

# 2007 University of Connecticut - Storrs Combined Research and Extension Annual Report

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## I. Report Overview

### 1. Executive Summary

The 2007 program year was active and successful in the areas of merit review, stakeholder input and program development and implementation.

#### Merit Review

The merit review process for Connecticut continued 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. During recent years, an external review process has been completed for all departments, including the Department of Extension. Results from this process were used for the development of the 2005-2010 college-wide five-year plan of work, as well as development of this Plan of Work. The five year plan of work components include: planning by all faculty and staff on three levels, a university wide review of the plan, a review by the peer institutions, and a review by the stakeholders. Peer review for Hatch, McIntire-Stennis, and Animal Health projects is designed to ensure that the highest quality research projects consistent with identified priorities are eventually approved.

#### Stakeholder Input

The stakeholder input process followed upon efforts initiated in recent years with the process including both research and Extension. The annual key event is the Leaders' Forum. Past events have focused on leaders of non-private organizations with whom Extension and research works. The Extension Bulletin, published each month, updates Extension faculty on programs, grants and conferences and includes recent trend data and needs identified by clientele during the course of conversations over the past month. A new stakeholder focus is women in agriculture and an effort to meet their needs.

Traditional stakeholders such as vegetable producers and town officials provided input through end of session evaluations of programs with suggestions for improvements. Input from stakeholders is critical to our future. Input is used to redesign programs, to initiate new programs, as the basis for grant proposals, and as a means for central administration to restructure programs. Stakeholder input has also influenced the outreach section of the new University Academic Plan. The College five-year plan is based on needs identified from stakeholders and built into both research and Extension programs and was reviewed by the provost office and the dean's council. The faculty and staff workshop discussions provide input to administration on college needs.

Stakeholders identify the critical issues for their town, business, or family. Topics that have been identified include the need to understand molecular genetics on the high school level; the need to develop more opportunities for K-12 educators; the need to focus programming efforts for women producers; the need to program for limited resource families related to nutrition and financial management; and the need to identify cooperative efforts with the Connecticut Experiment Station.

#### Program Implementation

Activities in each of the 10 program areas resulted in a wide variety of outcomes and impacts from our research and Extension efforts. Sample examples include:

For animal protection, an education program on biosecurity, disease and surveillance led to egg-laying commercial flocks of 3.5 millions being protected from the spread of Avian Influenza, Infectious Bursal Viral Disease, Coryza, Colibacillosis, and Pasteurellosis. No outbreaks of Salmonella food-borne outbreaks related to eggs and egg products from the Connecticut commercial egg farms occurred. In a collaborative effort with a veterinarian (pathobiologist) at the University of Connecticut, diagnostic assays are being developed and used experimentally through the Connecticut Agricultural Experiment Station as adjunct procedures to verify West Nile virus infections in horses in the state.

For animal production, financial evaluation of alternative agricultural enterprises found that surveyed farms stated that new information was learned in financial management of their farms in the areas of cost of production and marketing of cattle, grants available for farms, business planning, reduction of energy costs using solar and wind, and costs of solar and wind power on the farm.

For economics, marketing and policy, a bill to establish a Connecticut Milk Commission and a separate bill to levy a fee from retailers on retail milk prices were introduced in the Connecticut legislature. The Commission and Fee bills advanced through committee in both houses of the legislature before the legislative and governor leadership decided not to proceed with a formal vote in either house of the legislature.

For family, youth and communities, the Connecticut 4-H camp program was successful in providing campers the opportunity to take on leadership roles, set goals, make decisions, and learn how to cooperate with others to accomplish a task. 97.7% of camper parents reported that their child's camp experience was excellent or good. 58.3% felt that camp had "much impact" on making new friends. 46.3% felt that camp

has “much impact” on being more willing to try new things. 43.5% felt that camp has “much impact” on independence. 41.3% felt that camp has “much impact” on their awareness and appreciation of the natural environment. 44.5% felt that camp has “much impact” on increasing their self confidence.

For forestry and wildlife, participants at an annual Tree Warden School and Certification Program rated the program 4.0 out of 4.0 in terms of knowledge gained and 3.5 in the applicability of the information to their Tree Warden duties.

For human nutrition and health, 85% of parents participating in child nutrition workshops were able to identify healthier snack alternatives for their kids. 90% were able to identify dietary and sedentary lifestyle risk factors for the development of overweight /obesity in their children. 100% of children with Phenylketonuria (PKU) attending the low protein cooking school tried recipes at the event and subsequently increased their diet variety at home. 80% of incarcerated women attending food budgeting workshops were able to better utilize food stamp dollars when purchasing food after release from prison.

For land use, survey results of participants at Green Valley Institute workshops indicated that 93% can better assess natural resources, 86% have shared land protection strategies with others, 50% have used digital maps, and 50% have recommended conservation subdivisions as a result of attending the workshops.

For plant production, the UConn Plant Database has become very popular as over 3,000 persons make over 100,000 web page views daily. Landscape design firms are using the pictures and text as part of their design presentations; commercial nurseries and garden centers are linking to the pages; and homeowners send many questions in about plants after they have used the website. The United States government has even used some images for their publication.

For plant protection, the New England Floriculture Greenhouse Update – an early alert system for growers - is reaching the growers in a timely fashion and the growers value the information. A survey of 77 of the 350 participating farmers showed that 97% improved their understanding of a pest problem due to the website, 81% stated that it aided in their choice of the most effective pesticide, 70% stated that it aided in the timing of a pesticide application, 85% stated that it alerted them to a pest problem that they might have missed, 90% stated that it assisted them in diagnosing a pest problem, and 66% stated that the website assisted them in non-chemical management of pests. In collaboration with scientists at the University of Connecticut, (including Extension), the University of Massachusetts, and the University of Rhode Island, a Northeast IPM grant was awarded for 2008 to the Connecticut Agricultural Experiment Station to reduce pesticide use in vineyards.

For water and weather, the nutrient management program (NMP) program taught farmers to manage manure environmentally as well as agronomically. On-farm research of 18 farms determined that complying with a nutrient management plan increases farmer’s manure hauling cost by more than double.

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

Year:2007	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	67.0	0.0	58.0	0.0
<b>Actual</b>	129.1	0.0	56.8	0.0

**II. Merit Review Process**

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

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

**2. Brief Explanation**

The merit review process for Connecticut is 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. During recent years, an external review process has been completed for all departments, including the Department of Extension. Results from this process were used for the development of the 2005-2010 college-wide five-year plan of work, as well as development of this Plan of Work. The University is completing a new Academic Plan.

The five year plan of work components include: planning by all faculty and staff on three levels, a university wide review of the plan, a review by the peer institutions, and a review by the stakeholders. Peer Review for Hatch, McIntire-Stennis, and Animal Health Projects is designed to ensure that the highest quality research projects consistent with identified priorities are eventually approved. In brief, the review involves obtaining the objective opinion of other scientists, and/or administrators usually within the University of Connecticut, and users of research results when appropriate, to research proposals or completed projects.

The general goal of peer review is to subject every project to a rigorous and systematic evaluation for both its appropriateness and quality. The process is conducted within the framework of predetermined criteria whose objective is 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 to the topic investigated, (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. It is expected that the peer review process will afford the principal investigator(s) the benefit of the best counsel the system can provide.

The appropriate department heads serve as the focal point for the peer review process and suggests 2-3 faculty reviewers, usually within the University, as qualified reviewers for a given project. The director of the Storrs AES (or his associate director) is the ultimate authority to finally approve projects once they have been critically reviewed and been endorsed by the department head.

### **III. Stakeholder Input**

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

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

#### **Brief Explanation**

The stakeholder input process follows upon efforts initiated in recent years. The college-wide stakeholder input process includes both research and Extension. The annual key event is the Leaders' Forum. Past events have focused on leaders of non-private organizations with whom Extension and research works. Other efforts conducted within, as well as outside of the College, include the State of Connecticut Voices of Children report, needs and trends as identified within the Extension Bulletin newsletter, the Connecticut Food Policy Council's annual report on food insecurity in the state including the need for meat processing facilities, program evaluations, and program surveys as for HACCAP training for small and very small processors.

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

##### **1. Method to identify individuals and groups**

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

#### **Brief Explanation**

As a result of the 2003 Department of Extension program review conducted by CSREES, action has occurred related to the identifying of needs to increase impact data. As a result, an increase in formal program planning for expected outcomes includes planning for stakeholder input. Extension volunteers comprise the state Extension partners group that meets at least twice a year. Based on the MOU with Extension partner groups, they are expected to conduct a general public needs assessment for statewide programming. The Extension Bulletin, published each month updates Extension faculty on programs, grants and conferences and includes recent trend data and needs identified by clientele during the course of conversations over the past month. A new stakeholder focus is women in agriculture and an effort to meet their needs. A needs assessment is underway for the soil lab and the home and garden center as well as for the 4-H teen program.

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

**1. Methods for collecting Stakeholder Input**

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

**Brief Explanation**

Traditional stakeholders such as vegetable producers and town officials provide input through end of session evaluations of programs with suggestions for improvements. Changes in publication guidelines for newspapers limits the opportunity to announce meetings open to all. The two exceptions are the 4-H program and the home horticulture efforts. Radio spots are used in both eastern and western Connecticut to reach out to the public. The CANR Journal, a quarterly newspaper, highlights research and Extension efforts and is available to the public at no cost. The Sea Grant program collected input from aquaculture producers and town officials that lead to changes in the permitting process for the industry. Meeting with state boards such as the Food Policy Council and Farm Services Agency provide non-traditional stakeholder input.

**3. A statement of how the input was considered**

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

**Brief Explanation**

Input from stakeholders is critical to our future. Input is used to redesign programs, to initiate new programs, as the basis for grant proposals, and as a means for central administration to restructure programs. Stakeholder input has also influenced the outreach section of the new University Academic Plan. The College five-year plan is based on needs identified from stakeholders and built into both research and Extension programs and was reviewed by the provost office and the deans council. The faculty and staff workshop discussions provide input to administration on college needs.

**Brief Explanation of what you learned from your Stakeholders**

Stakeholders identify the critical issues for their town, business, or family. Topics that have been identified include the need to understand molecular genetics on the high school level; the need to develop more opportunities for K-12 educators; the need to focus programming efforts for women producers; the need to program for limited resource families related to nutrition and financial management; and the need to identify cooperative efforts with the Connecticut Experiment Station.

**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>
2024903	0	1697506	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>	1540018	0	648316	0
<b>Actual Matching</b>	1540018	0	648316	0
<b>Actual All Other</b>	11705972	0	6480713	0
<b>Total Actual Expended</b>	14786008	0	7777345	0

<b>3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous years</b>				
<b>Carryover</b>	30150	0	81151	0

**V. Planned Program Table of Content**

<b>S. NO.</b>	<b>PROGRAM NAME</b>
1	Animal Production
2	Animal Protection
3	Economics Marketing and Policy
4	Family Youth and Communities
5	Forestry and Wildlife
6	Human Nutrition and Health
7	Land Use
8	Plant Production
9	Plant Protection
10	Water and Weather

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

**1. Name of the Planned Program**

Animal Protection

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

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
311	Animal Diseases	100%		100%	
	<b>Total</b>	100%		100%	

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

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

Year: 2007	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	2.0	0.0	9.0	0.0
<b>Actual</b>	12.0	0.0	12.1	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
5531	0	49927	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
5531	0	49927	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1585298	0	1270396	0

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

**1. Brief description of the Activity**

Research will be focused on molecular level work to identify disease mechanisms and prevention approaches, often in collaboration with other labs and institutions. Extension will be focused on workshops, conferences, individual consultations.

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

Scientists, regulatory and health agencies, land and water based producers and managers, consumers.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

**Target for the number of persons (contacts) reached through direct and indirect contact methods**

	<b>Direct Contacts Adults</b>	<b>Indirect Contacts Adults</b>	<b>Direct Contacts Youth</b>	<b>Indirect Contacts Youth</b>
<b>Year</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>Plan</b>	200	1200	0	0
2007	1313	1800	0	0

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

**Patent Applications Submitted**

**Year Target**

**Plan: 0**

2007 : 2

**Patents listed**

Docket No. 0162.06. "A Live Attenuated Antigenically Marked Classical Swine Fever Vaccine". Inventors: Guillermo Risatti from University of Connecticut, and Manuel V. Borca from Plum Island Animal Disease Center, ARS, USDA.

Docket No. 0088.06. "A Novel Virulence Determinant within the E2 Structural Glycoprotein of Classical Swine Fever Virus". Inventors: Guillermo Risatti from University of Connecticut, and Manuel V. Borca from Plum Island Animal Disease Center, ARS, USDA.

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

**Number of Peer Reviewed Publications**

	<b>Extension</b>	<b>Research</b>	<b>Total</b>
<b>Plan</b>			
2007	0	21	21

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

**Output Target**

**Output Measure**

- Peer reviewed publications

Year	Target	Actual
2007	8	21

**Output Measure**

- Workshops and conferences

Year	Target	Actual
2007	1	1

**Output Measure**

- Fact sheets, bulletins and newsletters

Year	Target	Actual
2007	5	4

**Output Measure**

- Websites developed

Year	Target	Actual
2007	0	0

**Output Measure**

- Animal cases examined

Year	Target	Actual
2007	1200	1293

**Output Measure**

- Disease surveillance programs implemented

Year	Target	Actual
2007	1	1

**Output Measure**

- Books and monographs

Year	Target	Actual
2007	0	0

**Output Measure**

- Conference abstracts

Year	Target	Actual
2007	1	2

**Output Measure**

- Presentations and short courses

Year	Target	Actual
2007	10	11

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

**1. Outcome Measures**

Development of new recombinant vaccines

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	0	1

**2c. Qualitative Outcome or Impact Statement****Issue (Who cares and Why)**

Mycoplasma gallisepticum is an avian pathogen which causes chronic respiratory disease in chickens.

**What has been done**

Studied the molecular mechanisms of pathogenesis of mycoplasmas. The primary mycoplasmas studied are Mycoplasma gallisepticum, an avian pathogen which causes chronic respiratory disease in chickens by investigating the means of attachment; cytoadherence molecules and host cell receptors, as well as control mechanisms of variably expressed cell surface proteins involved in cytoadherence and/or evasion of the host immune response. In 2003 genome sequencing and annotation of the low passage virulent strain R of M. gallisepticum was completed. Current research utilizes the genomic data to study gene expression and functional genomics with completion of the avirulent M. gallisepticum Rhigh genome as well as the vaccine strain, F strain genome sequencing and annotations.

**Results**

The comparative genomic analysis of these strains will shed light on the mechanism(s) of pathogenesis employed by this important agricultural pathogen.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
311	Animal Diseases

**4. Associated Institution Types**

- 1862 Research

**1. Outcome Measures**

New diagnostic tests and approaches developed

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	1	1

**2c. Qualitative Outcome or Impact Statement****Issue (Who cares and Why)**

Avian influenza A type viruses and subtypes are potentially important in infecting the humans. Therefore it is a very useful test for differentiating the infections in poultry as well in humans.

**What has been done**

Successfully developed a multiplex PCR for avian influenza viruses. This multiplex PCR can detect avian influenza A type viruses, and simultaneously differentiate it from H5, H7, and H9 subtypes. These subtypes are potentially important in infecting humans. Therefore it is a very useful test for differentiating the infections in poultry as well in humans. This multiplex PCR test being tested and evaluated on the North American avian influenza isolates.

Established an international cooperative research program with the Guangxi Veterinary Research Institute, Nanning, China. An exchange of laboratory researchers from both institutes are engaged in various research projects in Pathobiology as well as in Guangxi Veterinary Research Institute.

**Results**

This multiplex PCR can detect and simultaneously differentiate avian influenza type A (all type A influenza viruses) and also differentiate very important subtypes implicated in poultry outbreaks as well as in human infections. This test will be rapid and very cost effective by using one test to diagnose several avian subtypes avian influenza viruses.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
311	Animal Diseases

**4. Associated Institution Types**

- 1862 Research

**1. Outcome Measures**

Regulatory agency actions adopted or implemented

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	1	0

**2c. Qualitative Outcome or Impact Statement****Issue (Who cares and Why)**

PCBs are ubiquitous environmental contaminants. While their effects have been relatively well documented in laboratory animals, their effects in humans are assumed to be somewhat similar, with a few accidental exposures (to PCBs and other contaminating chemicals) resulting in compatible health effects. While the mechanisms and pathways involved in the effects of dioxin and dioxin-like PCBs are relatively well understood, the effects of the non dioxin-like PCBs (which are the most abundant in the environment) are relatively undocumented and have until very recently been for the most part ignored.

**What has been done**

Research was conducted aimed at understanding the effects of those under-studied PCBs, and at comparing the immunotoxicity of PCBs between species. A system was developed to study cells from different species of marine mammals as well as humans, for which in vivo exposure would raise significant ethical constraints. The work quantified the immunotoxicity of different classes of PCBs in different species.

**Results**

Research results allow for accurate quantification of the congener-specific toxicity of dioxin-like and non dioxin-like PCBs in humans, mice and marine mammals, in addition to demonstrating for the first time the applicability of those results in species-specific risk assessment that would allow to model and predict the risk of exposure to PCBs. This may lead to appropriate agency actions and protocol used in this area.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
311	Animal Diseases

**4. Associated Institution Types**

- 1862 Research

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

External factors which affected outcomes

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

#### **Brief Explanation**

### **V(I). Planned Program (Evaluation Studies and Data Collection)**

#### **1. Evaluation Studies Planned**

- Retrospective (post program)
- Case Study

#### **Evaluation Results**

An education program on biosecurity, disease and surveillance have led to avian influenza, Salmonella and other diseases free poultry flocks in Connecticut. Visited poultry farms to discuss health and poultry management with poultry producers to prevent further losses due to diseases. Provided information on current poultry vaccination and medical treatment programs for various viral and bacterial infections. Total egg-laying commercial flocks of 3.5 millions were protected from the spread of Avian influenza, Infectious Bursal Viral Disease, Coryza, Colibacillosis and Pasteurellosis. No outbreaks of Salmonella food-borne outbreaks related to eggs and egg products from the Connecticut commercial egg farms.

#### **Key Items of Evaluation**

An education program on biosecurity, disease and surveillance have led to egg-laying commercial flocks of 3.5 millions being protected from the spread of Avian influenza, Infectious Bursal Viral Disease, Coryza, Colibacillosis and Pasteurellosis. No outbreaks of Salmonella food-borne outbreaks related to eggs and egg products from the Connecticut commercial egg farms.

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

**1. Name of the Planned Program**

Forestry and Wildlife

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

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
123	Management and Sustainability of Forest Resources	40%		50%	
124	Urban Forestry	20%		10%	
135	Aquatic and Terrestrial Wildlife	40%		40%	
<b>Total</b>		100%		100%	

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

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

Year: 2007	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	3.0	0.0	2.0	0.0
<b>Actual</b>	4.0	0.0	3.3	0.0

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

Extension		Research	
<b>Smith-Lever 3b &amp; 3c</b> 97229	<b>1890 Extension</b> 0	<b>Hatch</b> 11788	<b>Evans-Allen</b> 0
<b>1862 Matching</b> 97229	<b>1890 Matching</b> 0	<b>1862 Matching</b> 11788	<b>1890 Matching</b> 0
<b>1862 All Other</b> 982547	<b>1890 All Other</b> 0	<b>1862 All Other</b> 329932	<b>1890 All Other</b> 0

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

**1. Brief description of the Activity**

A combination research and Extension program will address key issues related to forestry and wildlife considerations in Connecticut. Particular emphasis will be on training cadres of volunteers who will become engaged in forest stewardship practices at the municipal and private landowner levels. Also, research will be designed to better understand the American Woodcock, Ruffed Grouse, and the State-endangered Burbot with an eye toward outreach efforts to protect these important species.

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

A mixture of public policy personnel (federal and state agencies as well as town conservation, planning and management officials), interested and involved citizens, and private landowners.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

**Target for the number of persons (contacts) reached through direct and indirect contact methods**

	<b>Direct Contacts Adults</b>	<b>Indirect Contacts Adults</b>	<b>Direct Contacts Youth</b>	<b>Indirect Contacts Youth</b>
<b>Year</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>Plan</b>	2500	5500	0	0
2007	3750	6000	0	0

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

**Patent Applications Submitted**

**Year Target**

**Plan: 0**

**2007 : 0**

**Patents listed**

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

**Number of Peer Reviewed Publications**

	<b>Extension</b>	<b>Research</b>	<b>Total</b>
<b>Plan</b>			
2007	2	8	10

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

**Output Target**

**Output Measure**

- Peer reviewed publications

Year	Target	Actual
2007	2	10

**Output Measure**

- Fact sheets, bulletins and newsletters

Year	Target	Actual
2007	5	99

**Output Measure**

- Short courses

Year	Target	Actual
2007	2	6

**Output Measure**

- Websites developed

Year	Target	Actual
2007	1	1

**Output Measure**

- Books and monographs

Year	Target	Actual
2007	0	1

**Output Measure**

- Conference abstracts

Year	Target	Actual
2007	1	0

**Output Measure**

- Workshops and conferences hosted

Year	Target	Actual
2007	2	4

**Output Measure**

- Presentations and short courses

Year	Target	Actual
2007	40	54

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

**1. Outcome Measures**

Increased (%) GIS database usage by towns

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	10	10

**2c. Qualitative Outcome or Impact Statement**

Issue (Who cares and Why)

Conservation commissions in the Quinebaug-Shetucket National Heritage Corridor (QSHC) known as the Last Green Valley, are responsible for maintaining an inventory of all natural resources and open spaces in their communities and providing advice for the protection of resources to the regulatory land use boards and commissions in each town. Prioritizing resources for the purpose of land protection can be streamlined using Geographic Information Systems (GIS) but conservation commissions in small towns often do not have staff or members with GIS expertise necessary to conduct prioritization analysis.

**What has been done**

To assist conservation commissions with their land and resource prioritization planning, the Green Valley Institute developed a Co-occurring Resources Inventory analysis. The analysis model can be adapted to meet the needs and reflect the priorities of each individual town. Co-occurring Resources analysis maps can be used to identify those areas in a community with multiple natural resources which may require protection. They may also provide information about the best tools for protection such as a Riparian Overlay Zone used to buffer resources along a pristine river corridor.

GVI has conducted Co-occurring Resources Analysis in eight QSHC Towns with conservation commissions or open space committees.

**Results**

Each of the participating towns has adopted the Co-occurring Resources Inventory as an additional planning tool in the town Natural Resource Inventory. The Towns of Scotland and Thompson have developed comprehensive Open Space plans for the protection of significant resources in their communities. Brooklyn and Eastford have identified and prioritized key open space parcels for acquisition and protection including a 127 acre parcel on the Quinebaug River identified as "highest priority wildlife and riparian corridor land." The Town of Chaplin recently accepted its first open space set-aside through the use of Open Space Subdivision regulations and, utilizing the Co-occurring Resources Analysis, the Conservation Commission was able to assist the developer and the Planning and Zoning Commission with recommendations for the highest conservation value, resulting in protection of 10 acres and 1000 feet of frontage on the Natchaug River. Four communities have completed state-of-the-art, digital town-wide resource inventories and utilized those inventories to enhance community planning and land conservation efforts.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased (%) qualified tree wardens appointed

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	5	5

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

For nearly a century Connecticut state law has mandated that each city and town appoint a Tree Warden and that this public official is then responsible for all municipal trees. However, Connecticut state law does not specify what skills and knowledge Tree Wardens must possess. To protect both the public and the urban forest resource, Tree Wardens need knowledge of tree biology, tree care, hazard tree assessment, public participation, tree law, and meeting management.

**What has been done**

An annual Tree Warden School and Certification Program was created to provide Tree Wardens with a voluntary educational opportunity to acquire this knowledge. Tree Wardens were educated in tree biology, tree care, hazard tree assessment, public participation, tree law, and meeting management during six half-day sessions, one day per week in the fall. An annual event, the Tree Warden School each year provides up to 30 Tree Wardens, Deputy Tree Wardens, chief elected officials, tree board members and others with the knowledge and skills required to perform and/or understand Tree Warden duties and responsibilities.

**Results**

In nine years, 237 Tree Wardens, Deputy Tree Wardens and others have gained new knowledge concerning Tree Warden duties and responsibilities through the Tree Warden School. This means that Certified Tree Wardens are now better able to make informed and responsible decisions about the care and preservation of public trees while protecting the public from hazardous ones. Chief elected officials have begun appointing more qualified people to the Tree Warden position. These people often are foresters or arborists who then attend the Tree Warden School to fill-in gaps in their expertise and obtain certification.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
124	Urban Forestry

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Municipal Shade Tree Ordinances Developed

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	5	5

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Connecticut is the fifth most densely populated state yet retains fifty-nine percent forest coverage. This extreme population density causes factors that not only shorten the lives of municipal trees (along streets, in parks, around schools, for example) but also creates hazardous ones. In spite of being a wealthy state, Connecticut municipalities typically do not adequately fund municipal forestry/tree care operations thereby undermining the health of public and jeopardizing public safety. Volunteers who receive quality and timely community forestry education and training are able to augment community forestry efforts.

**What has been done**

The Meskwaka Tree Project was created to provide urban and community forestry educational opportunities and programmatic support. Volunteers are educated in urban and community forestry including tree biology, tree care, fundraising, media relations, community affairs, meeting management, tree law, and marketing. An annual event is designed to provide municipal volunteers with basic educational background and contacts to either initiate new or support existing urban and community forestry programs, either in their municipality or on a state-wide basis.

**Results**

Since 1992 over 287 urban and community forestry volunteers have been trained. Participants have come from 77 Connecticut communities and three states. Since 1992, volunteers have been the initiator or participant in the following example outcomes: 43 communities have written and passed shade tree ordinances; 30 shade tree commissions have been established; about 6,333 new public trees have been planted; twenty-two cities and towns have conducted volunteer organized shade tree inventories; three nonprofit community forestry organizations have been founded; and seven municipal memorial tree programs have been created.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
124	Urban Forestry
123	Management and Sustainability of Forest Resources

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Stewardship Plans Developed

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	10	10

**2c. Qualitative Outcome or Impact Statement****Issue (Who cares and Why)**

Connecticut's 1.8 million acres of forest provide raw material for over 350 forest products processing and manufacturing firms, which employ 3,600 citizens and contribute over \$450 million annually to the state's economy. They also clean the air and water, provide habitat for wildlife, and provide recreational opportunities for nearly a million citizens each year. Almost 85% of Connecticut's forest is privately owned. Research shows that Connecticut is losing some 6,000 acres of commercially harvestable forest annually to development and fragmentation, and that the average forested parcel size has declined 34% over the past 20 years.

**What has been done**

Educational program target Connecticut's 115,000 private forest landowners with the goal to enhance their knowledge about good forest stewardship, and to increase the forested acreage under long-term stewardship plans by moving as many owners as possible through the stages of stewardship planning practice adoption. The underlying educational model draws on diffusion of innovations principles by seeking out, training and supporting opinion leader volunteers who lead by example in their communities, and who assist with local educational efforts. 1,744 people attended educational tours of the managed forests belonging to program volunteers. 54 formal indoor forest and wildlife stewardship workshops and/or presentations arranged and/or presented by program volunteers to 2,065 attendees. Organized and/or taught youth education programs to 312 young people. Also, there were 99 published newspaper, newsletter and periodical articles.

**Results**

5,104 acres of new or updated stewardship plans; habitat improvement, timber stand improvements implemented on 2,001 acres; knowledge and information gained by at least 936 additional forest landowners, who began new stewardship programs or enhanced existing stewardship programs on at least 2,727 acres.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased understanding of fish and wildlife population patterns and/or behavior (#)

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	2	1

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

There is a need to characterize methods to implement and support cost-effective conservation of fish species. The Connecticut Department of Environmental Protection developed a grant program to support research intended to gather data necessary to effectively manage such to look at less common habitat types and unusual species that are of conservation importance. Lota lota, commonly known as the burbot is a state-endangered fish species and is the only freshwater fish in the cod family.

**What has been done**

A two-year study of the state-endangered was designed to document the burbot life span, feeding habits, and physical characteristics; the second objective was to detail their preferred type of habitat.

**Results**

Results from the study will be used by the Connecticut Department of Environmental Protection as they will have a working knowledge of sensitive habitat areas as management approaches are implemented.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife

**4. Associated Institution Types**

- 1862 Research

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

**External factors which affected outcomes**

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

**Brief Explanation**

**V(I). Planned Program (Evaluation Studies and Data Collection)**

**1. Evaluation Studies Planned**

- After Only (post program)
- Retrospective (post program)

**Evaluation Results**

An annual Tree Warden School and Certification Program was created to provide Tree Wardens with voluntary educational opportunities to acquire knowledge. On a scale of 0 (poor) to 4 (excellent), Tree Warden School participants rated the school program 4.0 in terms of knowledge gained, with 3.55 in the applicability of the information to their Tree Warden duties.

**Key Items of Evaluation**

Participants at an annual Tree Warden School and Certification Program rated the program 4.0 out of 4.0 in terms of knowledge gained and 3.5 in the applicability of the information to their Tree Warden duties.

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

**1. Name of the Planned Program**

Animal Production

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

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals	10%		10%	
302	Nutrient Utilization in Animals	20%		20%	
304	Animal Genome	0%		40%	
305	Animal Physiological Processes	10%		10%	
306	Environmental Stress in Animals	15%		5%	
307	Animal Management Systems	45%		15%	
	<b>Total</b>	<b>100%</b>		<b>100%</b>	

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

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

Year: 2007	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	2.0	0.0	5.0	0.0
<b>Actual</b>	3.5	0.0	4.7	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
13741	0	111824	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
13741	0	111824	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
610398	0	1298231	0

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

**1. Brief description of the Activity**

Research activities will include a mix of focused research projects primarily in the areas of biotechnology and nutrition. Extension activities will be focused in the areas of equine, dairy and shellfish, with emphasis on production through aquaculture, nutrition and management. Peer reviewed publications will emanate from both research and Extension activities, along with presentations, training of graduate students, conferences, meetings, fact sheets and panel service.

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

Policy makers, industry, producers, scientific community, agencies, regulators, youth.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

**Target for the number of persons (contacts) reached through direct and indirect contact methods**

	<b>Direct Contacts Adults</b>	<b>Indirect Contacts Adults</b>	<b>Direct Contacts Youth</b>	<b>Indirect Contacts Youth</b>
<b>Year</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>Plan</b>	450	1200	100	200
2007	884	1350	177	240

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

**Patent Applications Submitted**

<b>Year</b>	<b>Target</b>
<b>Plan:</b>	1
2007 :	2

**Patents listed**

US patent # 6,982,172 issued January 3, 2006, "Oocyte vitrification" and corresponding China patent # ZL01806056.0 issued February 28, 2007.

US Patent #7,071,372 issued July 4, 2006, "Method for cloning animals with targeted genetic alterations by transfer of long-term cultured male or female somatic cell nuclei, comprising artificially-induced genetic alterations, to enucleated recipient cells" and corresponding China patent # ZL01806055.2 issued January 3, 2007.

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

**Number of Peer Reviewed Publications**

	<b>Extension</b>	<b>Research</b>	<b>Total</b>
<b>Plan</b>			
2007	9	78	87

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

**Output Target**

**Output Measure**

- Peer reviewed publications

Year	Target	Actual
2007	5	87

**Output Measure**

- Books and monographs

Year	Target	Actual
2007	1	3

**Output Measure**

- Conference abstracts

Year	Target	Actual
2007	1	4

**Output Measure**

- Workshops and conferences hosted

Year	Target	Actual
2007	3	6

**Output Measure**

- Fact sheets and bulletins

Year	Target	Actual
2007	5	12

**Output Measure**

- Websites developed

Year	Target	Actual
2007	1	1

**Output Measure**

- Presentations and short courses offered

Year	Target	Actual
2007	20	51

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

**1. Outcome Measures**

Identify specific characteristics of genomes

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	1	1

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Tissue regeneration is an important issue for animal production.

**What has been done**

Studied nuclear reprogramming, the returning of a differentiated somatic cell to a totipotent stage, so that these cells can be targetedly differentiated for tissue regeneration.

**Results**

The UConn study on the safety of food products from cloned animals has been used by the FDA for their "Cloning Risk Assessment." [http://www.fda.gov/cvm/Documents/Cloning\\_Risk\\_Assessment.pdf](http://www.fda.gov/cvm/Documents/Cloning_Risk_Assessment.pdf). Another impact is that invited talks to international conferences have increased by 800% from last year (one last reporting period and eight this period).

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
304	Animal Genome

**4. Associated Institution Types**

- 1862 Research

**1. Outcome Measures**

Determine fundamental understandings of animal growth

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	2	1

**2c. Qualitative Outcome or Impact Statement****Issue (Who cares and Why)**

This work is focused on identifying changes in several components of the somatotropic axis, including growth hormone (GH), insulin-like growth factor (IGF) I, and the IGF binding proteins (BP), in growing beef cattle from birth to one year of age.

**What has been done**

Identify changes in several components of the somatotropic axis, including growth hormone (GH), insulin-like growth factor (IGF) I, and the IGF binding proteins (BP), in growing beef cattle from birth to one year of age to more clearly define changes in the somatotropic axis with age to utilize exogenous somatotropin more efficiently. Have shown that exogenous somatotropin can increase growth rate 7 to 15% in growing cattle depending on the age, body weight and nutritional plane of the animals. Have also shown changes in GH, IGF and IGFBP from birth to one year of age in males and females.

**Results**

By more clearly identifying age-related changes in the axis, can reduce the variation in response to exogenous somatotropin and increase the potential for economic success of beef producers that may utilize somatotropin in the future.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
305	Animal Physiological Processes

**4. Associated Institution Types**

- 1862 Research

**1. Outcome Measures**

Public policy actions supporting biotechnology

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	1	0

**2c. Qualitative Outcome or Impact Statement****Issue (Who cares and Why)**

The US Food and Drug Administration's (FDA's) Center for Veterinary Medicine (CVM or the Center) has been meeting with clone producers and other stakeholders interested in cloning to discuss the safety and regulatory implications of somatic cell nuclear transfer (SCNT), the process most commonly used to generate animal clones during this time period.

**What has been done**

Research conducted to study nuclear reprogramming, the returning of a differentiated somatic cell to a totipotent stage, so that these cells can be targetedly differentiated for tissue regeneration.

**Results**

Research results on the safety of food products from cloned animals have been used by the FDA for their "Cloning Risk Assessment" [http://www.fda.gov/cvm/Documents/Cloning\\_Risk\\_Assessment.pdf](http://www.fda.gov/cvm/Documents/Cloning_Risk_Assessment.pdf). The FDA Draft Risk Assessment is a framework by which science-based questions regarding animal health and food consumption risks are evaluated. It does not provide any recommendations for managing those risks, the circumstances under which we might recommend that food from clones or their progeny may be released for commercial use, or ethical concerns that may be raised by cloning.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
304	Animal Genome

**4. Associated Institution Types**

- 1862 Research

**1. Outcome Measures**

Treatment methods developed for human and animal diseases

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	1	1

**2c. Qualitative Outcome or Impact Statement****Issue (Who cares and Why)**

Crohn's disease of man is a chronic disease of the small intestine that appears to have no counterpart in our animal species. The pathologic lesion has some similarities to intestinal tuberculosis, Yersinia infection, and chronic salmonellosis. Therefore, there is the suggestion that an infectious agent may be responsible.

**What has been done**

Families with multiple cases of Crohn's disease were the subject of the investigation. Twenty-one families with three or more affected first-degree relatives were identified in the Inflammatory Bowel Disease Registry at the University Hospital Gasthuisberg, Leuven and were studied together with 10 control families.

**Results**

This study makes a number of associations, perhaps the most important of which is the evidence of increased exposure, in the aggregate, to agents transmitted by the fecal-oral route in individuals who later developed CD. If the findings recorded here are substantiated by other studies, it may be possible to make recommendations that would reduce the risk of CD in those families that are genetically susceptible, as well as in spouses.

### 3. Associated Knowledge Areas

KA Code	Knowledge Area
305	Animal Physiological Processes

### 4. Associated Institution Types

- 1862 Research

#### 1. Outcome Measures

Increased (%)research funding

#### 2a. Outcome Type:

Change in Knowledge Outcome Measure

#### 2b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	15	15

#### 2c. Qualitative Outcome or Impact Statement

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

There is a need for both basic and practical research in the areas of reproductive physiology, embryology and stem cell biology/biotechnology, including somatic nuclear transfer cloning for cell reprogramming, embryonic stem cells, sexing, and regenerative medicine technology.

##### What has been done

Research has been conducted to improve animal reproductive efficiencies by developing and optimizing various reproductive biotechnologies and to test the possibility of regenerative medicine in animal models. A particular research focus has been on improving SCNT cloning techniques and understanding of various mechanisms in nuclear-cytoplasmic interactions and genetic reprogramming after somatic nuclear transfer for cell reprogramming and generating embryonic stem cells.

##### Results

Over the last 10 years, over \$10 million in extra-mural support has been attracted from the USDA, NIH, the State of Connecticut (CII), the Rockefeller Foundation, and the pharmaceutical industries, such as Genzyme, PPL, Evergen Biotechnologies, Inc., and Biotechnology Research and Development Corporation (BRDC). Success in cloning research has resulted in a University of Connecticut investment of a total of over \$20 million to establish a state-of-the-art Center for Regenerative Biology and hiring five academic faculty members and two research faculty members. CRB has placed UConn on national/international maps for cell reprogramming and regenerative biology/stem cell research.

### 3. Associated Knowledge Areas

KA Code	Knowledge Area
304	Animal Genome

### 4. Associated Institution Types

- 1862 Research

#### 1. Outcome Measures

Newly developed best management practices (BMPs) adopted by producers

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	2	3

**2c. Qualitative Outcome or Impact Statement****Issue (Who cares and Why)**

The future of Northeast agriculture lies largely in the ability of the small farm sector to thrive. Educators need to address the small farm needs to learn entrepreneurial rather than commodity-based production skills.

**What has been done**

Farmer to farmer discussions during local farm tours of established 'value-added' livestock enterprises were coordinated by Extension faculty, with various topics being supplemented with University research results. Topics included: Rotational grazing for healthy pastures; diversified goat/ chicken/ horticulture farming; meat goats; bio diesel for tractors and milking parlor; wind turbines investment and regulations.

**Results**

Changed behavior by 70% of participants following attendance at crop production programs including: grass forage production; soil fertility and pasture management; weed identification and control; Livestock production including: beef and sheep nutrition; slaughter regulations; direct marketing of meat cuts; breakeven price of meat to cover fixed and variable expenses.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
307	Animal Management Systems

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

New regulatory procedures adopted by governmental agencies

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	1	1

**2c. Qualitative Outcome or Impact Statement****Issue (Who cares and Why)**

In October 2001, the Connecticut Department of Agriculture, Bureau of Aquaculture introduced a new permitting system to the marine aquaculture industry. Because no two aquaculture projects are alike in Connecticut, applications have been reviewed on a case-by-case basis which has led to uncertainty on the part of the grower about application requirements, process time, and permit conditions, liability, etc.

**What has been done**

The Sea Grant Extension Program convened workshops for state and federal agencies involved in aquaculture permitting decisions to review the current policies and application process, and develop a more streamlined, straightforward permit application process

**Results**

As a result of the workshops, the agencies have a better and more efficient working relationship; more importantly, individuals and businesses applying for new aquaculture permits have developed improved lines of communication with the resource managers.

The immediate impact of this outreach effort was a significant reduction in the time it takes for aquaculture applications to be permitted. The longer-term goal is to achieve cost savings for aquaculture operations, as well as for resource managers. These results will be realized as resource managers begin to take a proactive rather than reactive approach to reviewing aquaculture operations.

A guide to marine aquaculture permitting in Connecticut is under review. This 8-page publication will contain information including: factors to consider when developing an application (i.e. environmental, structural engineering, business management, navigation, safety and security, public etiquette, etc.), detailed instructions on the permitting process, a sample application, a checklist for applications and contact information for permitting authorities.

### 3. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

### 4. Associated Institution Types

- 1862 Extension

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

### External factors which affected outcomes

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

### Brief Explanation

{No Data Entered}

## V(I). Planned Program (Evaluation Studies and Data Collection)

### 1. Evaluation Studies Planned

- After Only (post program)
- During (during program)

### Evaluation Results

Farmers are encouraged by various government agencies to explore alternative enterprises which will provide economic sustainability. In order to receive the grants, the farmers must complete the business planning process, showing that the added net income will justify the program's assistance in the operation. Using the excel spreadsheet on the computer, farmers create different scenarios of product pricing and the costs to produce, process, and market the products.

Five farms completed agriculture enterprise budgets as part of their application for cost-sharing or bank financing. Seven farms returned a survey, stating that new information was learned in financial management of their farms:

- cost of production and marketing of cattle
- learned about grants available for farms
- business planning
- reduction of energy costs using solar and wind
- costs of solar and wind power on their farm

One farm received grant money to improve the maple syrup operation and marketing, increasing their net income by 23%.

**Key Items of Evaluation**

Financial evaluation of alternative agricultural enterprises found that surveyed farms stated that new information was learned in financial management of their farms in the areas of:

- cost of production and marketing of cattle
- learned about grants available for farms
- business planning
- reduction of energy costs using solar and wind
- costs of solar and wind power on their farm

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

**1. Name of the Planned Program**

Economics Marketing and Policy

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

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
602	Business Management, Finance, and Taxation	40%		35%	
603	Market Economics	15%		15%	
605	Natural Resource and Environmental Economics	45%		35%	
606	International Trade and Development	0%		15%	
<b>Total</b>		100%		100%	

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

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

Year: 2007	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	4.0	0.0	4.0	0.0
<b>Actual</b>	12.0	0.0	3.1	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
86517	0	167052	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
86517	0	167052	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1357701	0	157435	0

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

**1. Brief description of the Activity**

A mix of research and Extension activities will be undertaken to address the issues identified above through economic assessments, program offerings, partnering and counseling.

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

Agricultural producers, tax practitioners, fishers and other water-based users, public policy personnel (including state, regional, national and international officials).

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

**Target for the number of persons (contacts) reached through direct and indirect contact methods**

	<b>Direct Contacts Adults</b>	<b>Indirect Contacts Adults</b>	<b>Direct Contacts Youth</b>	<b>Indirect Contacts Youth</b>
<b>Year</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>Plan</b>	500	1400	0	0
2007	2325	2800	0	0

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

**Patent Applications Submitted**

**Year Target**

**Plan: 0**

2007 : 0

**Patents listed**

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

**Number of Peer Reviewed Publications**

	<b>Extension</b>	<b>Research</b>	<b>Total</b>
<b>Plan</b>			
2007	3	4	7

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

**Output Target**

**Output Measure**

- Peer reviewed publications

Year	Target	Actual
2007	3	7

**Output Measure**

- Web sites developed

Year	Target	Actual
2007	1	2

**Output Measure**

- Media articles

Year	Target	Actual
2007	3	3

**Output Measure**

- Workshops and conferences hosted

Year	Target	Actual
2007	5	6

**Output Measure**

- Presentations and short courses

Year	Target	Actual
2007	10	13

**Output Measure**

- Books and monographs

Year	Target	Actual
2007	0	5

**Output Measure**

- Conference abstracts

Year	Target	Actual
2007	1	1

**Output Measure**

- Fact sheets, bulletins and newsletters

Year	Target	Actual
2007	4	5

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

**1. Outcome Measures**

New natural resource management policies adopted

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	2	2

**2c. Qualitative Outcome or Impact Statement**

Issue (Who cares and Why)

Long Island Sound, long termed the "urban sea", has been beset with unique problems in recent years. A regional entity (ASMFC) has responsibilities for management of several resident species. A recently-developed lobster V-notch program demanded more attention.

**What has been done**

A legislative redraft of enabling strategies was necessary to get all parties cooperating and overseeing a \$1 million state appropriation. Several meetings at the Capitol in Hartford enabled the lobster fishing industry associations, Connecticut Seafood Council, and ASMFC commissioners to plan the working logistics for the V-notch of female lobsters for future reproductive protection.

**Results**

A resolve has been codified in a recent legislative bill (Public Act No. 07-74) describing traditional stake markers as adequate. Vocational school participation in the V-notch program will offer students and faculty interns involvement in the marine lobster recovery exercise.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased(%)workshop participation

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	15	15

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

There is a need to improve the economic viability and profitability of Connecticut agricultural enterprises. The Agricultural Risk Protection Act of 2000 has provided funding through the USDA Risk Management Agency for education and information programs for Connecticut agricultural producers and advisors.

**What has been done**

Conducted two conferences - "Sustaining Agriculture in Connecticut's Urban Environment" and "Farm Family Decision Making". In addition, 7 day-long one-on-one advising sessions were held that provided producers with an opportunity to meet with a professional to discuss questions in the area of crop insurance, transition to organic farming, estate planning, business planning and dealing with local officials. Also, attended 11 agricultural organization meetings. Approximately 1,705 were in attendance at these various agricultural organization meetings.

**Results**

Program evaluations at the two conferences saw the average score for those that responded from conference 1 as 3.9 out of a maximum score of 5 and the average score for those that responded from conference 2 as 4.2 out of 5.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased (%) partnerships with agencies

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	10	10

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

There is a need to improve the economic viability and profitability of Connecticut agricultural enterprises.

**What has been done**

The Risk Management program team developed it's work through numerous partnerships. Foremost, the partnership with the Connecticut Department of Agriculture, USDA Risk Management Agency and UConn's Cooperative Extension and Department of Agricultural and Resource Economics has built a strong Targeted States Crop Insurance Education Program in Connecticut.

The Agricultural Risk Management Advisory Group includes representatives of Connecticut's agricultural community. Group members represent major agricultural producer associations, state and federal agencies, educators, and financial, legal and insurance firms and organizations including: agricultural producers, Connecticut Farm Bureau Association, Connecticut Green Industry, Connecticut Poultry Association, USDA Risk Management Agency, USDA Farm Service Agency, USDA Natural Resources Conservation Service, First Pioneer Farm Credit, Connecticut Department of Agriculture, UConn Department of Extension, UConn Department of Agricultural and Resource Economics, CT Farmland Trust, American Farmland Trust, a vocational agricultural center, and representatives of the legal and insurance professions. Agricultural Risk Management Advisory Group meetings were held to discuss educational activities and accomplishments, key farm risk management issues faced by Connecticut producers, and provided input regarding project activities.

**Results**

The Farm Risk Management Team's work in crop insurance and farm risk management education from 2001 to 2007 has resulted in development of a broad farm risk management and crop insurance Extension program in the College of Agriculture and Natural Resources. The initial work addressing crop insurance as one part of managing farm risks has developed into a program addressing a wide range of farm risk management topics. Three new partners during this year are: CT NOFA, City Seed (New Haven) and the CT Women's Agricultural Network.

Development of the Connecticut Agricultural Risk Management Advisory Group has created a partnership with the State's agricultural community that includes advising and participation in farm risk management programs.

Farmers were reached with crop insurance and risk management educational displays at 15 producers meetings across the state. Over 1,950 agricultural producers attended fifteen conferences and growers association meetings at which crop insurance/risk management information was presented and/or displayed.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased (%)acreage under crop insurance

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	10	10

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Risk management education programs provide important information to many Connecticut agricultural producers on a variety of risk management topics.

**What has been done**

A comprehensive education program was offered that was designed to provide education and information to help agricultural producers in Connecticut manage production, marketing, financial, legal, human resource and environmental risks with the use of crop insurance and other available strategies.

**Results**

During the six year period of the education program, the Risk Management Agency reported that the number of "policies earning premium" declined slightly; however, "liability" coverage increased from \$67 million to \$80 million. this data suggests that enhanced use of crop insurance by Connecticut producers is occurring.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased (%) program attendees adopting risk management strategies

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	10	10

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

There is a need to improve the economic viability and profitability of Connecticut agricultural enterprises.

**What has been done**

An education and information program delivery plan was developed and implemented. Educational activities included: one-on-one advising sessions for producers, two state-wide conferences, partnerships with two limited resource farmer organizations, displays and presentations at growers meetings, educational material distribution through 10 Extension educators, and direct mailings to agricultural producers and advisors.

**Results**

Five farms completed agriculture enterprise budgets as part of their application for cost-sharing or bank financing. Seven farms returned a survey, stating that new information was learned in financial management of their farms:

- cost of production and marketing of cattle
- learned about grants available for farms
- business planning
- reduction of energy costs using solar and wind
- costs of solar and wind power on their farm

One farm received grant money to improve the maple syrup operation and marketing, increasing their net income by 23%.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Improved (%) tax information provided by practitioners

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	10	10

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

The focus of the Tax School is to provide tax information to accountants, enrolled agents, and other tax practitioners in the state of Connecticut

**What has been done**

The tax school is a cooperative effort between Agricultural and Resource Economics, and the Connecticut Department of Revenue Services, the U. S. Internal Revenue Service, and private sector tax accountants and attorneys within the state. The output of the project was a two day tax school providing 16 continuing education credits for tax practitioners in Connecticut. 210 tax practitioners attended the tax school, most from smaller practices within the state.

**Results**

The impact of the tax school is the provision of up-to-date, accurate and timely tax information to assist smaller tax practitioners and their clients throughout Connecticut. Tax training for practitioners translates into more efficient and accurate tax payments for clients. The University of Connecticut Income Tax School has provided up-to-date and accurate tax information for approximately 3,000 Connecticut tax practitioners and their clients for the past 15 years.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

New food policies adopted

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	1	1

**2c. Qualitative Outcome or Impact Statement****Issue (Who cares and Why)**

Fluid milk pricing in southern New England is both economically inefficient and inequitable. The drop in farm level milk prices during the spring of 2006 brought the issue of fluid milk pricing to the forefront yet again.

**What has been done**

The regional milk marketing cooperatives Agrimark and DairyLea/Dairy Marketing Services, and Connecticut and Massachusetts dairy farmers approached the Food Marketing Policy Center with requests for an update of milk pricing and for a long term public solution to fluid milk channel pricing problems. A full day meeting was held at the University of Connecticut that included corporate economists from the two milk marketing cooperatives, university faculty and students, and more than 12 dairy farmers from the state. A 20 page paper summarized the discussion and decisions made at the meeting([www.fmpc.uconn.edu](http://www.fmpc.uconn.edu)). Several meetings with Connecticut legislators and their staff, legislature attorneys, members of the Milk Regulation Board and the CT Farm Bureau Dairy Committee. Obtained legal opinions on alternative policies and wrote language for bills that were introduced in the legislature (posted on the Food Policy Center website).

**Results**

A bill to establish a Connecticut Milk Commission and a separate bill to levy a fee from retailers on retail milk prices were introduced in the Connecticut legislature. The Commission and Fee bills advanced through committee in both houses of the legislature. The legislative and governor leadership decided not to proceed with a formal vote in either house of the legislature.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
603	Market Economics

**4. Associated Institution Types**

- 1862 Extension
- 1862 Research

**V(H). Planned Program (External Factors)****External factors which affected outcomes**

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

**Brief Explanation**

## **V(I). Planned Program (Evaluation Studies and Data Collection)**

### **1. Evaluation Studies Planned**

- After Only (post program)

### **Evaluation Results**

Surveys of attendees from two conferences -"Sustaining Agriculture in Connecticut's Urban Environment" and "Farm Family Decision Making". 65 people attendees at the "Sustaining Agriculture in Connecticut's Urban Environment" conference were asked if the conference met their expectations, the average score for those that responded was 3.9 out of a maximum score of 5. A total of 75 people attended the conference on "Farm Family Decision Making" were asked if the conference met their expectations, the average score for those that responded was 4.2 out of 5.

### **Key Items of Evaluation**

An overwhelming number of attendees at two risk management-oriented agricultural business conferences found the conferences met expectations and information provided would be applicable in their farm businesses decision-making processes.

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

**1. Name of the Planned Program**

Family Youth and Communities

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

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
801	Individual and Family Resource Management	10%		10%	
802	Human Development and Family Well-Being	10%		70%	
803	Sociological and Technological Change Affecting	10%		10%	
806	Youth Development	70%		10%	
<b>Total</b>		100%		100%	

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

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

Year: 2007	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	17.0	0.0	2.0	0.0
<b>Actual</b>	21.1	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
740334	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
740334	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
692491	0	49297	0

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

**1. Brief description of the Activity**

Extension programs, camps, workshops, 4-H clubs, School-enrichment programs, web-based educational programs.

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

Youth, schools and families.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

**Target for the number of persons (contacts) reached through direct and indirect contact methods**

	<b>Direct Contacts Adults</b>	<b>Indirect Contacts Adults</b>	<b>Direct Contacts Youth</b>	<b>Indirect Contacts Youth</b>
<b>Year</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>Plan</b>	4000	1500	24000	3500
2007	3462	3000	19789	4000

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

**Patent Applications Submitted**

<b>Year</b>	<b>Target</b>
<b>Plan:</b>	0
2007 :	0

**Patents listed**

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

**Number of Peer Reviewed Publications**

	<b>Extension</b>	<b>Research</b>	<b>Total</b>
<b>Plan</b>			
2007	2	3	5

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

**Output Target**

**Output Measure**

- Peer reviewed publications

Year	Target	Actual
2007	5	5

**Output Measure**

- Presentations and short courses

Year	Target	Actual
2007	80	145

**Output Measure**

- Websites developed

Year	Target	Actual
2007	1	2

**Output Measure**

- Curricula Developed

Year	Target	Actual
2007	1	1

**Output Measure**

- Media Contacts

Year	Target	Actual
2007	15	18

**Output Measure**

- Newsletters and marketing materials

Year	Target	Actual
2007	15	21

**Output Measure**

- After-school programs

Year	Target	Actual
2007	5	6

**Output Measure**

- eXtension committee participation

Year	Target	Actual
2007	1	1

**Output Measure**

- Books and monographs

Year	Target	Actual
2007	0	0

**Output Measure**

- Conference abstracts

Year	Target	Actual
2007	1	1

**Output Measure**

- Workshops and conferences hosted

Year	Target	Actual
2007	2	7

**Output Measure**

- Fact sheets, bulletins and newsletters

Year	Target	Actual
2007	10	22

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

**1. Outcome Measures**

Increased participation in community service projects (% change)

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	15	15

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Ninety-seven per cent of the 1.4 million inmates now in prison eventually will be released. Approximately two out of three of these offenders will return to prison within three years. Re-entry , the process of transition that people make from prison or jail to the community has received wide spread attention. One effort that has had a lower rate of re-incarceration is the New Life Prison Ministry, Old Lyme. In ten years, New Life, a faith based mentoring program has worked with over 90 inmates with 85% not returning to prison.

**What has been done**

Extension faculty and a prison volunteer, deciding to build on the success of New Life, created the Epiphany design team. The design team includes 10 (nine white and one black) women representing the CT Department of Correction, business and professional retirees, and clergy. The program is designed to reduce the rate of re-incarceration among offenders by creating a network of support to help individuals build successful lives in society.

**Results**

The mentoring for Ex-offenders program reduced the rate of re-incarceration as well as realizing cost saving. Savings were realized of approximately \$34,680.36 to the state of Connecticut for not re-incarcerating three ex- offenders (based on approximately 429 days in Epiphany as compared to \$80.84 per day in prison).

**3. Associated Knowledge Areas**

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

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased adoption of recommended BMPs by individuals (% change)

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	15	15

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Voluntary simplicity is one of the top trends in America. More than 35 million people in the United States have taken steps to simplify their lives. More than two thirds of Americans say they want balance in their lives.

**What has been done**

Created a pilot series on sustainable living. Organized a workshop series intended to raise awareness of America's highly consumptive lifestyles and their impact on individuals and their world, identify alternative consumptive patterns, help individuals evaluate current lifestyles and investigate ways to implement desired lifestyles changes.

**Results**

An average of 19 people, who were from Middletown, Cromwell, Portland, Middlefield, and West Hartford, attended the five sessions in Middletown. Nine people completed an evaluation at the last session. Forty-four percent said their participation in the series substantially increased their understanding of the sustainable living concept. Forty-four percent said that their understanding of the impact of human activities on the environment substantially increased. Sixty-six per cent said that their participation in the series increased their understanding of time spent, personal consumption habits and environmental awareness all related to own personal values.

In addition, participants developed their own plan of action. Followup sessions have showed that participants are working toward a more sustainable life style: learning about environmental friendly cleaning products, tracking the phases of the moon, cleaning closets and donating to charity, reducing the amount of trash, reading books on simple living, composting and investigating re-cycling in Middletown, making Saturday shopping bags, creating a list of web sites related to the environment and simple living and creating a list of local and organic farms. In addition, two church sermons have been preached and one article written on sustainable living. The group is interested in collaborating with another downtown church to hold a meal prepared with native grown foods. Group members have shared what they are doing with others

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
801	Individual and Family Resource Management
803	Sociological and Technological Change Affecting Individuals, Fam

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased knowledge and skills in one or more of nine 4-H program emphasis areas (% change)

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	10	10

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

According to Connecticut State Treasurer Denise L. Nappier, "A solid grounding in financial matters has become a prerequisite for success, and our goal must be for every child to acquire the financial savvy that their future will demand. The current level of financial literacy among our youth is unacceptable, and this data is a call to action for Connecticut, for community and corporate leaders, educators and parents."

**What has been done**

The Connecticut Jumpstart Coalition for Youth Financial Literacy was formed to bring together educators, state officials, the business community and nonprofits to focus attention and resources on helping advance young people's understanding about saving, investing and spending money responsibly. Cooperative Extension in Connecticut has a long history of working to increase the financial knowledge of youth and also training teachers, leaders and other adults to teach teens and youth financial and decision-making skills. The program coordinated the Real World Simulation a total of 8 times this year reaching 195 participants in Danbury, Hartford, Storrs, Enfield and New Haven. Groups have included 4-H, summer teen employment programs, high school classes and adult education students.

## Results

Evaluations were completed by 38 participants in the "Welcome to the Real World" simulation. The majority of those completing the evaluation indicated that: the information was useful (36) and participating in the program will help them in the future (36). 22 indicated that they learned to balance income and expenses and 16 participants learned how to balance a checking account.

### 3. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
806	Youth Development

### 4. Associated Institution Types

- 1862 Extension

#### 1. Outcome Measures

Increased exploration of career opportunities by participating youth (% change)

#### 2a. Outcome Type:

Change in Knowledge Outcome Measure

#### 2b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	10	10

#### 2c. Qualitative Outcome or Impact Statement

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

Increasingly, middle and high schools are requiring youth to complete community service projects, in many cases as a requirement for graduation. In rural areas, the opportunities are often limited for youth to take on meaningful volunteer roles. Afterschool programs continually look for positive youth role models for children in afterschool programs. According to a poll conducted in late 2001 by Harris Interactive, 72% of Connecticut adults believe that afterschool programs are important to children's well being

##### What has been done

A core group of teens recruited from Wamogo Regional High School Vocational Agriculture program received training and conducted programs in an after school setting. Eight teens participated in three training sessions. Six sessions were held as the after school program. A partnership was created between the 4-H program, the Vocational Agriculture program and the Goshen elementary school.

## Results

Six of the eight teens completed evaluations of their experiences. All six agreed or strongly agreed that that they 1) gained knowledge or skills, 2) the information was useful, and 3) they could use the information to better support children. They improved in their self confidence and poise as presenters and teachers. The experience has given them the ability to plan and teach lessons on their own, in either an afterschool setting or in their own 4-H Club.

### 3. Associated Knowledge Areas

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

### 4. Associated Institution Types

- 1862 Extension

#### 1. Outcome Measures

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

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	15	15

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Volunteers who serve on 4-H camp boards are extremely dedicated and interested in doing what is best for youth and camp. Most often they lack the skills needed to serve effectively on a volunteer board and the knowledge of camping standards. With training and support they can run exceptional camp programs.

**What has been done**

Experientially based training was offered to develop an understanding of the needs of youth and skills to create programs which meet their needs.

**Results**

A group of 25 representatives from all 4 4-H camp foundations demonstrated that they have learned skills to work together and network by attending meetings to plan a comprehensive staff training conference. They have increased their networking skills as evidenced by the increase in calls they have made to each other, requests they have made to Extension faculty, and practices they have adopted from other camps.

**3. Associated Knowledge Areas**

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

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased endowment of 4-H Centennial account (\$)

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	20000	48000

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

4-H members participate in a variety of statewide and national 4-H events as part of their ongoing educational experience in the 4-H program. The events and programs provide leadership and citizenship experiences beyond what they receive at the local level. Funds are needed each year to support participation in these events and ensure long-term support for the 4-H program.

**What has been done**

Twice a year an appeal newsletter is sent out to an established list of 4-H alumni, volunteers, and donors. The newsletter features 4-H alumni and donors along with current 4-H programming news.

**Results**

Since the inception of the newsletter mailing in 2002, there has been a steady increase in annual donations for the 4-H Centennial account each year. In 2007 a \$20,000 donation was received helping to double the total amount of annual donations received from the 4-H mailing. The University of Connecticut Foundation, the organization which receives and manages the donations, also agreed to create a new design for the 4-H appeals and handle the mailing process.

**3. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
806	Youth Development

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased awareness of value of 4-H to CT by general public (% change)

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2007	15	15

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

The Connecticut Department of Education has developed a framework for science curriculum for pre-k through high school that has been adopted by most of the schools in Connecticut. In 2008 Connecticut school children will have a State Mastery Test in science in grades 4 and 6. Additionally there is a Framework that represents Preschool Curricular Goals and Benchmarks for three, four and five year olds. Connecticut is on a path to increase the academic standing for all children and these 2 frameworks address core requirements. Children's class time is at a premium. Children can not participate in programs either during school hours or out of school time that does not meet learning objectives that prepare them for the mandated mastery tests.

**What has been done**

The 4-H Education Center at Auer Farm is located in Bloomfield Connecticut, 6 miles from the Center of Hartford. The purpose of the 120 acre facility is to provide quality science experiences to youth and outreach programs to adults and family members based on farm themes. Participants come from throughout the state but are predominately from the Greater Hartford area. The 4-H Education Center provides seasonal and year round science and math lessons both at the Center and off the Center grounds at schools and community based program sites. The different educational lessons correspondingly meet the objectives taught by grade level as prescribed in the CT Science Framework and Preschool Curricular Goals and Benchmarks and when appropriate, combine lessons that have their base in the Common Core for math.

**Results**

The Center's education lessons were selected by educators for over 17,000 children and teachers/leaders in grades pre-k through high school. Programs selected by the Hartford and Bloomfield school systems correspond 100% to the CT Framework. 20% represent audiences from Hartford. Hartford students consistently test amongst the poorest performing in the state. Also there were a number of students from New Britain, Waterbury and East Hartford, which also have test scores below the medium for the state.

**3. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
806	Youth Development

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased awareness by non-profit organizations of 4-H value (% increase)

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	10	10

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

The population of Connecticut represents a pre-dominant African American and Hispanic minority population in the cities and a pre-dominant majority white population in the surrounding towns. This separation by race, culture and ethnicity also represents a difference in economics. Living and learning in cultural, ethnic and economic isolation affects the way children learn and guides their perceptions and misconceptions children experiencing this separation have of each other.

**What has been done**

The Auer 4-H Education Center provided quality science and diversity education to lessen fear and anxiety that the children have of each other which is caused by the separation and isolation living in unconnected communities. Hartford programs from the Center for Youth and OPMAD (Organized Parents Make a Difference) partnered with the suburban towns of Simsbury, Burlington and Canton. This allowed for 60 children from Hartford and 60 children from the suburbs to partner during a 3 week science experience.

The Inter-district meeting times were a minimal of 3 hours each day, with a curriculum that allowed students to be more knowledgeable in the use of modern technology in agriculture and the environmental factors involved in food production. They learned their lessons within a multicultural, diverse learning setting. Each session has ice breakers that encourage team building and working together. The "Nutrition in Action" summer program in 2006 met for three, 4 day sessions. The lessons included digital camera use, knowledge of nutrition, food preparation, journal entering, farm animal and plant information.

**Results**

The 4Our partnerships with Simsbury and Canton with Center for Youth and OPMAD continue. The Center staff promotes the program through the permission of superintendents in Simsbury and Canton. Flyers are sent home to every child in 1st through 6th grade. To date the state Department of Education financially supported Inter-district Partnership Programs by providing eight grants for a total of \$440,000 for academic years and summer sessions. The Hartford Foundation for Public Giving has also funded many thousands of dollars for technical assistance, programming and capital improvement over the years.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
806	Youth Development

**4. Associated Institution Types**

- 1862 Extension

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

**External factors which affected outcomes**

- Economy
- Appropriations changes
- Competing Programatic Challenges

**Brief Explanation**

## **V(I). Planned Program (Evaluation Studies and Data Collection)**

### **1. Evaluation Studies Planned**

- After Only (post program)
- Retrospective (post program)
- Other (Project reports)

### **Evaluation Results**

Camp provides the opportunity for group living and teamwork. Campers are part of various small and large groups. They have the opportunity to take on leadership, set goals, make decisions and learn how to cooperate with others to accomplish a task. There is a natural progression of skills and responsibility. Previous studies have demonstrated that group skills learned at camp have been a critical factor of success in the workplace.

3619 youth attended a CT 4-H resident camp for at least a week last summer. An extensive survey was conducted with parents and campers. It was reported by 97.7% of camper parents that their child's camp experience was excellent or good. 58.3% felt that camp had "much impact" on making new friends. 46.3% felt that camp has "much impact" on being more willing to try new things. 43.5% felt that camp has "much impact" on independence. 41.3% felt that camp has "much impact" on their awareness and appreciation of the natural environment. 44.5% felt that camp has "much impact" on increasing their self confidence.

### **Key Items of Evaluation**

The Connecticut 4-H camp program was successful in providing campers the opportunity to take on leadership, set goals, make decisions and learn how to cooperate with others to accomplish a task. 97.7% of camper parents reported that their child's camp experience was excellent or good. 58.3% felt that camp had "much impact" on making new friends. 46.3% felt that camp has "much impact" on being more willing to try new things. 43.5% felt that camp has "much impact" on independence. 41.3% felt that camp has "much impact" on their awareness and appreciation of the natural environment. 44.5% felt that camp has "much impact" on increasing their self confidence.

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

**1. Name of the Planned Program**

Human Nutrition and Health

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

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
702	Requirements and Function of Nutrients and Other Food	10%		25%	
703	Nutrition Education and Behavior	40%		35%	
704	Nutrition and Hunger in the Population	30%		20%	
712	Protect Food from Contamination by Pathogenic	5%		5%	
724	Healthy Lifestyle	10%		10%	
804	Human Environmental Issues Concerning Apparel,	5%		5%	
	<b>Total</b>	100%		100%	

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

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

Year: 2007	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	12.0	0.0	10.0	0.0
<b>Actual</b>	49.0	0.0	11.5	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
70101	0	78129	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
70101	0	78129	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
4623680	0	1284820	0

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

**1. Brief description of the Activity**

Conduct research experiments, educational workshops, conferences, individual consultations, trials, newsletters, fact sheets.

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

Consumers, public policy decision-makers, health officials, academic researchers.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

**Target for the number of persons (contacts) reached through direct and indirect contact methods**

	<b>Direct Contacts Adults</b>	<b>Indirect Contacts Adults</b>	<b>Direct Contacts Youth</b>	<b>Indirect Contacts Youth</b>
<b>Year</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>Plan</b>	4000	12000	120	450
2007	5257	17461	768	5500

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

**Patent Applications Submitted**

**Year Target**

**Plan: 0**

2007 : 0

**Patents listed**

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

**Number of Peer Reviewed Publications**

	<b>Extension</b>	<b>Research</b>	<b>Total</b>
<b>Plan</b>			
2007	1	39	40

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

**Output Target**

**Output Measure**

- Peer reviewed publications

Year	Target	Actual
2007	23	40

**Output Measure**

- Fact sheets, bulletins and newsletters

Year	Target	Actual
2007	32	37

**Output Measure**

- Websites developed

Year	Target	Actual
2007	2	2

**Output Measure**

- Media releases

Year	Target	Actual
2007	22	30

**Output Measure**

- Books and monographs

Year	Target	Actual
2007	3	1

**Output Measure**

- Workshops and conferences hosted

Year	Target	Actual
2007	3	4

**Output Measure**

- Presentations and short courses

Year	Target	Actual
2007	55	82

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

**1. Outcome Measures**

Understanding of basic dietary processes (# of processes by target audience)

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	2	2

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Age-related macular degeneration (ARMD) and senile cataracts are major health concerns for the elderly in the United States. Approximately 25-30 million people suffer from ARMD in the U.S., and it is the most common cause of irreversible blindness in the elderly in this country. More than 50% of the people in the U.S. over 75 years of age have cataracts. Increasing plasma lutein through dietary interventions is thought to reduce the risk of these diseases. The egg is an important dietary source of lutein.

**What has been done**

Research was conducted to determine if egg consumption increased serum lutein and therefore decreased the risk for ARMD and cataracts in postmenopausal women a population at increased risk for ARMD and cataracts. Also factors influencing plasma levels of lutein were identified.

**Results**

More than 75% of the study subjects had a significant increase in serum lutein after consuming eggs. This confirms previous studies suggesting eggs in the diet provide a highly bioavailable source of lutein. Also that body mass index was negatively associated with change in plasma lutein due to the consumption of eggs. From an application standpoint, this may mean that individuals who want to reduce their risk for ARMD and cataracts will have to reduce weight before they respond to lutein interventions.

**3. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
702	Requirements and Function of Nutrients and Other Food Components

**4. Associated Institution Types**

- 1862 Research

**1. Outcome Measures**

Public policy adoption of health management strategies (# of strategies adopted)

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2007	2	2

**2c. Qualitative Outcome or Impact Statement****Issue (Who cares and Why)**

Latinos are now the largest minority group in the state of Connecticut. Between 1990 and 2000, the Latino/Hispanic population in Connecticut grew by 50.3% (from 213,116 to 320,323 individuals). Latinos experience a disproportionately high rate of many chronic health conditions, including type II diabetes and experience premature age-adjusted mortality due to diabetes at a rate that is almost twice as high as that in Whites.

**What has been done**

The Connecticut Center to Eliminate Health Disparities Among Latinos (CEHDL) objectives are to: a) advance the science directed toward reducing, eliminating, or preventing health disparities; b) accelerate the discovery of new interventions and expand/adapt exiting interventions for reducing, eliminating or preventing health disparities; c) increase the number of researchers and professionals from minority and medically underserved populations trained in biomedical and behavioral research; d) increase the quality of training provided to professionals conducting research on health disparities; and e) increase public trust and the dissemination of scientific and health information relevant to health disparity populations.

**Results**

A team headed by the Assistant Commissioner of the New York City Department of Health met with key CEHDL staff members to discuss how the Hartford-based Breastfeeding: Heritage and Pride peer counseling program could be replicated in New York City.

**3. Associated Knowledge Areas**

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

**4. Associated Institution Types**

- 1862 Extension
- 1862 Research

**1. Outcome Measures**

Reduced (%) levels of obesity by target populations

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	5	5

**2c. Qualitative Outcome or Impact Statement****Issue (Who cares and Why)**

The currently underway obesity epidemic has resulted in approximately two-thirds of Americans as being overweight or obese. Over the past several decades, the significant rise in the prevalence of obesity has coincided with the dramatic increase in obesity-related fatty liver disease, which is currently estimated to afflict nearly 40 million Americans. Thus, the evaluation of novel dietary strategies is increasingly essential in order to aid in the prevention and/or treatment of liver dysfunction given that the long-term success rate of weight management is only ~12%.

**What has been done**

Dietary intervention studies are actively underway that are addressing the extent to which specific antioxidants or antioxidant-rich foods, such as vitamin E or green tea extract, can regulate the deleterious processes that contribute towards the development of fatty liver disease. Specifically, the scope of these studies are targeted at using these dietary antioxidants to: 1) reduce the accumulation of fat in the liver and define the regulatory activities for this favorable outcome, 2) decrease the magnitude of obesity-induced liver injury which could contribute to the unfavorable enhancement in liver inflammation, and 3) attenuate free radical-mediated damage to the liver which would otherwise exacerbate the severity of fatty liver disease.

**Results**

Findings suggest that antioxidant interventions can be targeted successfully to a fatty liver which, in turn, may be protective against free radical mediated damage that could otherwise contribute to the development of obesity-induced fatty liver disease.

Collectively, the outcomes of these studies may potentially result in the development of novel dietary strategies that could complement other lifestyle factors known to contribute to the development of this tragic and debilitating disease that currently has no well-established therapeutic options.

**3. Associated Knowledge Areas**

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

**4. Associated Institution Types**

- 1862 Research

**V(H). Planned Program (External Factors)****External factors which affected outcomes**

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

## Brief Explanation

### V(I). Planned Program (Evaluation Studies and Data Collection)

#### 1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)

#### Evaluation Results

The economic impact of chronic disease on the United states economy is staggering. Seventy-five percent of the \$1.8 trillion the US spends on health care annually is spent on treating chronic diseases. Less than five percent of the annual health care spending goes toward chronic disease prevention – even less for at risk, low-income population groups. The Extension focus was to provide education and tools for the prevention of chronic disease by providing diet and health information to low- income populations in the greater Hartford area. As a result, 85% of parents participating in child nutrition workshops were able to identify healthier snack alternatives for their kids. 90% were able to identify dietary and sedentary lifestyle risk factors for the development of overweight /obesity in their children. 100% of children with phenylketenuria (PKU) attending the low protein cooking school tried recipes at the event and subsequently increased their diet variety at home. 80% of incarcerated women attending food budgeting workshops through the Paul and Lisa Program were able to better utilize food stamp dollars when purchasing food the next month (were done with lifeskill training and released from prison).

#### Key Items of Evaluation

85% of parents participating in child nutrition workshops were able to identify healthier snack alternatives for their kids. 90% were able to identify dietary and sedentary lifestyle risk factors for the development of overweight /obesity in their children. 100% of children with phenylketenuria (PKU) attending the low protein cooking school tried recipes at the event and subsequently increased their diet variety at home. 80% of incarcerated women attending food budgeting workshops were able to better utilize food stamp dollars when purchasing food after release from prison.

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

**1. Name of the Planned Program**

Land Use

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

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
131	Alternative Uses of Land	100%		100%	
	<b>Total</b>	100%		100%	

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

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

Year: 2007	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	9.0	0.0	7.0	0.0
<b>Actual</b>	4.4	0.0	7.7	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
59992	0	22532	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
59992	0	22532	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
432493	0	753534	0

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

**1. Brief description of the Activity**

Research will address issues related to land use and land cover through satellite-based technology. Education programs will be delivered with a mix of community and regional audiences receiving information through multiple means.

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

Public policy decision makers, including federal and state level agency personnel, town and regional personnel associated with land use decision making, academic researchers and Extension personnel at the state, regional and national level. Professional development related design personnel.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

**Target for the number of persons (contacts) reached through direct and indirect contact methods**

	<b>Direct Contacts Adults</b>	<b>Indirect Contacts Adults</b>	<b>Direct Contacts Youth</b>	<b>Indirect Contacts Youth</b>
<b>Year</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>Plan</b>	450	1200	0	0
2007	1363	1350	0	0

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

**Patent Applications Submitted**

**Year Target**

**Plan: 0**

2007 : 0

**Patents listed**

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

**Number of Peer Reviewed Publications**

	<b>Extension</b>	<b>Research</b>	<b>Total</b>
<b>Plan</b>			
2007	1	7	8

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

**Output Target**

**Output Measure**

- Peer reviewed publications

Year	Target	Actual
2007	7	8

**Output Measure**

- Fact sheets, bulletins and newsletters

Year	Target	Actual
2007	10	6

**Output Measure**

- Web sites developed

Year	Target	Actual
2007	1	1

**Output Measure**

- Presentations and short courses

Year	Target	Actual
2007	50	107

**Output Measure**

- News releases and media appearances

Year	Target	Actual
2007	10	11

**Output Measure**

- Books and monographs

Year	Target	Actual
2007	0	0

**Output Measure**

- Workshops and conferences hosted

Year	Target	Actual
2007	2	6

**Output Measure**

- Conference abstracts

Year	Target	Actual
2007	1	3

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

**1. Outcome Measures**

Requests for and use of land cover data base

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	25	25

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

The 26 towns in northeast Connecticut are faced with rapid growth and land conversion. To maintain their rural community character many towns have adopted a variety of tools to balance development and land protection including; direct acquisition, open space subdivisions, and resource protection zoning.

**What has been done**

To assist conservation commissions with their land and resource prioritization planning, the Green Valley Institute (GVI) developed a Co-occurring Resources Inventory analysis. The analysis model can be adapted to meet the needs and reflect the priorities of each individual town. Co-occurring Resources analysis maps can be used to identify those areas in a community with multiple natural resources which may require protection. They may also provide information about the best tools for protection such as a Riparian Overlay Zone used to buffer resources along a pristine river corridor.

GVI has conducted Co-occurring Resources Analysis in 8 QSHC Towns with conservation commissions or open space committees.

**Results**

Each of the participating towns has adopted the Co-occurring Resources Inventory as an additional planning tool in the town Natural Resource Inventory. The Towns of Scotland and Thompson have developed comprehensive Open Space plans for the protection of significant resources in their communities. Brooklyn and Eastford have identified and prioritized key open space parcels for acquisition and protection including a 127 acre parcel on the Quinebaug River identified as "highest priority wildlife and riparian corridor land." The Town of Chaplin recently accepted its first open space set-aside through the use of Open Space Subdivision regulations and, utilizing the Co-occurring Resources Analysis, the Conservation Commission was able to assist the developer and the Planning and Zoning Commission with recommendations for the highest conservation value, resulting in protection of 10 acres and 1000 feet of frontage on the Natchaug River. Four communities have completed state-of-the-art, digital town-wide resource inventories and utilized those inventories to enhance community planning and land conservation efforts.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
131	Alternative Uses of Land

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased (%) public policy changes by communities

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	20	20

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

In Connecticut land use decisions are made locally by volunteers serving on Planning, Zoning, Zoning Boards of Appeals and Inland Wetlands Commissions. These officials are either elected or appointed and few have any expertise in land use decision making. There is a desperate need for local officials to receive training so they understand their roles and responsibilities, the legal procedures they must follow as they conduct official business, and how to read maps and technical reports.

**What has been done**

Two legislative blue ribbon committees reviewed land use education in the state and concluded there was a strong need to enhance existing efforts and to provide the UConn Extension System with state funding to lead such an initiative. UConn Extension renamed their basic educational program as the Connecticut Land Use Academy. The three sessions; roles and responsibilities, legal procedures, and reading maps, were reviewed and revised. The Land Use Committee of the Connecticut Bar Association agreed to remain as a long term partner and the program was coordinated with the Under-Secretary of the Office of Policy and Management. The Land Use Academy was introduced and was nested in the University of Connecticut Center for Land Use Education and Research (CLEAR). Reaction to the revisions were very favorable, particularly by the development community who felt educated commissioners were vital to timely and accurate reviews of permit applications. The Land Use Academy had immediate positive impacts by establishing an Advisory Committee composed of representatives from economic development and conservation interest groups as well as key state and federal agencies. Local land use commissioners were appointed to the Advisory Committee as were representatives from planning, legal and engineering societies.

**Results**

In its first year, the Academy sponsored four programs of three workshops in various locations within the state. As a result 250 newly elected or appointed commissioners became more knowledgeable about land use issues and their roles and responsibilities as local commissioners. Of the 250 registrants, 200 received certificates in recognition of their attendance at all three workshops.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
131	Alternative Uses of Land

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Acres of land permanently protected and managed

**2a. Outcome Type:**

Change in Condition Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	3000	1569

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

The Quinebaug-Shetucket National Heritage Corridor (QSHC) is a 35-town region in eastern Connecticut and south-central Massachusetts, officially recognized by the National Park Service as having natural, cultural and historic resources of national significance. The region has been nicknamed "The Last Green Valley" because night-time satellite images clearly show it as the last dark spot in the Boston to Washington DC coastal megalopolis.

The Corridor's population grew 4% between 1990 and 2000, and is projected to grow an additional 20% by 2020. The rate of growth in rural communities was more than triple that of the urban areas. Preserving environmental quality and viable agriculture in the face of these pressures, will require unprecedented inputs of education and information to several key audiences. Chief among them are: 1) private farm and forest owners, who control 80% of the Corridor's land, and 2) municipal officials and commissioners, to whom virtually all authority to plan for and regulate land use has been delegated. This latter audience is overwhelmingly populated by lay volunteers who are in chronically short supply and often poorly supported with education and technical support.

**What has been done**

Extension faculty and the QSHC partnered to create a comprehensive educational initiative called The Green Valley Institute. The Institute is dedicated to improving the knowledge base, at every level from the individual to the Corridor as a whole, from which land use and natural resource decisions are made.

**Results**

Workshops on Protecting Family Farms and Forests and follow-up work with attendees resulted in at least 1,569 acres of additional land that is now in the process of, or has been permanently protected.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
131	Alternative Uses of Land

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased (%) research funds

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	10	10

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Population growth threatens the character and environmental integrity of towns in eastern Connecticut.

**What has been done**

Annual funding of \$203,000 from the Quinebaug-Shetucket Historic Corridor enabled the implementation of a comprehensive land use education and research program through the Green Valley Institute, operated under the leadership of the University of Connecticut.

**Results**

Funding-supported programs resulted in an additional 1,569 acres now in the process of, or has been permanently protected.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
131	Alternative Uses of Land

**4. Associated Institution Types**

- 1862 Extension
- 1862 Research

**1. Outcome Measures**

Increased (%) application of municipal design approaches by towns

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	10	10

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Cities and towns in Connecticut are experiencing rapid growth and change. Development pressure in towns associated usually with large highway systems, is of primary importance to the community. Plans need to address the long term viability of existing uses whether commercial or residential and to provide an environment that produces orderly growth.

### **What has been done**

Educational programs were conducted to enable the community to assess the existing situation and to prepare development scenarios for the community in order to gain a consensus of the community.

Community workshops were very successful in that the final proposals reflected their active and forthright inputs. The workshops averaged about 25 participants. The importance of retaining the character of the town green and adjacent properties, which is adjacent to the study area, was carried along by the residents which resulted in specific recommendations.

### **Results**

The Town Manager has been bringing the findings to the table with prospective developers and is finding the development suggestions to be very useful as guides to their potential development plans. Enabling legislation and development strategies are in preparation.

### **3. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
131	Alternative Uses of Land

### **4. Associated Institution Types**

- 1862 Extension

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

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

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Programatic Challenges

### **Brief Explanation**

## **V(I). Planned Program (Evaluation Studies and Data Collection)**

### **1. Evaluation Studies Planned**

- After Only (post program)

### **Evaluation Results**

CANR and the QSHC partnered to create a comprehensive educational initiative called The Green Valley Institute. The Institute is dedicated to improving the knowledge base, at every level from the individual to the Corridor as a whole, from which land use and natural resource decisions are made. Results from a lag survey given to over 100 attendees of previous workshops on Conservation Development Options indicate that 93% can better assess natural resources, 86% have shared land protection strategies with others, 50% have used digital maps, and 50% have recommended conservation subdivisions as a result of attending the workshops.

### **Key Items of Evaluation**

Survey results of participants at Green Valley Institute workshops indicate that 93% can better assess natural resources, 86% have shared land protection strategies with others, 50% have used digital maps, and 50% have recommended conservation subdivisions as a result of attending the workshops.

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

**1. Name of the Planned Program**

Plant Production

**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	20%		20%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		10%	
202	Plant Genetic Resources	0%		20%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting	10%		10%	
205	Plant Management Systems	70%		40%	
	<b>Total</b>	100%		100%	

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

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

Year: 2007	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	6.0	0.0	10.0	0.0
<b>Actual</b>	7.9	0.0	8.8	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
216302	0	109550	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
216302	0	109550	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
468180	0	753074	0

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

**1. Brief description of the Activity**

Research, demonstration sites, Extension programs

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

Agricultural producers, industry, consumers

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

**Target for the number of persons (contacts) reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	3000	12000	0	0
2007	5689	18000	0	0

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

**Patent Applications Submitted**

Year	Target
Plan:	0
2007 :	3

**Patents listed**

Richard J. McAvoy, Mariya Khodakovskaya, and Yi Li. Method and Composition for Increasing Branching and Flowering Response in Plants Through Controlled, Endogenous Cytokinin Regulation. Non-provisional patent filed May 12, 2006 & Updated May 12, 2007 (pending).

Provisional Patent filed:

Richard J. McAvoy, Mariya Khodakovskaya, and Yi Li. Method and Composition for Increasing Plant Survival & Viability Under Cold Storage, or Dark and Cold Storage Conditions. US60/837,585. Filed 08/15/2006

Brand, Mark. Panicum Plant Named "RR1" PP 17,944 08/28/07.

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

**Number of Peer Reviewed Publications**

	Extension	Research	Total
Plan			
2007	0	26	26

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

**Output Target**

**Output Measure**

- Peer reviewed publications

Year	Target	Actual
2007	7	26

**Output Measure**

- Fact sheets, brochures and newsletters

Year	Target	Actual
2007	30	40

**Output Measure**

- Web sites developed

Year	Target	Actual
2007	1	1

**Output Measure**

- Presentations and short courses

Year	Target	Actual
2007	45	67

**Output Measure**

- News releases and media events

Year	Target	Actual
2007	30	95

**Output Measure**

- Books and monographs

Year	Target	Actual
2007	1	6

**Output Measure**

- Workshops and conferences hosted

Year	Target	Actual
2007	4	4

**Output Measure**

- Conference abstracts

Year	Target	Actual
2007	2	3

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

**1. Outcome Measures**

Increased adoption (%) of BMP approaches by industry and growers

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	5	5

**2c. Qualitative Outcome or Impact Statement**

Issue (Who cares and Why)

Fairway topdressing surfaced approximately 20 years ago in the Pacific Northwest in an effort to improve playing conditions on waterlogged fairways. Many golf course superintendents across the country that have adopted this practice have reported several agronomic and player benefits, but the practice requires a significant budget, considerable labor, time, and commitment to implement properly. Additionally, there is limited information concerning suitable sands for fairway topdressing, the optimal target depth of the topdressing layer, and specific turfgrass management concerns as the topdressing layer develops.

**What has been done**

Research was initiated to: 1) Quantify the effects of particle size distribution and topdressing layer depth on infiltration rates and water retention by depth following several simulated precipitation events; 2) Determine whether particle size distribution and/or topdressing layer depth will help regulate root zone temperatures during periods of high temperature stress; 3) Use the resultant data to make recommendations to improve the practice of fairway topdressing.

**Results**

Research is currently in its initial stages, but is designed to address questions specific to the New England region, by using undisturbed soil samples and topdressing materials native to the region. Although the research is designed to answer questions specific to the New England region, results from this research will likely have national implications by providing valuable information to golf course superintendents across the country currently practicing or contemplating a fairway topdressing program.

**3. Associated Knowledge Areas**

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

**4. Associated Institution Types**

- 1862 Research

**1. Outcome Measures**

Increased awareness (% increase) of new BMP approaches by industry and growers

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	5	5

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

The Green Industry is the number one agricultural commodity in Connecticut. It is imperative that the concerns of the Green Industry and the demands of the public to keep the businesses that are involved in the industry strong and thriving by continuing to provide the latest in ornamental horticulture education.

**What has been done**

A full-day Perennial Plant Conference for professional horticulturists was presented by the Ornamental Plant Extension Team to attendees from across the state and the New England area.

**Results**

100% of the symposium attendees who filled out evaluation forms responded that the symposium met their expectations and provided them with useful references.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
205	Plant Management Systems

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased research funding

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	5	5

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Salix has become increasingly used in environmental restoration work, providing a cost-effective material for stabilization and reclamation of disturbed landscapes, as well as for phytoremediation, bioengineering, and biomass production.

**What has been done**

Funding provided by the University of Connecticut Research Foundation for \$20,000 enabled research to identify the range of applications of willows toward minimization of negative anthropogenic impacts on local ecosystems and to study the ecological and cultural requirements of Salix species for successful plant establishment for phytoremediation projects. The study focuses on Salix tolerance of natural and anthropogenic stresses, including drought and heavy metal contamination in order to reveal genus potential for phytoremediation and biomass production.

**Results**

This research is in progress. It is anticipated that the results will facilitate the selection of species for different applications such as phytoremediation, revegetation, and biomass production to ensure the compatibility of candidate species to specific site conditions, to optimize species performance and to meet project objectives.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

**4. Associated Institution Types**

- 1862 Research

**1. Outcome Measures**

Understanding of basic plant production processes (#)

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	2	2

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Developing unique and commercially valuable ornamental plants through genetic unique traits that either enhance aesthetic appeal to the consumer, or provide an obvious and direct benefit to the producer, or that enhance the utility of a plant in the landscape have great economic potential in ornamental horticulture

**What has been done**

Research endeavors to evaluate the effects of unique fusion genes designed to improve aesthetic properties for the consumer, or to increase productivity and provide flexibility in crop management for the producer. Specifically, to genetically engineer vegetative propagated poinsettia with a unique gene construct designed to increase branching and flower bud number. To characterize the phenotype under commercial production conditions of transgenic poinsettias associated with this unique gene.

**Results**

PCR positive ipt transgenic lines have been obtained with EHA-105 and GV-3301. Have been able to visualize successful tissue transformation events as early as 1-2 weeks after inoculation. On 'Red Success', a single spray application of 50 ppm cyanilide successfully stimulated numerous lateral branches that tended to be longer toward the base than the apex of the shoot. Leaco10.821kb-ipt transgenic plants that express normal vegetative development but increased flower bud initiation appear to have great potential for ornamental crop improvement. Filed one (1) provisional patent on the cor15-ipt/cor15-fad technology. Updated IDS information on one (1) pending patent (on leaco-ipt technology)

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms

**4. Associated Institution Types**

- 1862 Research

**V(H). Planned Program (External Factors)****External factors which affected outcomes**

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

**Brief Explanation****V(I). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- Retrospective (post program)

**Evaluation Results**

The UConn Plant Database receives over 100,000 web page views per day from over 3,000 persons that visit the site each day. Numerous inquiries were received requesting use of the information and photographs for a variety of purposes. Landscape design firms are using the pictures and text as part of their design presentations, commercial nurseries and garden centers are linking to the pages, and homeowners send many questions in about plants after they have used the website. The United States government has even used some images for their publication. The website generates about 100 email plant material questions per month. Email feedback on the site has all been glowing and surveys of undergraduate students using the website as a resource in their plant materials courses has all been positive. A sample of user comments about the UConn Plant Database follows: "your website is one of the best online resources", "it's a favorite now – I think it is just wonderful!", "Fantastic site! – by far the best", "Best resource I could find either online or in print", "better than the USDA plant web site", "your site is easy to use and quite complete", "I consider your site one of the plant 'Bibles'".

**Key Items of Evaluation**

The UConn Plant Database has become very popular as over 3,000 persons make over 100,000 web page views daily. Landscape design firms are using the pictures and text as part of their design presentations; commercial nurseries and garden centers are linking to the pages; and homeowners send many questions in about plants after they have used the website. The United States government has even used some images for their publication.

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

**1. Name of the Planned Program**

Plant Protection

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

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
212	Pathogens and Nematodes Affecting Plants	10%		20%	
215	Biological Control of Pests Affecting Plants	10%		50%	
216	Integrated Pest Management Systems	80%		30%	
<b>Total</b>		100%		100%	

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

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

Year: 2007	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	7.0	0.0	2.0	0.0
<b>Actual</b>	7.1	0.0	1.0	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
86663	0	4424	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
86663	0	4424	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
592575	0	152771	0

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

**1. Brief description of the Activity**

Research, Extension programs, demonstrations

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

Agricultural producers, consumers, agency personnel at federal, state and local level.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

**Target for the number of persons (contacts) reached through direct and indirect contact methods**

	<b>Direct Contacts Adults</b>	<b>Indirect Contacts Adults</b>	<b>Direct Contacts Youth</b>	<b>Indirect Contacts Youth</b>
<b>Year</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>Plan</b>	2500	12000	0	0
2007	3304	6355	0	0

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

**Patent Applications Submitted**

**Year Target**

**Plan: 0**

2007 : 2

**Patents listed**

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

**Number of Peer Reviewed Publications**

	<b>Extension</b>	<b>Research</b>	<b>Total</b>
<b>Plan</b>			
2007	8	20	28

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

**Output Target**

**Output Measure**

- Peer reviewed publications

Year	Target	Actual
2007	2	28

**Output Measure**

- Websites developed

Year	Target	Actual
2007	1	2

**Output Measure**

- Presentations and short courses

Year	Target	Actual
2007	30	28

**Output Measure**

- Fact sheets, bulletins and newsletters

Year	Target	Actual
2007	25	130

**Output Measure**

- Media contacts

Year	Target	Actual
2007	25	100

**Output Measure**

- Books and monographs

Year	Target	Actual
2007	0	2

**Output Measure**

- Conference abstracts

Year	Target	Actual
2007	0	6

**Output Measure**

- Workshops and conferences hosted

Year	Target	Actual
2007	2	2

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

**1. Outcome Measures**

Increased adoption (%) of recommended BMPs by targeted consumer populations

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	10	10

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Gardening is a popular activity for many Americans. An estimated 79% of US households participate in some type of indoor or outdoor lawn and garden activity. Gardening has many benefits including an increase in the feelings of self-sufficiency, and increases in home property values. Recovery values on landscaping investments range from 100 to 200 %, a greater return than any other home improvement. There is a need between both novice and experienced gardeners for accurate, environmentally responsible gardening information. The director of the National Gardening Association recently stated "A majority of US households follow only three out of 12 of the recommended environmentally-friendly lawn and garden practices".

**What has been done**

Educational focus was to provide educational conferences and workshops presenting cutting-edge research on environmentally responsible gardening, information on new plant introductions and products. The Ornamental Plant Extension Team and Home & Garden Center organized the Garden Conference - A Conference for the Home Gardener.

**Results**

Over 400 garden enthusiasts attended this one-day conference. Of the 193 that completed evaluation forms. 83% rated the overall conference as good to excellent, 91% rated the speakers as good to excellent, 89% stated that they would recommend the conference to others, 83% stated that they learned new information from the sessions they attended, and 94% stated that they were somewhat or definitely felt more prepared to make changes to their home landscape and gardens.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
215	Biological Control of Pests Affecting Plants
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased adoption (%) of recommended BMPs by targeted grower populations

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	10	10

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

The Sustainable Agriculture Vegetable Crops Extension Program trains producers in reduced-risk methods that help them preserve environmental quality, keep vegetables free of illegal pesticide residues, maintain farm profitability and preserve open space.

**What has been done**

Educational efforts for growers while participating in full-season IPM field training program included instruction on proper pesticide selection criteria. Growers learn that only part of the cost of using a pesticide is included in the price on the jug. Other possible costs of using pesticides include surface and ground water pollution, elimination of natural enemies, resurgence of pest populations, secondary (new) pest problems, resistance, regulatory expenses, chemical residues on crops, health related risks (especially to the applicator), and land devaluation because of real or perceived hazards. Growers learned to choose environmentally-friendly, selective pesticides, that are soft on beneficial organisms and that don't come with a lot of hidden costs. Past educational efforts have helped lead growers away from the use of highly toxic organophosphate or carbamate insecticides that may be detrimental to the environment or harsh on natural enemies.

**Results**

Growers maintained sweet corn crop quality and yield, but reduced risks associated with the use of insecticides by switching to new safer materials.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Pesticide use reduction (%) by participating growers

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	15	15

**2c. Qualitative Outcome or Impact Statement****Issue (Who cares and Why)**

Many commonly used field corn herbicides have moderate to severe soil leaching potentials. Contamination of groundwater is of great concern to the residents of Connecticut where agricultural and suburban areas are situated in such close proximity to one another. The effect of certain pesticides on water quality will continue to be a major public issue. IPM practices that reduce the use of herbicides with severe risk potential for soil leaching in watershed areas will reduce the potential for future groundwater contamination.

**What has been done**

Four field corn growers with 1,746 acres of field corn participated in the IPM Component for Field Corn Training included identifying problem weed pests through field scouting methods, and choosing the most economical and environmentally sound solutions to the overall problem. Training sessions were all held at the respective farms enrolled in the program.

**Results**

Four growers with 1,746 acres of field corn participating in the IPM program made significant changes in their pesticide applications for field corn compared to previous growing seasons as a direct result of the IPM recommendations they followed for weed management. Overall herbicide use was reduced on these farms by 24.3 % (3050 lbs ai). Reduction of herbicides with moderate to high leaching potential was reduced by 38.9% (3190 lbs ai). Overall herbicide cost was reduced on these farms by 22.2 % (\$21,287).

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
216	Integrated Pest Management Systems

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased certification (%) by pesticide applicators

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	10	10

**2c. Qualitative Outcome or Impact Statement****Issue (Who cares and Why)**

The Federal Insecticide Fungicide and Rodenticide Act, FIFRA directs the EPA to cooperate with the USDA and use the services of the Cooperative Extension System to inform and educate pesticide users about the accepted uses and other regulations made under the Act. The State of Connecticut requires that individuals using restricted-use pesticides on their own property or property which they rent for agricultural purposes become certified as private pesticide applicators. Individuals who hold themselves for hire to apply any type of pesticides are required to be certified as commercial applicators. All applicators must maintain their certification by earning re-certification credit at educational programs.

**What has been done**

The Pesticide Safety Education Program focused on the safe use and handling of pesticides and provided information about pesticides and their uses. The educational objective was to provide information and education about the safe use and handling of pesticides.

**Results**

One hundred twenty-three individuals participated in the Ornamental and Turf Short Course at three locations. Eighty-two individuals took the written portion of the state certification exam immediately following the courses. Thirty-four individuals or 41.8% passed the state written exam. These individuals will take oral exams and upon passing their orals will be certified as supervisory pesticide applicators which will allow them to open or expand their businesses or advance their careers.

The CT DEP administered 209 certification exams for Ornamentals and Turf and 44 for Golf Course Superintendents this year. There were 51 passing scores for the Ornamental and Turf exam, 45 of these, (88%), had been class participants. Of the 44 Golf Course Superintendent exams given 11 individuals passed. Three of the eleven (27%), were class participants. Participants' course evaluations rated the instructors and the short course as very good to excellent. The course training manual was also rated very good to excellent.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
215	Biological Control of Pests Affecting Plants

**4. Associated Institution Types**

- 1862 Extension

**V(H). Planned Program (External Factors)****External factors which affected outcomes**

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

**Brief Explanation****V(I). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- After Only (post program)

### **Evaluation Results**

The New England Floriculture Greenhouse Update – an early alert system for growers was developed. Timely information and observations were collected from growers in CT, MA and RI, which was posted on the website [http://www.negreenhouseupdate.info/greenhouse\\_update/](http://www.negreenhouseupdate.info/greenhouse_update/)

350 growers signed up for the alert program, an increase of 100 from last year. This tool is reaching the growers in a timely fashion and the growers value the information. As an added benefit, trade magazine editors and industry representatives have requested to receive the emails and the information posted on the website is being distributed nation-wide. Of the 350 farmers who received regular emails with links to our alert website, 77 responded to the on-line evaluation and of those, 59 were from southern New England (MA, CT, and RI). Of the responses, 97% improved their understanding of a pest problem due to the website, 81% stated that it aided in their choice of the most effective pesticide, 70% stated that it aided in the timing of a pesticide application, 85% stated that it alerted them to a pest problem that they might have missed, 90% stated that it assisted them in diagnosing a pest problem, 66% stated that the website assisted them in non-chemical management of pests. Some comments included:

This is a great site: very useful, the meeting updates along with production information are very helpful. The site contains up to date information with great graphics.

Getting the email messages has been extremely helpful. It puts the up to the minute issue in front of me. Several times I didn't know what was happening to plants and got an email update and suddenly was on my way to getting the problem diagnosed and solved.

It is great to be reminded of potential problems to be reminded of throughout the seasons. Then to be able to access information on ways to combat the problem is very helpful. The website is a must for me as a grower!

### **Key Items of Evaluation**

The New England Floriculture Greenhouse Update – an early alert system for growers - is reaching the growers in a timely fashion and the growers value the information. A survey of 77 of the 350 participating farmers showed that 97% improved their understanding of a pest problem due to the website, 81% stated that it aided in their choice of the most effective pesticide, 70% stated that it aided in the timing of a pesticide application, 85% stated that it alerted them to a pest problem that they might have missed, 90% stated that it assisted them in diagnosing a pest problem, and 66% stated that the website assisted them in non-chemical management of pests.

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

**1. Name of the Planned Program**

Water and Weather

**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	20%		10%	
111	Conservation and Efficient Use of Water	10%		10%	
112	Watershed Protection and Management	30%		20%	
132	Weather and Climate	0%		10%	
133	Pollution Prevention and Mitigation	40%		40%	
141	Air Resource Protection and Management	0%		10%	
<b>Total</b>		100%		100%	

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

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

Year: 2007	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	5.0	0.0	7.0	0.0
<b>Actual</b>	5.0	0.0	4.6	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
163608	0	93090	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
163608	0	93090	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
360609	0	431223	0

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

**1. Brief description of the Activity**

A variety of research and Extension activities will be undertaken. Specifically, certain river and ground water systems will be modeled to determine variation, residential and agricultural water quality concerns will be researched, BMPs developed, and outreach efforts to the agricultural, residential and engineering/regulatory community conducted. Demonstration sites will be established for use in such research and Extension programs. Publications, fact sheets, web sites will be made available.

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

Target audiences will include agricultural producers, public decision makers to include federal and state agencies, municipal planners, various NGOs (land trusts, environmental organizations, etc.), and the general public.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

**Target for the number of persons (contacts) reached through direct and indirect contact methods**

	<b>Direct Contacts Adults</b>	<b>Indirect Contacts Adults</b>	<b>Direct Contacts Youth</b>	<b>Indirect Contacts Youth</b>
<b>Year</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>Plan</b>	1000	3000	0	0
2007	1442	5555	0	0

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

**Patent Applications Submitted**

**Year Target**

**Plan: 0**

2007 : 1

**Patents listed**

Application # TX-6-438-431 filed April 6, 2006, "Geometrical Geodesy Software, Version 1.0"

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

**Number of Peer Reviewed Publications**

	<b>Extension</b>	<b>Research</b>	<b>Total</b>
<b>Plan</b>			
2007	0	3	3

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

**Output Target**

**Output Measure**

- Peer reviewed publications

Year	Target	Actual
2007	5	3

**Output Measure**

- Fact sheets, bulletins and newsletters

Year	Target	Actual
2007	15	11

**Output Measure**

- Training manuals and instructional CDs developed

Year	Target	Actual
2007	1	4

**Output Measure**

- News releases/articles

Year	Target	Actual
2007	5	6

**Output Measure**

- Websites developed

Year	Target	Actual
2007	1	1

**Output Measure**

- Books and monographs

Year	Target	Actual
2007	1	1

**Output Measure**

- Conference abstracts

Year	Target	Actual
2007	1	3

**Output Measure**

- Workshops and conferences hosted

Year	Target	Actual
2007	4	4

**Output Measure**

- Presentations and short courses

Year	Target	Actual
2007	45	48

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

**1. Outcome Measures**

Increased (%) of BMP approaches adopted by target audiences

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	5	5

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Non-point pollution is a major source of contamination of ground water and water bodies. A street tree planting strip along the east side of Hartford's Bushnell Park along Elm Street had been negatively impacted by pedestrians who line up for food provided by vendors. Compaction and erosion has caused the existing street trees to either fail or be in poorer health.

**What has been done**

The focus was a mitigation of an existing problem with sedimentation due to erosion. Ground surfaces where foot traffic is greatest and where runoff is concentrated will be treated with permeable pavement beneath which is to be installed a porous soil mixture.

**Results**

The CT Department of Environmental Protection (DEP) is using the project as an opportunity to distribute brochures on non-point pollution in the Bushnell Park area. This is a demonstration project for the CT DEP as the headquarters are directly across the street. Sedimentation in the runoff will be greatly reduced. The project is to be the first phase and represents one section of the edge of Bushnell Park along Elm Street. As funds become available, the remaining sections will receive the same treatment.

**3. Associated Knowledge Areas**

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

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Development of new models

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	1	1

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Last year the CT Department of Environmental Protection (DEP) approached the Home and Garden Education Center for assistance in reducing the amount of lawn care pesticides and fertilizers that are collected at Household Hazardous Waste collection sites. No records of what products are being disposed of are kept so an objective was to identify the target products.

**What has been done**

A Subcommittee on Lawn Pesticides and Fertilizers was formed from DEP HAZNET (Household Hazardous Waste) committee to address this problem. A survey was developed and administered at several HHW collection days. Approximately 200 surveys were completed.

**Results**

Initial results suggest grub control products and herbicides make up a considerable amount of waste. Surveys will also attempt to ascertain the reasons why extra product is being purchased and not used to aid in education programs.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Number of nutrient management plans adopted

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	5	5

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Farmers are under increasing pressure to protect the environment. Recent research has shown that soils can become saturated with phosphorus(P). When this happens P becomes soluble and can move with rain runoff in to streams. P concentrations in streams at the parts per billion level have been shown to increase algae blooms and eutrophication of surface water. New regulations being written for Concentrated Animal Feeding Operations (CAFOs) would require farms to apply manure according to a strict phosphorus standard, to minimize the amount of P in runoff waters. This would mean that phosphorus levels in the soil would be used to determine the amount of manure and fertilizer that could be applied to a crop. Connecticut farmland soils are high in phosphorus from decades of animal agriculture and application of generated manure.

**What has been done**

The nutrient Management Planning (NMP) program was implemented to teach farmers on 18 farms to manage manure environmentally as well as agronomically. The 18 farms represented 7,200 dairy cows, 161 beef cattle, 24 sheep, 16 horses and 2 swine. Together these livestock produce 9,487 tons of solid manure, and 36,377,361 gallons of liquid manure annually. Plans were written to spread this manure on 1,453 fields, consisting of : 6,082 acres of field corn, 3,822 acres of hay, 71 acres of barley, 262 acres of soybeans, 193 acres of vegetables, 550 acres of pasture, and 283 acres of other minor crops. Farms collected data to document their management practices for the first (baseline) year. As part of the data collection GIS maps of the farm are developed and provided to the farmer and any consultants the farmer identifies. These maps ensured that data collected in the field was accurate.

**Results**

Implementing a NMP forces farms on average to double their manure hauling costs by forcing farms to carry manure twice as far from the barn. 18 farms hauled manure a total of 43,877 miles to spread manure. Hauling costs per farm ranged from \$159 TO \$ 150,738.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
112	Watershed Protection and Management
102	Soil, Plant, Water, Nutrient Relationships
133	Pollution Prevention and Mitigation

**4. Associated Institution Types**

- 1862 Extension

**1. Outcome Measures**

Increased (%) of rain gardens installed by targeted populations

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	5	5

**2c. Qualitative Outcome or Impact Statement****Issue (Who cares and Why)**

Excess nutrients pose a threat to many water bodies in Connecticut. Landscape management, and in particular management of home lawns by the homeowner and/or landscape manager, can seriously impact the quality of water in Connecticut.

**What has been done**

The LAWNS (Learning about water and nutrient strategies) program was implemented to educate residents and Master Gardeners about strategies to reduce loss of nutrients from the landscape to receiving water bodies. A key focus of the education was on the use of rain gardens. Rain gardens are landscape design techniques that reduce the loss of water from the property. Education programs were offered to Master Gardeners through advanced training programs and to the general public through direct education and through the Residential Water Quality website (<http://www.sustainability.uconn.edu>).

**Results**

320 rain garden brochures were distributed by request to towns, individuals and local boards and commissions. The Hartford region Metropolitan District Commission (a wastewater and water supply agency) reproduced 15,000 copies for use.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
102	Soil, Plant, Water, Nutrient Relationships
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation

**4. Associated Institution Types**

- 1862 Extension
- 1862 Research

**1. Outcome Measures**

Increased adoption (%) of improved turf management practices by targeted populations

**2a. Outcome Type:**

Change in Action Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	10	10

**2c. Qualitative Outcome or Impact Statement****Issue (Who cares and Why)**

Turfgrass represents one of the largest agricultural commodities in the Northeastern U.S., and the industry is growing rapidly in response to increasing urbanization of the region. Best management practices for turf need to be developed and implemented to minimize the threat of water pollution from turfgrass fertilizers.

**What has been done**

Research was conducted to evaluate new technologies that will improve N fertilizer recommendations for turfgrass. The results will be of use to homeowners with lawns, and also to turf professionals such as golf course superintendents, grounds keepers, sod producers, sports turf managers, and municipal workers with responsibilities of maintaining parks and recreational areas.

A 3-yr funded research project was funded by USDA-CSREES. This is a multi-state research and extension grant that will involve five different institutions from New England.

Two manuscripts were published in peer-review journal articles - one reported on the use of using anion exchange membranes to predict nitrate leaching losses from turf, and one reported on the use of tissue nitrogen tests to predict turf growth and quality. Two additional manuscripts are being prepared for submission to a peer-review journal - one that documents the use of anion exchange membranes to predict nitrate leaching losses from turf, and one that indicates that golfer perception of the need for faster green speeds are forcing the superintendent into management practices that may be detrimental to turf health. A presentation of research findings was given at the annual meeting of the American Society of Agronomy, Crop Science Society of American, Soil Science Society of America. Five presentations emphasizing the research data were given to homeowners, municipal officials, and turfgrass industry groups.

A state-wide program has been initiated in partnership with the Residential Water Quality extension faculty and several Master Gardeners to develop demonstration sites and provide information on lawncare decisions that can affect water quality. The demonstration sites include alternative, low-maintenance grass species and white clover as a substitute for fertilizer.

**Results**

Research results suggest that fertilization practices (rates, timing, formulations) for turfgrass can be refined to maintain turf quality while decreasing the threats to water quality by nutrient pollution. Presentation of the research to industry professionals has prompted some to change or considering changing their current fertilization practices. Research indicates that new technologies such as anion exchange membranes and hand-held reflectance meters have the potential to better guide turf fertilization rates. Use of these technologies will result in a decreased threat of nutrient enrichment of water resources.

Coordinated research and extension-outreach activities will decrease the need for supplemental water on turf and lessen the potential of water pollution from fertilizers applied to turfgrasses in the urban and suburban landscape.

**3. Associated Knowledge Areas**

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
112	Watershed Protection and Management
111	Conservation and Efficient Use of Water
133	Pollution Prevention and Mitigation

**4. Associated Institution Types**

- 1862 Extension
- 1862 Research

**1. Outcome Measures**

Increased awareness (%) of turf alternatives by targeted homeowner populations

**2a. Outcome Type:**

Change in Knowledge Outcome Measure

**2b. Quantitative Outcome**

Year	Quantitative Target	Actual
2007	10	10

**2c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Homeowners as well as residential landscapers in Connecticut negatively impact water quality primarily through the use of excessive fertilizer and pesticide applications on suburban landscapes and lawns. Contamination to existing bodies of water and groundwater are increasing through these practices by both the professional and homeowner practitioner.

**What has been done**

The residential water quality team addressed the excessive use of chemicals in the landscape by promoting sustainable landscaping practices. Sustainable landscape techniques and practices are systems of gardening that utilize many of the same principles that natural ecosystem utilize. Sustainable landscapes reduce waste, energy and materials. The rationale behind the programs and products produced by the residential water quality team is to encourage homeowners and groundskeepers to work with the natural environment to protect water quality in Connecticut. Program participants learned how to work with nature to obtain the landscapes they desire without negatively impacting the environment.

**Results**

Over 90% of students in the Master Gardener program responded that they learned something new and were willing to change a gardening practice in response to information learned. Over 95% learned a new approach to the topic of water quality. 1,680 general public participants gained knowledge related to sustainable landscaping.

**3. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
102	Soil, Plant, Water, Nutrient Relationships

**4. Associated Institution Types**

- 1862 Extension

**V(H). Planned Program (External Factors)****External factors which affected outcomes**

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

**Brief Explanation****V(I). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- Comparisons between program participants (individuals, group, organizations) and non-participants

**Evaluation Results**

The nutrient management program (NMP) program is teaching farmers to manage manure environmentally as well as agronomically. The majority of the P is coming onto the farm in purchased feed - rather than the fertilizer as one might expect. Farmers have decreased the amount of P in the rations, but cattle are only about 50% efficient at removing P from feedstuffs. This means that 50% of P in the diet passes through the animals and ends up in the manure being applied to crop land. This leads to an imbalance on the farm and the accumulation of P in the soil. There is limited opportunity to move manure off the farm, particularly liquid dairy manure.

18 farms participated in the NMP and represented 7,200 dairy cows, 161 beef cattle, 24 sheep, 16 horses and 2 swine. Together these livestock produce 9,487 tons of solid manure, and 36,377,361 gallons of liquid manure annually. Plans were written to spread this manure on 1,453 fields, consisting of : 6,082 acres of field corn, 3,822 acres of hay, 71 acres of barley, 262 acres of soybeans, 193 acres of vegetables, 550 acres of pasture, and 283 acres of other minor crops. Results included the following:

No commercial dairy from 15 - 1571 cows can manage manure under a strict phosphorus standard.

Complying with a nutrient management plan increases farmer's manure hauling cost by more than double.

Farmers soil tested 84 percent of their crop fields

2 – 94 % of crop fields had nutrients over applied (depending on the nutrient N, P or K)

Of the 11,263 acres being managed under Nutrient Management Plans:

3,636 (32%) received excess N

5,588 (50%) received excess P

5,202 (46%) received excess K

### **Key Items of Evaluation**

The nutrient management program (NMP) program is teaching farmers to manage manure environmentally as well as agronomically. On-farm research of 18 farms determined that complying with a nutrient management plan increases farmer's manure hauling cost by more than double.