress on DZT adoption was published.

Results
In 2012, 8 growers (1 CT, 3 MA, 1 NH, 2 ME, 1 VT) purchased new DZT machines, while 2 CT vegetable growers modified existing machines to achieve DZT on their farms, bringing the total number of New England growers using this technology to 31. DZT in an extremely wet season (2011) favorably influenced crop earliness and ear size for sweet corn, and fruit size, handle quality and marketable yield for pumpkins. One CT grower measured the time and fuel it took to prepare and plant a measured acre using both conventional methods and DZT. Prep time was reduced 66-83%, depending upon whether the planter was attached to the zone tiller, and fuel

consumption was reduced by 72-77%. A NY grower confirmed the calculations on over 1,500 acres of sweet corn, and also reduced his nitrogen application costs by 79%.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
206	Basic Plant Biology
601	Economics of Agricultural Production and Farm Management

Outcome #8

1. Outcome Measures

Increased understanding of proper poultry management

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	580

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In the past few years more youth and families are choosing to rear poultry, including chickens, ducks, turkeys, game birds and other fowl, for personal use and as a source of supplemental income in New England. In 2011, more than 90,000 chicks, and adult birds were purchased by small flock owners throughout New England. Many small flock owners are less experienced in the management of poultry relative to proper nutrition and health care. The threat of Avian Influenza and Salmonella has increased awareness of the need for proper biosecurity in rearing poultry.

What has been done
The UCONN Extension program, Youth Poultry Projects and Small Poultry Flock Rearing focuses on educating small poultry flock owners about the proper management and health care of their poultry. Over 320 people attended 11 small flock workshops. They learned the basics of choosing birds, housing, nutrition and basic health care of poultry. In addition, 50 adult volunteers worked with 4-H youth on poultry projects, 124 youth participating in the 17th Annual Southern New England 4-H Poultry Show and Showmanship contest held at UCONN.

Results

Through Youth and Small Poultry Flock Programs, over 320 people attended various workshops during this reporting period seeking advice on purchasing, rearing, managing, etc. of small egg, meat or show bird flocks. This information helped decrease the incidence of disease and other welfare problems with small poultry flocks. Of the 260 plus contacts by phone or email, about 63 of these are new to poultry within the past year. The economic impact on CT and New England is considerable. Small flock owners purchase 50lb bags of feed at $15 to $20+ per bag. This is equivalent to about $600 - $800 per ton of feed, which in bulk sells for about $420 - 480 per ton. This increased profitability to businesses carries through to other products for poultry rearing.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
306	Environmental Stress in Animals
307	Animal Management Systems
311	Animal Diseases
315	Animal Welfare/Well-Being and Protection

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Through a variety of evaluation tools including pre-testing, time series and post-testing Extension Educators surveyed participants utilizing both written and internet based methods. Participants reported changed in attitude and increased knowledge following completion of programs.

Key Items of Evaluation

Team leaders reviewed programs for educational value to ensure programs were relevant to the planned program goals.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Family Youth and Communities

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
205	Plant Management Systems	4%		0%	
307	Animal Management Systems	4%		0%	
724	Healthy Lifestyle	14%		0%	
801	Individual and Family Resource Management	4%		0%	
802	Human Development and Family Well-Being	18%		0%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	4%		0%	
806	Youth Development	52%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	33.8	0.0	1.0	0.0
Actual Paid Professional	9.1	0.0	0.0	0.0
Actual Volunteer	300.0	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**
658609	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
658609	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1102352	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

We have approximately 60 ongoing extension programs at the University of Connecticut that address components of family, youth and communities. These programs focus their efforts on helping create safe, healthy, well-educated children, teens and families. In this reporting period, over 17,000 youth participated in and learned new skills relating to 4-H science experiments or the environment. Of those participating, approximately 10,000 report they gained skills and increased knowledge in one or more of the 4-H program emphasis areas relating to science. Two highlights of our youth programs are the 4-H STEM and 4-H Leadership and Citizenship programs.

4-H STEM covers a wide range of engaging subjects that are planned to draw youth into exploring science in a fun and motivating way. Improving nutrition and decreasing obesity through Wii™ and other action oriented activities have helped young people understand STEM not only for their current wellbeing but for career exploration as well. The CT 4-H robotics program begins with after school Lego robotics groups, and often progresses to learning to assemble NXT robots to perform specific tasks. This evolved into obtaining grants ($75,000 total) to establish eight 4-H robotics teams at the high school level. Animal science programming encourages youth to understand genetics and genomics by learning more about sire analysis and at the terminal end of their project, increasing their awareness of product integrity and food safety.

4-H Leadership and Citizenship delves into the soft sciences of youth development to help youth learn to make good decisions, develop leadership and citizenship skills while improving self confidence. We strive to provide youth with the support and positive experiences needed to grow to their fullest capacity and to become productive adult citizens. Research has shown that caring adults play an absolutely essential role in the healthy development of youth. Older youth take an active part in the planning, implementation and evaluation of the programs in which they participate. More specifically, citizenship education allows youth to learn and practice citizenship skills with the goal of being better able to network and feel comfortable engaging in community activity. The 4-H program strongly encourages participation in some type of community service by all members. This involvement in "helping others" promotes a sense of caring and commitment as well as providing their communities with additional resources.

2. Brief description of the target audience

Youth, school personnel and families, youth serving agencies and organizations; community organizations and agencies. Volunteers involved with youth and adults.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	64370	632395	58541	153619

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	17	0	17

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- New or updated webpage(s).

Year	Actual
2012	1351

Output #2

Output Measure

- Volunteer training conferences or sessions hosted or conducted.

Year	Actual

2012	218

Output #3

Output Measure

- Fact sheets, bulletins and newsletters written or edited

Year	Actual
2012	19171

Output #4

Output Measure

- After-school programs [sites] conducted or organized.

Year	Actual
2012	351

Output #5

Output Measure

- Undergraduate and Graduate Students Supervised

Year	Actual
2012	49

Output #6

Output Measure

- Individual Consultations

Year	Actual
2012	335318

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of 4-H sponsored community service projects completed by youth.
2	Number of youth indicating increased knowledge and skills in one or more of nine 4-H program emphasis areas.
3	Increased exploration of career opportunities by participating youth (number of youth)
4	Increased knowledge of leadership skills by adult volunteers working with youth (% change)
5	Increased, new, active collaborative partnerships with other organizations, agencies, etc.
6	Number of consumers indicating new or confirmed knowledge of recommended consumer practices.

Outcome #1

1. Outcome Measures

Number of 4-H sponsored community service projects completed by youth.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	7663

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Youth development is important to help youth learn to make good decisions, learn leadership and citizenship skills while improving self confidence, which contriubutes to a prosperous and productive society.

What has been done
The 4-H Leadership and Citizenship programs provided youth with the supports and positive experiences needed to grow to pratice positive citizenship skills. The program encourages community service through individual and club projects. Each of the 323 4-H Clubs in CT provided a positive impact on their community through community service projects. In addition, community service teaches job skills, provides career experiences, and encourages personal growth.

Results
Based on 4-H year-end club summaries, thousands of hours were dedicated by volunteers. Member, parents and other volunteers participated in community food bank collections, holiday meal donations, blood drives, roadside and beach clean-ups and funding raising for the Wounded Warriors project.

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
806	Youth Development

Outcome #2

1. Outcome Measures

Number of youth indicating increased knowledge and skills in one or more of nine 4-H program emphasis areas.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Increased exploration of career opportunities by participating youth (number of youth)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3600

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
There is an increase interest in attracting students into the fields of science, technology, engineering and mathematics, also known as STEM. According to the U.S. Department of Commerce's Economics and Statistics Administration, over the past decade the number of STEM jobs grew three times faster than non-STEM jobs, and STEM workers earn 26 percent more than their non-STEM counterparts.

What has been done
The 4-H STEM program engages young people in science, technology, engineering and math by providing program opportunities and career exploration in computer technology, nutritional science, math and on-campus college events. In addition,the 4-H STEM program has engaged high school teens who would not have otherwised considered joining 4-H because other their interest in 4-H science programming.

Results
4-H STEM engaged high school teens who would not have considered joining 4-H, to become members of Connecticut 4-H through 4-H/FIRST robotics teams. There are currently 12 active 4-H robotics teams. Youth members also participate at local 4-H fairs, assist with LEGO NXT

robotics trainings, attend the UCONN Cornucopia event and other related 4-H/College festivals and activities. In addition, many elementary and middle school level 4-H LEGO robotics clubs and teams have been formed and are active throughout the state. In July of 2012, 299 youth were reported to be engaged in 4-H robotics clubs and teams. Also 4-H STEM participants demonstrated a greater knowledge of renewable energy options and its possible applications as suitable alternatives to fossil fuels.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

Increased knowledge of leadership skills by adult volunteers working with youth (% change)

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Increased, new, active collaborative partnerships with other organizations, agencies, etc.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Number of consumers indicating new or confirmed knowledge of recommended consumer practices.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Competing Programmatic Challenges

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Through a variety of evaluation tools including pre-testing, time series and post-testing Extension Educators surveyed participants utilizing both written and internet based methods. Participants reported changed in attitude and increased knowledge following completion of programs.

Key Items of Evaluation

Activities that engaged continual evaluation and feedback from participants and stakeholders were motivating factors in obtaining desired feedback. Team leaders were asked to review processess for educational value to ensure planned programs were being followed and that programs remained significant and relevant.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Sustainable Energy

☐ Reporting on this Program

Reason for not reporting

We are not reporting on this planned program because our Sustainable Energy program was consolidated into our Climate Change planned program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	3.0	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conduct field trials
Conduct economic analysis
Conduct basic research

Incorporate energy management, conservation, etc. into Extension programs
Update webpages

2. Brief description of the target audience

Agricultural producers, farmers
Seafood producers
Agricultural businesses
Forest and land managers
Local and state officials
Policy makers
Consumers

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

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

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

Patent Applications Submitted

Year: 2012
Actual: {No Data Entered}

Patents listed
{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	2	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- New and updated websites

Year	Actual
2012	0

Output #2

Output Measure

- Fact sheets, bulletins and newsletters written or edited.

Year	Actual
2012	0

Output #3

Output Measure

- Training conferences or sessions hosted or conducted.

Year	Actual
2012	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increased adoption of BMP (%) by consumers
2	Increased adoption (%) of energy best management practices by producers.
3	New biomass models developed.

Outcome #1

1. Outcome Measures

Increased adoption of BMP (%) by consumers

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Increased adoption (%) of energy best management practices by producers.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

New biomass models developed.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual

2012 0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}