

# 2013 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 more than two-hundred and eighty formal outreach programs. A key component to Extension programs 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 that are 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).

#### Total Actual Amount of professional FTEs/SYs for this State

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	65.5	0.0	42.8	0.0
Actual	62.1	0.0	41.3	0.0

## II. Merit Review Process

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

- 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

#### **Brief explanation.**

The college-wide stakeholder input process continued to include considerations for both research and extension. Regular consultation with the 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

**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
- Meeting with traditional Stakeholder individuals

**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 , highlighted research and extension efforts 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 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

<b>1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)</b>			
<b>Extension</b>		<b>Research</b>	
<b>Smith-Lever 3b &amp; 3c</b>	<b>1890 Extension</b>	<b>Hatch</b>	<b>Evans-Allen</b>
2006134	0	1164887	0

<b>2. Totaled Actual dollars from Planned Programs Inputs</b>				
<b>Extension</b>			<b>Research</b>	
	<b>Smith-Lever 3b &amp; 3c</b>	<b>1890 Extension</b>	<b>Hatch</b>	<b>Evans-Allen</b>
<b>Actual Formula</b>	1734820	0	960779	0
<b>Actual Matching</b>	1734820	0	960779	0
<b>Actual All Other</b>	3065510	0	3030077	0
<b>Total Actual Expended</b>	6535150	0	4951635	0

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

## V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Food Safety
2	Climate Change
3	Childhood Obesity (and Human Health)
4	Global Food Security and Hunger
5	Family Youth and Communities
6	Sustainable Energy

**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
205	Plant Management Systems	5%		5%	
206	Basic Plant Biology	0%		10%	
212	Pathogens and Nematodes Affecting Plants	0%		5%	
215	Biological Control of Pests Affecting Plants	20%		5%	
216	Integrated Pest Management Systems	25%		10%	
307	Animal Management Systems	5%		5%	
311	Animal Diseases	15%		40%	
315	Animal Welfare/Well-Being and Protection	5%		10%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	15%		5%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	10%		5%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	9.0	0.0	8.0	0.0
Actual Paid Professional	3.9	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
326012	0	107354	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
326012	0	107354	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
543676	0	504463	0

## V(D). Planned Program (Activity)

### 1. Brief description of the Activity

The food safety efforts focus on ensuring a safe food supply in the state of Connecticut and across New England. Research and Extension programs address pre-harvest/slaughter and post harvest/slaughter food safety at farm, processor, food service and consumer levels. Our programs include Good Agricultural Practices (GAP) training for crop producers, Hazardous Critical Control Points (HACCP) training for seafood and meat producers and handlers, chemical residue analysis of foods, and safe practices for food storage for homeowners.

Based on stakeholder input, food safety is a high priority area for our programs. In view of recent instances of contaminated foods, people remain very concerned about unwanted chemical, biological and physical hazards in food, beverages and consumer products. Research and Extension teams worked to identify problems and challenges most relevant to the state and region, and worked with stakeholders to fully describe and address the current situation.

Activities included:

- Food Safety workshops
- Consumer focused websites
- Training for processors, dealers, importers, harvesters, and regulatory personnel
- Fact sheets, newsletter articles, and bulletins
- One on one consultations
- Basic and applied research projects

### 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**

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	9400	40200	140	30

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

**Patent Applications Submitted**

Year: 2013  
 Actual: 1

**Patents listed**

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**

2013	Extension	Research	Total
<b>Actual</b>	9	4	13

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

**Output Target**

**Output #1**

**Output Measure**

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

Year	Actual
2013	81

**Output #2**

**Output Measure**

- New or updated web page(s)  
 Not reporting on this Output for this Annual Report

**Output #3**

**Output Measure**

- Diagnostic tests conducted  
Not reporting on this Output for this Annual Report

**Output #4**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2013	189

**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

<b>Year</b>	<b>Actual</b>
2013	17

**Output #7**

**Output Measure**

- Undergraduate and graduate students supervised

<b>Year</b>	<b>Actual</b>
2013	20

**Output #8**

**Output Measure**

- Formal Extension outreach programs

<b>Year</b>	<b>Actual</b>
2013	33

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

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

O. No.	OUTCOME NAME
1	Increase number of viable technologies to improve food safety
2	Reduce incidence of foodborne illness
3	Increase adoption of recommended safe food handling practices at the individual, family, community, production, and supply system levels
4	Increase knowledge and use of Good Agricultural Practices (GAP)

**Outcome #1**

**1. Outcome Measures**

Increase number of viable technologies to improve food safety

Not Reporting on this Outcome Measure

**Outcome #2**

**1. Outcome Measures**

Reduce incidence of foodborne illness

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2013	2500

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

**Issue (Who cares and Why)**

Salmonella in poultry can cause human foodborne infection when the animal infection spreads to eggs or their products and enters the food chain producing contaminated food. Every year, approximately 40,000 cases of salmonellosis are reported in the U.S. Because many milder cases are not diagnosed or reported, the actual number of infections may be 30 or more times greater. Young children, the elderly, and the immunocompromised are the most likely to have severe infections. Approximately 400 persons die each year with acute salmonellosis.

**What has been done**

Research was conducted on new types of feed supplements to help poultry grow, produce more efficiently, and produce immunity against Salmonella. Over 500 commercial poultry producers from throughout the North East attended seminars, conferences or individual consultations on using PDAs to control Salmonella and Camplobactor in poultry. In addition, approximately 2,000 indirect contacts had access to data published on websites, newsletters and journal articles directed to small poultry flock owners and commercial producers.

**Results**

Through direct and indirect outreach activities approximately 2,500 poultry producers and small flock owners in Connecticut and New England gained knowledge on reducing salmonella in poultry which is a leading cause of human foodborne infection.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
205	Plant Management Systems
307	Animal Management Systems
311	Animal Diseases
315	Animal Welfare/Well-Being and Protection
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

**Outcome #3**

**1. Outcome Measures**

Increase adoption of recommended safe food handling practices at the individual, family, community, production, and supply system levels

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2013	550

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

**Issue (Who cares and Why)**

Connecticut food safety regulations currently in place, the recently passed Food Safety Modernization Act, and Hazard Analysis Critical Control Point (HACCP) regulations require that meat and poultry, seafood, and fresh juice food processing operations write and implement food safety plans and/or complete training programs that will serve to prevent foodborne illnesses. Regional training programs that help processors meet these regulations are essential to their ability to comply.

**What has been done**

UConn Extension partnered with the University of Rhode Island and faculty from the University of Vermont to offer two meat and poultry HACCP courses per year in CT; developed and implemented the first New England Meat Conference(NEMC), attended by 325 meat processors,

producers, and service providers; and partnered with the Connecticut Farm Bureau Association to provide a one day workshop for farmers interested in on-farm processing of acidified foods.

**Results**

All of these programs helped processors comply with regulations that require a training component before processing meat and poultry, seafood, and acidified foods in the farm home kitchen. A total of 35 meat and poultry processors, 76 seafood processors and 21 high school students attended the programs. Twenty-eight farmers attended the acidified food training program. After attending training participants are prepared to develop food safety plans and/or use safe food handling practices to reduce the risk that their products are involved in a foodborne disease outbreak. General workshop (NEMC) programs serve to reinforce the skills/knowledge gained at mandatory training programs.

**4. Associated Knowledge Areas**

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

**Outcome #4**

**1. Outcome Measures**

Increase knowledge and use of Good Agricultural Practices (GAP)

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2013	305

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

**Issue (Who cares and Why)**

From 1998 to 2008, 46% of foodborne illnesses were attributed to produce, according to the Centers for Disease Control (CDC). The USDA and FDA published Good Agricultural Practices (GAP) produce safety guidelines to help farmers minimize risks for foodborne illness from fresh produce. While producers are not required to have a GAP program by regulation, many of their commercial customers (retailers, distributors) are requiring GAP programs and audits. In

addition, as more schools, community organizations, and restaurants develop produce gardens with the intent to supply produce to foodservice, food donation organizations or restaurants, this potential client group will benefit from GAP education targeted to their program/operation.

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

We provided 4 workshops in January/February 2013: a 2-day GAP school, a GAP food safety plan writing workshop; an update for those that had previously attended the GAP school, and a GAP Lite program for those that are not preparing for an audit. Farm visits are provided as an extension of GAP workshops to help farmers with food safety plan writing. A short talk was provided at the annual UConn Extension Fruit and Vegetable Growers workshop and a session on produce safety, GAP and the new Food Safety Modernization Act was presented by invitation at the Northeast FDA regional meeting in August 2013.

#### **Results**

Eight farms passed USDA third party audits in 2013 which allowed them to sell produce to major distributors/supermarkets in Connecticut, workshops reached 39 farmers, increasing awareness and knowledge of safe on-farm produce handling practices. This contributed to the development of a culture of food safety on the Connecticut farm. Thirty-nine farmers were reached with 4 programs offered as part of the UConn Extension GAP School. Evaluations indicated that all participants learned something new or more about something they already knew, when asked about each topic covered in the workshop. \$26,259 was received from the Connecticut Department of Agriculture/USDA Specialty Crops Program to fund the project, Connecticut's On-farm Packing Houses: GAP/GHP Needs Assessment, Resources, and Training.

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
205	Plant Management Systems
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

#### **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**

The following relates to the evaluation results for the GAP program:

In September 2012 an on-line survey was completed to inform the development of produce safety/Good Agricultural Practices programming for the 2013 program year. 127 farmers responded to the survey. Data from the survey provided updated information including farmer attitudes/opinions about GAP and produce safety; training and information preferences; possible influence of farm size, longevity, and past GAP program attendance on willingness to participate in/or to develop a GAP program. Results indicated: 83% of farmers had not written a food safety plan, though 20.3% indicated that all produce farmers should have food safety plans; 44% said that they were interested in participating in a basic GAP workshop; 24.1% are interested in a GAP update annually; 20.5% are interested in a food safety plan writing workshop; 43% indicated that they are still confused by GAP; and 32% were not interested in any kind of produce safety training.

Post-workshop evaluations were provided at all UConn Extension GAP/Produce safety workshops. A follow-up survey was conducted in 2012. A follow-up survey will be conducted of all 2013-2014 workshops in the fall of 2014.

### **Key Items of Evaluation**

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

**Program # 2**

**1. Name of the Planned Program**

Climate Change

Reporting on this Program

**V(B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		10%	
104	Protect Soil from Harmful Effects of Natural Elements	5%		5%	
111	Conservation and Efficient Use of Water	5%		5%	
112	Watershed Protection and Management	25%		15%	
123	Management and Sustainability of Forest Resources	0%		10%	
124	Urban Forestry	5%		5%	
125	Agroforestry	5%		5%	
131	Alternative Uses of Land	5%		5%	
132	Weather and Climate	5%		5%	
135	Aquatic and Terrestrial Wildlife	0%		5%	
136	Conservation of Biological Diversity	0%		5%	
205	Plant Management Systems	0%		5%	
216	Integrated Pest Management Systems	5%		5%	
605	Natural Resource and Environmental Economics	0%		5%	
608	Community Resource Planning and Development	15%		5%	
903	Communication, Education, and Information Delivery	15%		5%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	18.0	0.0	12.0	0.0

Actual Paid Professional	3.9	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
329391	0	226999	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
329391	0	226999	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
733928	0	1056251	0

## V(D). Planned Program (Activity)

### 1. Brief description of the Activity

The broad emphasis of climate change is to address critical environmental priorities that contribute to improved air, soil, and water quality; fish and wildlife management; and enhanced aquatic, terrestrial, and coastal ecosystems.

Our programs are strongly focused on the use of geospatial technologies to promote smart growth while conserving the natural resource base. Programs provide research-based training for municipal officials that incorporate geospatial technologies allowing them to better manage existing natural resources. Recently we have focused on water resource management. Connecticut is a water-rich state. However, local development can create substantial pressure on and competition for water resources. By linking water resource planning and land use planning, we promote sustainable development.

In Connecticut, the green industry accounts for approximately two billion dollars of the state economy each year. UConn is focused on developing new tools and technologies that promote safe and healthy green spaces across the state. Research and extension programs focus on Integrated Pest Management (IPM) approaches for schools and other municipal areas. Programs also address tools and techniques for groundskeepers to improve management of inputs on recreational areas and for homeowners to achieve healthy, sustainable lawns and landscapes.

Activities in this planned program include:

- Training conferences for municipal officials and volunteers (e.g., Land Use Academy, GIS, town tree wardens,)
- Public workshops and train-the-trainer sessions
- Master Gardener support and training
- Connecticut Environmental Action Day for high school students
- Fact sheets, web pages, and general media
- Continued research and development of computer-based technologies such as video programs, webinars and possibly phone apps.
- Basic and applied research projects.

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

Elected municipal officials, municipal staff and volunteers, citizens, Soil Science Society of America, research scientist in the environment 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**

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	10500	25000	750	1000

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

**Patent Applications Submitted**

Year: 2013

Actual: 1

**Patents listed**

Methods to produce animal browsing resistant plants

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2013	Extension	Research	Total
<b>Actual</b>	17	11	28

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

**Output Target**

**Output #1**

**Output Measure**

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

Year	Actual
2013	199

**Output #2**

**Output Measure**

- New or updated web page(s)  
Not reporting on this Output for this Annual Report

**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.

<b>Year</b>	<b>Actual</b>
2013	29

**Output #5**

**Output Measure**

- Training undergraduate and graduate students and Post Doctoral Researchers

<b>Year</b>	<b>Actual</b>
2013	45

**Output #6**

**Output Measure**

- Number of individual consultations (in person, via e-mail, etc.)

<b>Year</b>	<b>Actual</b>
2013	169

**Output #7**

**Output Measure**

- Formal Extension outreach programs

<b>Year</b>	<b>Actual</b>
2013	77

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

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

O. No.	OUTCOME NAME
1	Development of new knowledge and technologies
2	Enhance adaptive capacity to climate change
3	Improve climate mitigation strategies and their adoption
4	Development of new knowledge on land use
5	Increase knowledge on the use of geospatial technologies

**Outcome #1**

**1. Outcome Measures**

Development of new knowledge and technologies

Not Reporting on this Outcome Measure

**Outcome #2**

**1. Outcome Measures**

Enhance adaptive capacity to climate change

Not Reporting on this Outcome Measure

**Outcome #3**

**1. Outcome Measures**

Improve climate mitigation strategies and their adoption

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Condition Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2013	274

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

**Issue (Who cares and Why)**

With 1000 miles of coastal shoreline, CT waterways are heavily impacted by coastal development. Polluted runoff is one of the primary sources of nitrogen pollution to Long Island Sound. Residents can help mitigate impacts to waterways by establishing and maintaining riparian buffers; the site of an intersection between a natural system and a human-based system that slow runoff from precipitation, aid in flood control, and filter or trap pollutants. Vegetated corridors are also reduce the impacts of waves and overwash on properties.

### **What has been done**

We developed a web-based Coastal Riparian Landscaping Guide for Long Island Sound which tool includes a series of fact sheets describing the functions and values of coastal riparian corridors, how to prepare an area for planting, and how to plant. A listing of native plants is provided, with indications of their ability to withstand salt spray and inundation. A series of landscaping diagrams including both plan views and cross sections are provided. We also created "Buffer in a Bag" with 20 plants for \$40 and fact sheets on how and where to plant.

### **Results**

We developed one web-based tool, worked with seven towns, and presented workshops to 274 people. These activities included planting riparian buffers at Lake Hayward in East Haddam and on the Niantic River in Niantic. Presentations on riparian buffers were given in the towns of Bridgeport, Monroe, Trumbull and Groton. Another presentation was given as part of the curriculum for the Advanced Master Gardeners - Sea Grant Coastal Certificate program. We also supported the development of a riparian buffer planting plan for a small pond in Lebanon.

## **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships
104	Protect Soil from Harmful Effects of Natural Elements
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
124	Urban Forestry
125	Agroforestry
131	Alternative Uses of Land
132	Weather and Climate
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
205	Plant Management Systems
216	Integrated Pest Management Systems
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development

## **Outcome #4**

### **1. Outcome Measures**

Development of new knowledge on land use

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

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2013	2923

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

**Issue (Who cares and Why)**

Connecticut, like many states in the Northeast, is a patchwork of rural, urban and transitional landscapes. Land use and the health of water resources are interconnected, and land use in Connecticut is determined at the local (municipal) level, by volunteer commissioners on planning, zoning, conservation and wetlands boards. In order to protect and improve the health of critical natural resources such as water, prime agricultural land and areas of wildlife diversity, local land use planners and board members must be educated on the links between land use and natural resources, and provided with information and resources to help them better determine and govern the future landscapes of their towns.

**What has been done**

The Center for Land Use Education and Research (CLEAR) has two major (and collaborating) programs on these issues, one focusing on land use planning and the other on water resource protection. The programs are: the Nonpoint Education for Municipal Officials (NEMO) and the Connecticut Land Use Academy. NEMO delivers educational workshops for local officials, conducts 2-day Rain Garden trainings, and continued its leadership role in tracking GI practices on campus. The Land Use Academy conducts regular full-day trainings for land use commissions.

**Results**

- 6 municipalities changed their plans and/or regulations to promote green infrastructure.
- A survey of CLEAR clientele on the use of CLEAR information and programs, 238 respondents from 87 towns and 25 regional or state organizations, showed that: 70% used CLEAR information to educate themselves, 50% to educate others; 57% to inform local land use decisions, and 56% to conduct analysis or research.
- The UConn Rain Garden App was downloaded 2,537 times in this time period.
- 9 new green infrastructure practices were installed on the UConn campus.
- UConn green infrastructure practices have cumulatively disconnected about 10 acres of impervious cover and reduced runoff to Eagleville Brook by about 38 million gallons to date.
- Land Use Academy graduates have come from 148 of the state's 169 municipalities.
- Of the over 100 Land Use Academy attendees providing evaluation feedback during this period, 100% said they would recommend the training to their fellow commissioners.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
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102	Soil, Plant, Water, Nutrient Relationships
104	Protect Soil from Harmful Effects of Natural Elements
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land
132	Weather and Climate
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
205	Plant Management Systems
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development

### **Outcome #5**

#### **1. Outcome Measures**

Increase knowledge on the use of geospatial technologies

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

- 1862 Extension
- 1862 Research

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

Change in Knowledge Outcome Measure

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

<b>Year</b>	<b>Actual</b>
2013	225

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

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

In order to study, protect and manage natural resources, all sectors of society -- from private individuals and producers to private sector firms to communities to governmental agencies must have access to digital geographically-referenced (geospatial) information, and the ability to use it. There is a need in the state for training on the use of geospatial technologies such as geographic information systems (GIS), global positioning systems (GPS) and remote sensing. In addition, recent advances in geospatial technology now make it possible for non-technical audiences to access and use this information through the use of interactive mapping websites, but training is needed to unlock this potential.

### **What has been done**

The Geospatial Training Program (GTP) conducted training in: Basic GIS, GPS, Internet Mapping, and special advanced courses on varying topics: three 3-day GIS courses, four two-day GPS courses, one 1-day internet mapping course and two 1-day special topics courses were taught. GTP conducted internet mapping training within the USDA/NIFA Water Program network; three one-day workshops and one workshop at the National Land/Water Conference were held during this period. GTP also develops and maintains web mapping tools. GTP also worked with CT SeaGrant to create the Shellfisheries Mapping Atlas for non-technical citizens.

### **Results**

Over 150 individual were trained in the use of GIS and GPS. Post-workshop surveys indicated that 90% were planning on putting their new expertise to immediate use in their jobs/businesses. 75 faculty and staff involved in the USDA/NIFA Water Program were trained in the creation of online maps to depict their research results and outreach programs; this is a five-year projects and evaluation is ongoing.

The CT ECO website was visited over 44,000 times by over 25,000 unique individuals, with an average stay of just under 3 minutes. This represents over 85 24-hour days of time that the CT ECO website was in use providing maps, data, and other natural resource-related information to CT citizens.

## **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
132	Weather and Climate
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development
903	Communication, Education, and Information Delivery

## **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**

These results are from the CLEAR Land Use and Water Program:  
NEMO town programs and trainings conduct pre and post workshop surveys. Long

term outcomes are tracked via phone interviews that provide "case study" examples of changes to land use practices, plans and regulations, which typically take multiple years to come to fruition. Technical tool use, such as the rain garden app, are tracked by web statistics, and feedback is received directly from individual users through a Feedback function of the app. Land Use Academy trainings use pre and post training surveys, which are distributed both at the workshops and available on a survey website. The impact of GI practices on the UConn campus are tracked through a unique system devised by NEMO staff that combines daily rainfall records with information on the design, specifications, and performance of each individual GI practice.

### **Key Items of Evaluation**

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

**Program # 3**

**1. Name of the Planned Program**

Childhood Obesity (and Human Health)

Reporting on this Program

**V(B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
604	Marketing and Distribution Practices	10%		5%	
607	Consumer Economics	10%		5%	
610	Domestic Policy Analysis	10%		5%	
701	Nutrient Composition of Food	0%		30%	
702	Requirements and Function of Nutrients and Other Food Components	0%		35%	
703	Nutrition Education and Behavior	40%		10%	
724	Healthy Lifestyle	30%		10%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	5.0	0.0	11.0	0.0
Actual Paid Professional	0.8	0.0	0.2	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
68840	0	186259	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
68840	0	186259	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
421304	0	1085851	0

## V(D). Planned Program (Activity)

### 1. Brief description of the Activity

Connecticut is second among states in income disparity comparisons of the wealthiest and poorest citizens. Across the state, obesity is on the rise in both urban and selected rural communities. Obesity rates have been climbing for children, and children born today are for the first time expected to have a shorter life span than their parents. Chronic diseases and health conditions including diabetes, heart disease, cancer, and the metabolic syndrome (among others) are associated with obesity. Despite this knowledge, the prevalence of obesity continues to rise suggesting that more effective prevention and intervention strategies are needed to reverse this epidemic. Paradoxically, the root cause of obesity among financially underprivileged populations is driven by food insecurity coupled with less access to healthy foods (e.g. inner city food swamps). The Childhood Obesity program aims to increase knowledge about good eating and exercise habits to promote improved health and wellness.

Activities in this planned program included:

- Home visits, individual and family consultations
- Demonstrations
- Summer youth activities
- Workshops
- Newsletters and training sessions for other organizations and agencies
- Basic and applied research studies

### 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

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	7200	153000	15700	91900

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

Year: 2013  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2013	Extension	Research	Total
Actual	35	19	54

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

**Output Target**

**Output #1**

**Output Measure**

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

Year	Actual
2013	213

**Output #2**

**Output Measure**

- New or updated web page(s)  
 Not reporting on this Output for this Annual Report

**Output #3**

**Output Measure**

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

Year	Actual
2013	34

**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.

<b>Year</b>	<b>Actual</b>
2013	2

**Output #6**

**Output Measure**

- Training of undergraduate, graduate and post doctoral students

<b>Year</b>	<b>Actual</b>
2013	24

**Output #7**

**Output Measure**

- Formal Extension outreach programs

<b>Year</b>	<b>Actual</b>
2013	8

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

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

O. No.	OUTCOME NAME
1	Children Practice Healthy Eating
2	Children engage in healthy levels of physical activity
3	Nutrition programs decrease childhood obesity

## **Outcome #1**

### **1. Outcome Measures**

Children Practice Healthy Eating

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

- 1862 Extension
- 1862 Research

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

Change in Knowledge Outcome Measure

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

<b>Year</b>	<b>Actual</b>
2013	7172

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

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

Even in our relatively high income state, 12% of households experience food insecurity, 1/3 of children are overweight or obese (more than half of whom are Hispanic and Black), an estimated one out of 5 residents eat no vegetables daily, 1/3 of our census tracts live more than a half mile from a healthier food retailer, and only 10% of our cropland are used to harvest fruit and vegetables. Efforts to strengthen our food system assume that by decreasing availability of unhealthy foods, and helping healthier foods to enter that void, families will experience healthier outcomes.

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

FoodCorps CT: A service-learning program, placing individuals in 5 high-need communities and expanded to 12 in September 2013. FoodCorps CT service members focus on three reinforcing pillars to improve school food environments: promoting farm-to-school programming, establishing school gardens, and providing nutrition education.

CT Food Justice Youth Corps VISTA Project: A service-learning program in Aug 2013, placed 5 individuals in community-based non-profits seeking to create or strengthen youth leadership programming around food justice.

#### **Results**

- 18 young adults have new leadership skills and knowledge to help improve food systems.
- 154 adult volunteers have new leadership skills working with youth to improve school food environments.
- These have led to over 7000 school children having improved knowledge of healthy, nutritious eating.
- 5 new school gardens were built, 2 new community gardens were built, and 13 school/community gardens were revitalized.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
724	Healthy Lifestyle

#### Outcome #2

##### 1. Outcome Measures

Children engage in healthy levels of physical activity

##### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2013	415

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

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

Lack of physical activity over a lifetime places adults at a much greater risk for chronic diseases like cancer, hypertension, cardiovascular disease and diabetes. Minority and low-income families are disproportionately at risk for developing chronic diseases due to lifestyle factors and limited access to preventive care. In Connecticut, 10% of students are obese, 14% do not participate in moderate or vigorous physical activity in a week, and 30% of high school students watch TV for 3 or more hours on an average school day. Correcting these disparities will require the best applications of chronic disease program knowledge to the populations at greater risk.

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

We partner teen mentors with school age children under adult volunteer guidance for hands-on training and non-formal education. Programs were conducted in after-school enrichment and summer program models, as either a single workshop or a series of lessons. Bilingual programs are available for Spanish speaking children. Three UConn websites also provide nutrition and physical activity information to the general public.

###### **Results**

At-risk youth targeted by our programs have shown increased awareness and knowledge of nutrition and physical activity. Youth have also documented positive behaviors of increased physical activity during the week. The town of Meriden received a designation as a "Let's Move City" and one school became a "Let's Move School" in cooperation with our program. Youth participated in Presidential Active Lifestyle and Nutrition awards. Youth demonstrate a change in behavior by becoming involved in physical activities and pushing themselves to accomplish goals. 100% of youth wrote positive journal entries regarding health practices at home and with family as a result of participation in the programs. 34% of respondents in a nutrition program also reported an increase in physical activity. Adults have also shown behavior change in choosing more nutritious foods, limiting intake of processed foods and increased physical activity such as walking and gardening.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
604	Marketing and Distribution Practices
703	Nutrition Education and Behavior
724	Healthy Lifestyle

**Outcome #3**

**1. Outcome Measures**

Nutrition programs decrease childhood obesity

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2013	4297

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

**Issue (Who cares and Why)**

More children across the United States are suffering from overweight and obesity. Thirty percent of American children are overweight, fifteen percent are obese, and millions more are at risk. Children from low-income households are at greatest risk for developing obesity given the high calorie, but poor quality diets and limited opportunities for physical activity. In Connecticut, 10% of students are obese. Chronic diseases such as heart disease, cancer and diabetes are the leading causes of death and disability in the United States. Poor diet quality over childhood and lifetime

puts adults at much greater risk.

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

Preventative nutrition and wellness programs conducted by UConn are reaching targeted groups of limited resource families and youth to raise awareness and promote positive behavior changes in diet quality. Programs are conducted as single workshops or series of lessons to assist in basic nutrition for youth and adults in urban, suburban and rural settings. Bilingual programs are also conducted for Spanish speaking groups. UConn nutrition educators also regularly consult with the public on nutrition, food safety and food preservation topics.

#### **Results**

Parents with healthy eating habits pass those along to their children. 100% of adults in Connecticut showed at least one positive food choice behavior change after participation, based on pre/post 24 hour recall data. This includes dietary improvements for those participants eating no servings of the various food groups. After participation, those numbers decreased dramatically, showing that our program improved diets of at-risk individuals. For example, 34% of program graduates reported eating no fruit upon entering the program, but after participation, half that number, 18% reported eating no fruit. Average intake of fruits and vegetables combined increased from 2.8 to 4.5 cups, an increase of over 1.5 cups in the daily diet. 80% of participants showed improvement in at least one and 53% improved in two or more food resource management practices (i.e. plans meals, compare prices, does not run out of food, or uses grocery lists). 81% of participants showed improvements in at least one, and 59% improved in two or more nutrition practices.

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
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.)
- Other (Lack of access to a supermarket)

##### **Brief Explanation**

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

## **Evaluation Results**

The EFNEP Program uses a national evaluation program that documents dietary intake of adults enrolled via 24 hour recalls done at the start for the program, during and at the conclusion of sessions to document dietary changes. There is also a food and activity behavior checklist to document changes in behavior both pre and post program delivery. Youth are also evaluated using behavior checklists.

The Connecticut Fitness and Nutrition Clubs In Motion (CT FANs IM) project did not have formal evaluations the first year; however, observational data was noted including quotes and success stories as a result of program participation. Youth kept journals of their daily activities and documented what they learned.

Youth enrolled in 4-H CYFAR projects have completed pre and post-tests after each lesson of an 8 week Tools for Healthy Living curriculum to assess learning and awareness of topic content; youth have also written journal entries after each lesson to document learning, increased awareness and any behavior changes.

We use AmeriLearns and VISTA progress reporting tools for service-learning program impacts, and we use a nationally recognized survey instrument (the Fruit & Vegetable Neophobia Scale) to measure change of attitude among students working with FoodCorps CT Service Members.

## **Key Items of Evaluation**

**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**

<b>KA Code</b>	<b>Knowledge Area</b>	<b>%1862 Extension</b>	<b>%1890 Extension</b>	<b>%1862 Research</b>	<b>%1890 Research</b>
102	Soil, Plant, Water, Nutrient Relationships	0%		2%	
202	Plant Genetic Resources	4%		4%	
205	Plant Management Systems	25%		5%	
206	Basic Plant Biology	4%		10%	
216	Integrated Pest Management Systems	10%		2%	
301	Reproductive Performance of Animals	0%		5%	
303	Genetic Improvement of Animals	0%		4%	
304	Animal Genome	0%		4%	
305	Animal Physiological Processes	4%		10%	
306	Environmental Stress in Animals	4%		4%	
307	Animal Management Systems	5%		5%	
315	Animal Welfare/Well-Being and Protection	4%		10%	
503	Quality Maintenance in Storing and Marketing Food Products	0%		5%	
601	Economics of Agricultural Production and Farm Management	15%		10%	
602	Business Management, Finance, and Taxation	5%		0%	
604	Marketing and Distribution Practices	0%		2%	
605	Natural Resource and Environmental Economics	5%		13%	
607	Consumer Economics	10%		0%	
704	Nutrition and Hunger in the Population	5%		5%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

**1. Actual amount of FTE/SYs expended this Program**

<b>Extension</b>	<b>Research</b>
------------------	-----------------

Year: 2013	1862	1890	1862	1890
	Plan	13.0	0.0	11.0
Actual Paid Professional	5.0	0.0	0.9	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
436301	0	440167	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
436301	0	440167	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
533535	0	375512	0

**V(D). Planned Program (Activity)**

**1. Brief description of the Activity**

The Global Food Security and Hunger program area is focused on reducing food insecurity in the state of Connecticut. Research and extension programs address food production and the broader food system affecting access, distribution, and waste in the food system. The food production component focuses on specialty crops (fruits and vegetables) - improving Best Management Practices (BMPs) for producers and incorporating pest management strategies and improved business practices. The food systems work addresses improving access to fresh fruits and vegetables for low-income families, schools in urban areas, and many state institutions.

Activities in this planned program:

- Workshops
- Fact sheets, newsletters, and bulletins
- Conferences
- Educational displays
- Websites and webinars
- Individual consultations
- Basic and applied research

**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 officials, 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**

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	19000	488900	300	15

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

**Patent Applications Submitted**

Year: 2013  
 Actual: 1

**Patents listed**

Revenue raising auction processes for public goods.

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2013	Extension	Research	Total
<b>Actual</b>	25	14	39

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

**Output Target**

**Output #1**

**Output Measure**

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

Year	Actual
2013	180

**Output #2**

**Output Measure**

- New or updated web page(s)  
 Not reporting on this Output for this Annual Report

**Output #3**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2013	335

**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.

<b>Year</b>	<b>Actual</b>
2013	43

**Output #6**

**Output Measure**

- Number of undergraduate and graduate students and Post Doctoral Researchers trained

<b>Year</b>	<b>Actual</b>
2013	41

**Output #7**

**Output Measure**

- Formal Extension outreach programs

<b>Year</b>	<b>Actual</b>
2013	76

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

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

O. No.	OUTCOME NAME
1	Enhanced capacity of a sustainable global food sytem including new/improved plans, animals, technologies and management systems
2	More sustainable, diverse, and resilient food systems across scales
3	Improved national and global capacity to meet growing food demand
4	Number of Growers made aware of deep zone tillage (DZT) crop yield advantages

## **Outcome #1**

### **1. Outcome Measures**

Enhanced capacity of a sustainable global food system including new/improved plans, animals, technologies and management systems

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

- 1862 Extension
- 1862 Research

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

Change in Knowledge Outcome Measure

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

<b>Year</b>	<b>Actual</b>
2013	9162

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

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

Broader adoption of IPM practices enhanced responsible pest management and reduced management and production costs; minimized adverse environmental and economic effects from pests; resulted in improved ecosystem quality and plant performance; and improved plant health, quality, and yields. An increase in the number of producers that utilized IPM strategies resulted in additional properties and acreage being maintained with IPM practices. The use of IPM (including cultural controls, biological control agents, biological fungicides, physical and mechanical controls, the use of resistant cultivars, and behavioral modification) reduced plant losses due to plant pests: insects, mites, diseases, and weeds, including invasive species.

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

IPM Program team members conducted intensive on-site educational training for fruit and vegetable producers, garden center owners, greenhouse growers, nursery producers and retailers, and turf and landscape professionals. Growers and green industry professionals received information on the current status and recommendations for important plant pests and training via pest messages, email alerts, newsletters, articles in national trade journals, websites, social media, consultations via phone, site visits to their operations, workshops and conferences.

#### **Results**

- 99 growers and landscape professionals adopted IPM practices and acquired relevant information on and increased awareness of existing and emerging pests to improve production, crop quality, profitability, and landscape aesthetics.
- 1,305 pesticide applicators and occupational users were provided with training on the safe use and handling of pesticide products, including those who earned pesticide recertification credits.
- 4,193 non-certified people received pesticide safety training.
- 4,870 participants received IPM training and increased their knowledge and awareness of

managing plant pests (insects, mites, diseases, and weeds, including invasive species), resulting in improved decision-making regarding management options.

- The use of existing and new IPM technology on 99 farms and landscapes improved agricultural production and enhanced aesthetics by reducing plant pest problems.

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
202	Plant Genetic Resources
205	Plant Management Systems
206	Basic Plant Biology
216	Integrated Pest Management Systems
301	Reproductive Performance of Animals
303	Genetic Improvement of Animals
304	Animal Genome
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection
503	Quality Maintenance in Storing and Marketing Food Products
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
604	Marketing and Distribution Practices
605	Natural Resource and Environmental Economics
607	Consumer Economics
704	Nutrition and Hunger in the Population

#### **Outcome #2**

##### **1. Outcome Measures**

More sustainable, diverse, and resilient food systems across scales

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

- 1862 Extension
- 1862 Research

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

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2013	888

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

**Issue (Who cares and Why)**

Contemporary global and national food systems have been shaped to maximize efficiency and produce large volumes of inexpensive food, without much attention to demand-side issues of inequity and food justice, nor long-term questions about sustainability. A sustainable food system relies on economically viable and environmentally sound methods that sustain farmers, communities, and the environments in which they live. Efforts to strengthen our food system assume that by decreasing the availability of unhealthy foods, and helping healthier foods to enter that void, families will experience healthier outcomes.

**What has been done**

The impact of our combined programs will encourage more vibrant and sustainable local food and farm businesses, increase public awareness and support of local food systems, and improve access healthy, affordable food. Programs include: Scaling Up, BuyCTGrown/10% Campaign, FoodCorps CT, CT Food Justice Youth Corps VISTA Project, Community Food Security in CT, and networking. We deliver whole farm planning, field visits, workshops, twilight talks, conference presentations, and one-on-one assistance.

**Results**

- 25 new and beginning farmers have new knowledge and improved skills in sustainable farming practices and farm business planning
- 10 new and beginning farmers have applied recommendations to their farming practices, primarily in the area of soil management, pest management and infrastructure decision-making
- 245 new and beginning farmers and farmland owners have increased knowledge about farmland leasing
- 8 beginning farmers and 11 farmland owners have increased knowledge about farmland assessment and farmland leasing, resulting in 5 known leases totaling 211 acres.
- Over 600 farm and food businesses have reduced marketing risk through better access to new buyers through they buyctgrown.com website and the CT 10% Campaign

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
604	Marketing and Distribution Practices
605	Natural Resource and Environmental Economics
607	Consumer Economics
704	Nutrition and Hunger in the Population

### **Outcome #3**

#### **1. Outcome Measures**

Improved national and global capacity to meet growing food demand

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

- 1862 Extension
- 1862 Research

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

Change in Knowledge Outcome Measure

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

<b>Year</b>	<b>Actual</b>
2013	2

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

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

Worldwide, seaweed production eclipses the production of shellfish, finfish and other marine organisms, but U.S. production contributes only about 1%. Sugar kelp (*Saccharina latissima*) is a native, cold temperate brown seaweed. Its southernmost limit of distribution in the U.S. is Long Island Sound. While similar kelp species have been cultivated for decades in Asian countries, the U.S. depends on wild harvests for this resource.

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

We established a kelp culture to serve as a seed bank for aquaculturists. A permit for kelp culture was obtained and we also worked with the kelp farmer on developing new HACCP protocols for the processing and sale of fresh wet seaweed or sea vegetables, as well as blanched frozen product. Students were trained in how to process the seaweed under a HACCP program developed by their instructor, who was trained in HACCP principles our program. We also provided development funds to run tests to determine the safety of the kelp product as a food product, before a permit to harvest and sell the product was issued.

##### **Results**

Our research on kelp culture techniques, support for product testing, and extension assistance in the area of permitting, new HACCP protocols for sea vegetables, and safety training resulted in the first permitted kelp farm and harvest in Long Island Sound. In May 2013, The Thimble Islands Oyster Company harvested its first crop of kelp - the first sea vegetable crop to be harvested in Connecticut. More than 120 pounds was sold as fresh, wet product to five restaurants in New York City. They are integrating future shellfish and sea vegetable crops, with plans to grow 12 tons of kelp in 2014. A second species of seaweed is being considered, and a second company obtained permits to begin growing kelp in winter 2014. Sea vegetable culture provides a new water-dependent opportunity for shellfishermen and displaced lobstermen in Connecticut.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
202	Plant Genetic Resources
205	Plant Management Systems
206	Basic Plant Biology
216	Integrated Pest Management Systems
301	Reproductive Performance of Animals
303	Genetic Improvement of Animals
304	Animal Genome
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection
503	Quality Maintenance in Storing and Marketing Food Products
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
604	Marketing and Distribution Practices
605	Natural Resource and Environmental Economics
607	Consumer Economics
704	Nutrition and Hunger in the Population

#### Outcome #4

##### 1. Outcome Measures

Number of Growers made aware of deep zone tillage (DZT) crop yield advantages

##### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2013	7000

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

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

The excessive conventional tillage practices used on vegetable farms in the Northeast are expensive, inefficient, and result in problems with soil compaction, soil degradation and soil erosion. Most vegetable farmers plow, harrow several times, cultipack or bed the plantings, and may also cultivate multiple times. Additional tillage passes are associated with sidedressing fertilizer, incorporating crop residue and planting cover crops. Multiple tillage trips across the field are expensive and produce plow and disc-pans which often prevents root growth beyond 8-12 inches deep and leads to soil flooding and disease problems.

### **What has been done**

Providing DZT and soil health talks at the CT Vegetable & Small Fruit Growers Conference, hosting a DZT workshop/discussion group, arranging for a DZT session at the New England Vegetable & Fruit Conference, providing additional talks at conference and workshops throughout New England, writing an additional case study for a DZT farm, conducting pre-adoption Soil Health Tests for new DZT farms and post-adoption tests at farms that had used DZT for 5 years (early adopters), conducting a compaction comparison at DZT and conventionally-tilled farms, and conducting DZT research at the UConn Plant Science Research Farm.

### **Results**

14 New England vegetable (specialty crop) growers purchased DZT machines during the grant period, and 5 others also moved to reduced tillage or DZT. A total of 40 people from New England have switched to DZT. Most growers who made the switch to DZT are completely satisfied with all the benefits that the system provides, and many have stated that they will never return to conventional tillage. One grower purchased a second DZT machine to use while preparing raised beds and experienced better quality root crops (carrots and beets) and greens (lettuce, spinach and chard). Even on small farms with less than 20 acres, this technology can generate over \$417 per acre in labor and fuel savings, reduced maintenance costs, and increased yields. It pays for itself in just two years. Compacted plow pans were reduced from 100% to 60% and depth of plow pans was increased by 2 inches. There were also improved levels of potentially mineralized nitrogen in the soil.

## **4. Associated Knowledge Areas**

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

## **V(H). Planned Program (External Factors)**

### **External factors which affected outcomes**

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

### **Brief Explanation**

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

### **Evaluation Results**

For Sea Vegetable Aquaculture: After state agency review of the HACCP plans for the kelp products and the results of the tests conducted on the product, a permit was issued by the Connecticut Department of Agriculture, Bureau of Aquaculture, for the harvest and sale of the first crop of kelp for human consumption from Connecticut waters.

IPM programs were evaluated by the following methods: pre- and/or post program surveys, focus groups, key informant interviews, and testimonials.

Sustainable Foods uses one-on-one interviews as well as post-workshop evaluations with growers to evaluate progress in the Scaling Up program. We use post-event surveys for feedback on networking evnets and presentations.

There were two main goals and outcomes listed in the original grant proposal under Measurable Outcomes: 1) to "increase the number of vegetable farmers in New England using DZT" from 10 to 20 by the end of the grant, and 2) to "determine if there were compaction differences between DZT and those using conventional tillage." We expected "less than half the DZT farms to have plow pans" by the end of the study, while a benchmark study conducted in 2008 showed that 89% of the conventionally tilled vegetable farms in CT had a plow pan 11 inches deep. Over 40 New England vegetable growers will be using DZT next season, and data from early adopters showed that 100% had plow pans before using DZT and only 57-60% had plow pans after using DZT.

### **Key Items of Evaluation**

**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	3%		5%	
307	Animal Management Systems	2%		5%	
703	Nutrition Education and Behavior	8%		25%	
724	Healthy Lifestyle	17%		5%	
801	Individual and Family Resource Management	5%		10%	
802	Human Development and Family Well-Being	15%		30%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	5%		10%	
806	Youth Development	45%		10%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	20.0	0.0	0.2	0.0
Actual Paid Professional	8.2	0.0	0.1	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
574276	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
574276	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
833067	0	8000	0

## V(D). Planned Program (Activity)

### 1. Brief description of the Activity

The Family, Youth and Communities planned program is focused on creating safe, healthy, well-educated children and teens through 4-H Clubs, afterschool programs and interactive learning experiences. In addition, our efforts focus on incorporating Science, Technology, Engineering and Math (STEM) curriculum into youth development programs and activities. Our stakeholders also focus us on providing Connecticut citizens a link to UConn specialists and current research in priority areas identified. Our programs focus on providing knowledge that improves conditions for families and communities through leadership development, community planning, and technology training.

Activities in this planned program include:

- Websites
- Volunteer Training
- Fact Sheets, bulletins, newsletters
- Afterschool programs
- Consultations
- Conferences
- Workshops
- 4-H STEM day
- Basic and applied research

### 2. Brief description of the target audience

Youth, their families, school personnel, 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

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	64800	640500	58700	154000

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

Year: 2013  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2013	Extension	Research	Total
Actual	1	0	0

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

**Output Target**

**Output #1**

**Output Measure**

- Number of new or updated webpage(s).  
 Not reporting on this Output for this Annual Report

**Output #2**

**Output Measure**

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

**Output #3**

**Output Measure**

- Fact sheets, bulletins and newsletters written or edited

<b>Year</b>	<b>Actual</b>
2013	12

**Output #4**

**Output Measure**

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

Not reporting on this Output for this Annual Report

**Output #5**

**Output Measure**

- Face to Face group educations sessions, workshops

<b>Year</b>	<b>Actual</b>
2013	39

**Output #6**

**Output Measure**

- Expert services, consultations (in-person or email)

<b>Year</b>	<b>Actual</b>
2013	87

**Output #7**

**Output Measure**

- Formal Extension outreach programs

<b>Year</b>	<b>Actual</b>
2013	92

**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.
7	Students Gain Knowledge About Personal Finances

**Outcome #1**

**1. Outcome Measures**

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

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2013	650

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

**Issue (Who cares and Why)**

The success and future of our nation depends on the youth of today, and we will need even more citizen action in the 21st century. The UConn Extension 4-H program strongly encourages community service involvement from all program participants and provides opportunities on the local, state and national level. Youth learn to make good decisions, develop leadership and citizenship skills while improving self-confidence. Youth need support and positive experiences to grow to their fullest capacity and to become productive adult citizens. Research has shown that caring adults play an essential role in the healthy development of youths. This year, 4-H staff recruited, trained and supervised over 1100 adult and 330 teen leaders.

**What has been done**

Trained teen and adult committees conducted workshops on youth development, problem solving, communication, mentoring, healthy lifestyles, citizenship and resource development for both youth and adults. Established 4-H clubs, provided evaluation and recognition experiences for youth including Achievement Nights, year-end recognition programs, project evaluation, etc. Over 18,000 youth participated in 4-H development in Connecticut during this period, and fifty trained adult mentors provided supervised experiences for 160 youth in urban communities.

**Results**

650 youth reported involvement in civic engagement and community/volunteer service activities, over 1100 reported being involved in leadership activities. 85% of enrolled 4-H members were involved in service learning/community service activities - this represents an estimated 7500 hours of service. Activities include: food drives, providing a live nativity, educational outreach, collecting school items, filling backpacks for military children, gifts for senior centers, animal shelters and more. In mentoring programs throughout the state, about 160 youth have met with mentors totaling 5,500 sessions. Fifteen volunteer teens and adults planned and conducted State

4-H Citizenship Day, an annual citizenship education program for 4-H youth held at the state capitol. 75 youth and adults are educated at the event on how they can make a meaningful contribution to the political and public policy process in our state.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
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.

##### 2. Associated Institution Types

- 1862 Extension

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2013	17790

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

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

There is an increased 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 following programs were conducted: workshops (single and multi-day), summer "mini-camps", after school enrichment programming, specialty workshops, robotics training, technology workshops, videography workshops, teach youth to conduct interviews and record video histories of 4-H, trainings for adult partners and parents, one-day STEM conference, state-wide 4-H Youth Science day experiment.

###### **Results**

Our 4-H youth programs reached 17,790 youth across Connecticut. Results included: increase in STEM literacy and careers, tutoring and homework help provided by college student volunteers, role models for younger students, school garden increases plant science and nutrition literacy, youth gain business experience while learning and using math and technology, increase awareness of scientific fields with robotics and GPS, and ability to solve problems.

Sixty-two youth attended the one-day STEM conference. Over 50% of attendees believed science is useful for solving problems of everyday life. Most attendees felt comfortable using scientific procedures to solve a problem. Over 50% of attendees felt the conference provided them with ideas for a future career in STEM.

#### 4. Associated Knowledge Areas

<b>KA Code</b>	<b>Knowledge Area</b>
205	Plant Management Systems
307	Animal Management Systems
703	Nutrition Education and Behavior
724	Healthy Lifestyle
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
806	Youth Development

#### **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 Knowledge Outcome Measure

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

<b>Year</b>	<b>Actual</b>
2013	14543

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

**Issue (Who cares and Why)**

There is a perception that America faces a future of a shortage of scientists. Only eighteen percent of U.S. high school seniors are proficient in science and only five percent of current U.S. college graduates earn science, engineering, or technology degrees compared to 66 percent in Japan and 59 percent in China. Nationally, 4-H Science programs reach more than 5 million youth with hands-on learning with goals of ensuring global competitiveness and preparing the next generation of science, engineering, and technology leaders. 4-H youth learn about science careers that will contribute to their communities and develop them into tomorrow's global leaders.

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

The following programs were offered: single and multi-day workshops, summer mini-camps, after-school enrichment programs, teen meetings, specialty trainings, robotics training, videography and technology workshops, trainings for adult partners and parents, a STEM conference and a statewide 4-H Youth Science day experiment. Tutoring and homework help was provided by college student volunteers. Students demonstrated an increase in STEM literacy and awareness of STEM related careers. Youth also gain business experience while learning and using math and technology.

#### **Results**

A total of 877 youth were engaged in technology and engineering projects during the reporting period. Another 3,433 youth had projects in environmental education, while 10,233 youth had biological sciences projects. As a result of attending the 4-H STEM conference, over 32 youth believe science is useful for solving problems of everyday life, and that the conference provided them with ideas for a future career in STEM. A total of 67 attendees felt comfortable using scientific procedures to solve a problem. 4-H science programs help youth build their science and knowledge, while becoming engaged in their communities through experiential and inquiry-based activities. Youth experienced a sense of belonging and independence. 4-H partnered with faculty, staff and organizations throughout UConn on this program. Non-UConn partners include schools throughout the state, veterinarians, Mystic Marine Life Aquarium, the Connecticut Science museum, FIRST robotics, US Coast Guard academy, and others.

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
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

**Outcome #7**

**1. Outcome Measures**

Students Gain Knowledge About Personal Finances

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2013	274

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

**Issue (Who cares and Why)**

Due to the financial collapse and recent recession as well as resource limitations common in urban areas, challenges exist for individuals, families and communities in financial capacity, food access, and other areas that support sustainable communities. In CT, 14.9% of children are identified as poor with 6.8% living in extreme poverty. Sustainable Families integrates appropriate content and method to teach and/or enhance decision making skills and practices as they relate to life choices, gardening, finances, nutrition, technology, services and workforce skills.

**What has been done**

The FCD Sustainable Families program has reached its audience through: afterschool programs; single and multi-session workshops; presentations at state AAFCS Annual Conference. The 2012-13 Highlights and Resources for Embracing and Managing Economic Change Through Family and Consumer Sciences, as well as use of social media such as Twitter, articles, and resource materials and referrals to state or community organizations that can provide the support needed by military youth and families.

#### **Results**

- 89 middle school students learned about gardening, composting, technology, nutrition, workforce skills, entrepreneurship, leadership development. They also practiced gardening, composting, technology, nutrition, and workforce skills.
- Financial Programs - financial stability, money management skills; money saved
- Students participating in Welcome to the Real World, Connecticut Edition Simulation reported that they:
  - Strongly agreed (89) or agreed (32) that the program helped them learn about what their lives might be like as adults.
  - 79 learned more about careers
  - 52 learned about balancing a check register and opening a savings account
  - 115 learned about balancing income and expenses and
  - 107 learned more about life as an adult making financial decisions.
  - 31 people made a pledge to save regularly for a personal goal of their choosing.

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
703	Nutrition Education and Behavior
724	Healthy Lifestyle
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
806	Youth Development

#### **V(H). Planned Program (External Factors)**

##### **External factors which affected outcomes**

- Economy
- Appropriations changes
- Competing 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. Interviews, exit surveys, observations and common measures were

also used in evaluation. 4-H also utilizes self assessment through record keeping as an evaluation tool.

**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 processes 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

Sustainable energy program and research projects are now reported in our Climate 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: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	0.5	0.0	0.6	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 web pages

**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**

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	0	0	0	0

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

**Patent Applications Submitted**

Year: 2013

Actual: {No Data Entered}

**Patents listed**

{No Data Entered}

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2013	Extension	Research	Total
<b>Actual</b>	1	3	0

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

**Output Target**

**Output #1**

**Output Measure**

- Number of new and updated websites

<b>Year</b>	<b>Actual</b>
2013	0

**Output #2**

**Output Measure**

- Fact sheets, bulletins and newsletters written or edited.

<b>Year</b>	<b>Actual</b>
2013	0

**Output #3**

**Output Measure**

- Training conferences or sessions hosted or conducted.

<b>Year</b>	<b>Actual</b>
2013	0

**Output #4**

**Output Measure**

- Number of graduate and undergraduate students trained

<b>Year</b>	<b>Actual</b>
2013	0

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

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

O. No.	OUTCOME NAME
1	Increased knowledge and understanding of the biofuels supply chain
2	Economic Development: An enhanced or improved economy as a result of bioenergy development

**Outcome #1**

**1. Outcome Measures**

Increased knowledge and understanding of the biofuels supply chain

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2013	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**

Economic Development: An enhanced or improved economy as a result of bioenergy development

**2. Associated Institution Types**

- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2013	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}