2008 University of Connecticut - Storrs Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

University of Connecticut Extension and research programs consistently address significant issues in Connecticut through innovative programming, volunteer contributions, involvement of public officials and partnerships and collaborations with an extensive array of agencies and non-governmental organizations.

Below are selected examples of programs that illustrate the range of topics and collaborations.

Forestry program improves forest management:

The Forestry education program has had impacts across the state and nation. Programs have targeted forest landowners, natural resource professionals and municipal land use officials.The COVERTS program, begun 25 years ago by UConn Extension and the Ruffled Grouse Society, targets landowners and managers in a state where forest land is significant, yet because much of it is in small acreage, is often unmanaged.Since the program's inception, over 600 people have completed the 3.5 day training in CT, and this year's class is responsible for nearly 9,000 acres of CT forest land.

Land Use Decision Making at Local Level improved:

Extension has been the lead agency in a consortium providing basic courses for new land use commissioners, known as the Connecticut Land Use Education Partnership (LUEP). Working with the Connecticut Bar Association, the American Society of Landscape Architects, the Connecticut Chapter of the American Planners Association, Regional Planning Agencies and the Connecticut Rural Development Council, Extension has coordinated workshops throughout the state using the regional planning agencies as gate keepers. Based on the legislative recommendations and administrative changes among the various LUEP partners, UConn Extension took a stronger leadership role and creatingas the Connecticut Land Use Academy. Three sessions: legal procedures, roles & responsibilities, and reading maps, were updated.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. During the past year a new schedule for program delivery was adopted, providing blanket coverage for the state as well as presenting the three sessions on one day on weekends .

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.However, there is a real need to provide basic training for the many commissioners who are elected or appointed each year. The issue then is the need for volunteer land use officials to be educated so they might make rational land use decisions on behalf of their community.

The Land Use Academy had immediate positive impacts. It established 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. In its first year, the Academy sponsored 14 programs in five locations throughout the state. As a result 615 newly elected or appointed commissioners became more knowledgeable about land use issues and their roles and responsibilities as local commissioners. Many registrants attended all three workshops and received certificates in recognition of their attendance.

Master Gardeners: Volunteerism at its best:

The Master Gardener program is an example of volunteerism at its best. This year, 177 students enrolled in the Master Gardener Program. 170 (96%) became certified Master Gardeners after completion of 65 hours of class instruction and at least 60 hours as interns in the County Extension Centers and/or community. Gardeners made 5703 in-office contacts with members of the public via telephone, email and walk-ins resulting in the diagnosis of a wide variety of plant cultural, insect and disease problems. Master Gardeners volunteered over 7500 hours in a variety of community settings that involved 207 outreach projects in the areas of urban and community horticulture and historical and sustainable landscapes. This amounts to approximately $198,750 in donated time.An MG task force to locate, control or eradicate invasive plants has been developed at Bartlett

Arboretum and the Cove Island Wildlife sanctuary one day per week at each site. Asylum Hill Cong. Church Community Garden: 10 master gardeners cleared a vacant lot, designed space and built raised beds. Planted beds with neighbors and worked on development of children's' program with the Asylum Hill Boys & Girls Club.

Mark Twain House Master Gardeners were involved in the Restoration of portion of outdoor grounds at Mark Twain House in Hartford. This included development of period appropriate plantings with information on care and maintenance, and a conservatory management protocol, including maintenance and organic pestmanagement practices.At theFoodshare Garden at UConn Auer Farm, Master Gardeners converted half the garden from traditional in-ground planting to intensive raised bed planting producing 2,700 pounds of organic produce in a no-till format. In addition they are developing a self-guided interactive walking tour of organic no-till practices.850 students enrolled in the 66 classes offered by the Advance Master Gardener Program. 44 certified master gardeners achieved Advanced Master Gardener status level and/or moved up in advanced rank. Advanced Master Gardeners volunteered over 3,500 hours in Extension offices and in a variety of community settings.

Urban non-point pollution control:

Non-point pollution is a major source of contamination of ground water and water bodies, yet many urban residents are unaware of this environmental issue.The street tree planting strip along the east side of Bushnell Park (a venue for many public events) in downtown Hartford, has 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 poor health. Mitigation of an existing problem with sedimentation due to erosion with subsequent impact on the health of street trees was undertaken by landscape architecture faculty. Support funding of $ 5,000 was provided through the CT Department of Environmental Protection and the North Central Conservation District under a grant from the US EPA Section 319 non-point pollution program of the U. S. Clean Water Act. Supervision of construction was provided by the City of Hartford.Base mapping was provided by the Hartford Department of Public Works and on-the-ground survey. John Kehoe, Park Superintendent and City Forester provided consultation. Plans and specifications were developed by UConn faculty and contracts by the City of Hartford.Ground surfaces where foot traffic is greatest and where runoff is concentrated were treated with permeable pavement beneath which a porous soil mixture was installed.Tree locations were protected by a system of bollard and rail with ground cover plantings installed within the protected area.The first phase has been completed one section of the edge of Bushnell Park along Elm Street.As funds become available, the remaining sections will receive the same treatment.This is a successful demonstration project, with erosion and sedimentation from runoff totally reduced, and no evidence of erosion. The CT DEP is using the project as an opportunity to distribute brochures on non-point pollution in the Bushnell Park area.

Reducing Embryonic Mortality in Ruminants:

Ovarian and Environmental Influences on Embryonic/Fetal Mortality in Ruminants The major findings resulting from this project are that embryonic and fetal survival is affected by follicular and luteal physiology early during pregnancy. More specifically, it was found that luteal function at day 30 of pregnancy was related to serum progesterone in dairy cows at risk for late embryonic or early embryonic mortality. It was determined that metabolic clearance of progesterone was more important in regulating peripheral concentrations of progesterone than luteal production. These findings have led to new investigations into the regulation of the metabolism of progesterone during early pregnancy. This new information should assist in reducing early embryonic mortality in all domestic species.

Horticulture Technology Improves Access:

The UConn Plant Database currently contains information about 450 ornamental trees, shrubs, and vines, with over 2000 cultivars and over 5,000 photographs. It also features a "plant selector, online glossary, virtual campus plant walks and a dichotomous key. Several hundred new photographs were obtained for the database. Server statistics were generated on a monthly basis. Commercial Nurseries have access to superior ornamental landscape plant knowledge.Nurseries, landscapers and homeowners can easily find information on ornamental landscape plants and make choices and decisions regarding their use that are most appropriate. Homeowners have free, continually available access to photographic and textual information on landscape plants. Courses at UConn and other universities use the website for instruction.The UConn Plant Database receives almost 300,000 hits from over 10,000 persons visiting 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 publications.The website generates about 100 e-mail plant material questions per month.Feedback on the site has been

overwhelmingly positive: "I consider your site one of the plant ‘Bibles’".

Controlling Poultry Diseases:

Control of Emerging and Re-emerging Poultry Respiratory Diseases in the United States The simultaneous use of interferon-alpha with a DNA vaccine has provided significant protection against an IBV challenge. This finding may allow the use of safe DNA vaccines in commercial poultry flocks and other livestock operations. In-ovo vaccination of 18 days old chicken embryos with a recombinant DNA specific for IBV S gene along with interferon as an adjuvant suggest a good protection against IBV infection. Reverse genetic technology was developed and optimized for avian influenza subtype H7 and H5 viruses for vaccine development and pathogenicity studies. The project resulted in successfully made several recombinant viruses that contain in various combinations of Hemagglutin (HA) and Neuraminidase (NA) genes from low pathogenic avian influenza subtypes viruses. Avian Influenza rescued viruses are being characterized in cell culture and chickens for pathogenicity and vaccine development. The successful development and optimized reverse genetic technology for avian influenza will allow manipulation of the virus genetically for the development of safe vaccine candidate as well as for pathogenesis studies.

Addressing Green Industry Labor Needs - a new approach:

It has been estimated that the 3000 + companies making up the Green Industry in Connecticut have a need for at least 7000 additional employees with greater numbers possible with the implementation of stricter foreign/undocumented worker laws.The University of Connecticut had been contacted by the Green Industry to develop and provide instruction especially tailored for those who may be considering employment opportunities in the field of growing, maintaining and selling plants. An introductory horticulture short course was designed to provide both new and potential employees of the Green Industry with plant care basics including how plants grow, plant identification, essential cultural requirements, introductory propagation techniques, and common pest problems. It consisted of lecture/discussion sessions held at the University of Connecticut Hartford campus and hands-on sessions held at Green Industry businesses in the Greater Hartford area. Classes are held Thursday nights and Saturday mornings in January and/or February. 20 of the 23 students enrolled in the 2008 class received their certification. More than three-quarters of the students enrolled this winter were interested in finding employment in the Green Industry. Through the CT Nursery and Landscape Association’s website, potential employees could be matched up with employers.

Financial Literacy Education for At-risk Families:

Connecticut ranks number one nationally in per capita income, with the gap between its highest and lowest income families increasing.Connecticut Voices for Children reported that the gap in income between Connecticut's richest and poorest, and between the richest and the middle-income earners, has grown more than anywhere else in the country.The state's poorest families lost ground over the same time period. Their income declined by 17 percent, the largest drop of any state, the report said.According to the Voices for Children report wide income disparity can reduce a community's diversity. In Southern Fairfield County a wage of $31 an hour is needed to afford an apartment. More than 12% of Connecticut’s childrenlive in poverty.This same data reports that 11.3% of residents (394,000 residents) reported lacking health insurance for a full year.Families seeking financial assistance and counseling from social service agencies continues to be in high demand as they try to cope with Connecticut’s economic climate. Increasing costs of home heating and gasoline have greatly impacted all of Connecticut’s families.

Financial Literacy programs are designed for limited resource families and individuals enrolled in programs sponsored by agencies working with at-risk families. The objectives are to provide program participants with the skills necessary to manage their money and to give parents the skills necessary to teach their children about managing money.

Social service agency staffs also need training in money management as they assist their clientele with the challenges presented by the economy. Train-the-trainer programs were conducted for staff representing 12 statewide agencies. Those trained represented agencies including the Danbury Regional Child Advocacy Center; Ability Beyond Disability; InfoLine; Municipal Social Workers; and Labor Union Peer Counselors.

Managing Your Money program series were conducted as part of the Communication of Parent Effectiveness Skills program (COPES) at the Danbury Regional Child Advocacy Center. One group was composed of English-speaking parents and one group was composed of Spanish-speaking parents.The Commission provided a translator for the Spanish-speaking groups.The objective is to increase the participant’s financial literacy.Series topics included setting family financial goals; developing budgets; credit and debt management; reducing expenses; children and money; and resolving consumer problems. The Commission reports that 85% of the 100 clients who participated in this program achieved their goals, including improved money management

skills.87% of participants indicated, on post-program surveys, that they felt better about communicating about money with their partners/spouses.Sixty-four percent indicated that they had begun to teach their children about money through the use of allowances.Thirty percent have set financial goals and some have begun savings accounts to reach these goals and provide emergency funds.In post-program interviews participants indicated that they would now save for big-ticket items, such as television sets or furniture, rather than use rent-to-own options.

Social service agency staff in post-program evaluations reported that they felt more confident advising clients about money management.Evaluations also indicated that: 100% plan to use the skills learned in their work; 90% will distribute one or more worksheets to their clientele; 90% will share workshop information with their co-workers; and 15% plan to present a money management program at their agency.Agency staff indicated that they have changed their own personal practices, improving their money management skills after participating in the training.

New Technology, Taste and Health:

The tastes and more broadly, oral sensations, from food/beverages vary across individuals, ranging from those living in a pastel food world (ie, nontasters) to those living in a vibrant food world (ie, supertasters). Oral sensation varies genetically and across the lifespan with exposure to common pathologies (eg, middle ear infection) or changes in hormone levels (eg, menstruation, pregnancy, perimenopause). Nontasters and supertasters vary in the foods and beverages they like and thus chose to eat. The ultimate goal is to understand how variation in oral sensation influences the ability to follow a healthy diet for the prevention of chronic diseases such as heart disease and cancer, as well as risk of obesity. This research will provide direct recommendations on how individuals can lower their risk of obesity and chronic diseases with improved compliance to healthful diets that are tailored toward individual food preferences. In partnering with faculty at Yale University, the breakthrough new method of resonance Raman spectroscopy (RRS) is being used to objectively estimate fruit and vegetable intake in Head Start preschool children across the state of Connecticut. RRS uses light to noninvasively assess skin levels of carotenoids, the best-considered biomarker of fruit and vegetable consumption. Carotenoids are plant pigments widely distributed in fruits and vegetables that are not encountered in significant concentrations in other foods. These results could potentially allow for outcome measurement of child nutrition programs in the state, such as the Captain 5 A Day program.

Improving Animal and Public Safety:

City and Town Animal Control Officers (ACOs) often have no knowledge of how to handle horses, yet are asked to handle them when an emergency arises. The objective of this one day workshop sponsored by the CT Horse Council, and hosted at UConn was to the teach the ACOs basic horse handling and safety. The Extension Equine Specialist/Associate professor of Animal Scinece, helped organize, teach, and implement the event. Funds for the program were provided by the CT Horse Council. Participants received resource materials from the University and the Horse Counci. An article was published before and after the event in the Horseman's Yankee Pedlar. Over 45 ACOs learned basic horse handling safety and increased their confidence in their ability to handle horses.

Insuring Seafood Safety:

A 1997 FDA regulation requires all seafood processors to meet a HACCP training requirement, which involves taking a standard course developed by academics, regulators, and industry members. The impetus for the regulation was concern about the increasing number of outbreaks of foodborne illness related to seafood, and the need to protect consumers by assuring that all domestic fish and fishery products are processed and handled in the safest manner possible. The regulations extend to imported seafood products as well. Importers are required to prove that all imported product is processed and handled in a manner that meets the same standards required of domestic producers.

Recognizing that the seafood industry’s continual employee/business turnover would drive the demand for this training, a regional training partnership between Connecticut and Rhode Island Sea Grant Extension / Cooperative Extension was established to:ensure that industry members in southern New England have regular access to the required training; engage instructors from both the university and regulatory environments in the training to broaden the perspective and expertise available to course participants; provide pertinent, timely HACCP and food safety-related information post-training through print and electronic newsletters; and share responsibility for organizing and teaching the training courses.

Training opportunities are offered a minimum of four times annually to industry members in partnership with RISG, FDA, CT

and RI regulatory agencies, and the Association of Food and Drug Officials (AFDO).Annual "School to Career" training are offered to senior high school students at the Sound School Aquaculture Center in New Haven and Grasso Technical High School in Groton to enhance employability.

Additional instruction provided by CT and RI state staff responsible for regulating the shellfish industries under the National Shellfish Sanitation Program, as well as a FDA inspector. This enables industry members to ask questions about regulations and hear directly from those who will be conducting their inspections.Training—through 48 courses offered in CT, RI, and MA since 1997, more than 700 seafood processors, importers, and dealers received the required training in the application of HACCP principles to seafood processing (45 trained in 4 courses in 2007-2008), enabling them to remain in business (including 133 CT firms with gross annual income ranging from less than $100K to more than $10M).Since 2001, 117 (27 in 2008) senior vocational high school students have received seafood HACCP training as a "School to Career" offering. Currently, four students are putting their training to use in the Connecticut seafood industry.

Enhancements to the standard Seafood HACCP Alliance curriculum provide trainees with stronger understanding of sanitation requirements and other prerequisite programs.Periodic newsletters helps HACCP-trainees to stay current with changes to seafood hazards and/or controls, changes in inspection or enforcement policies, or pending rules and regulations that are pertinent. As the only HACCP instructors to offer this continuing education service, our newsletters are used by several instructors and FDA/state inspectors outside CT and RI.

Combining a Hobby with Academics: 4-H Horse Program

There are over 1000 4-H horse project members in Connecticut, (more than dairy, beef, sheep, hogs and poultry combined) representing the largest single project area enrollment.814 girls and 247 boys between the ages of 7 and 19 are currently enrolled in the 4-H horse program.There are 127 adult volunteers who are active in the 4-H Horse Program. Connecticut ranks 2nd per capita in horse density with 1 horse for every 65 people. There are approximately 400 horse shows per year in Connecticut helping to generate 333 million-dollar in annual revenue.The 4-H Horse Program helps initiate and educate 4-H participants to all aspects of horse involvement.Academic endeavors are stressed, and responsible horsemanship practices are reviewed. 4-H members need not own a horse but a majority of them do. A focus of the State 4-H Horse Program was to continue the Connecticut State 4-H Horse Academic Events. This affords 4-H members the opportunity to be evaluated on and display their academic knowledge of all things horse.

The program includes Extension educators, Animal Science faculty, the State 4-H Horse Advisory Committee, independent study undergraduate students in the Equine Program and volunteers. The State 4-H Horse Contests include: State 4-H Horse Public Speaking, State 4-H Horse Individual Demonstration. State 4-H Horse team Demonstration, State 4-H Hippology, State 4-H Horse Bowl, and State 4-H Horse Judging.4-H Members either did a presentation on which they were evaluated and given feedback or they were tested in each of the other areas.

The annual State 4-H Horse Contests had over 170 combined participants.The contests increased all participants' knowledge of the subject matter, increased social, teamwork and public speaking skills, and provided members with feedback on how their studies were proceeding.Four of the top teams and 2 individual speakers from the 2006 State 4-H Horse Contests were offered the opportunity to compete on the national level in Kentucky. The study habits that are formed by the participants can be applied to their schoolwork.Many contestants comment on how studying for state contest has greatly improved their ability to retain information for other school subjects.The program created a positive learning and sharing situationwhich improves a participant's self-confidence in the academic arena as well as their self-image and academic standing in school.Their participation increases interest in equine studies at the college level, leading to more productive employment. Their academic 4-H experience enables them to be more ecologically sound in their horse management practices.

Addressing Invasive Plants in the Environment:

Conservation, Management, Enhancement and Utilization of Plant Genetic Resources There is significantly increased interest in using native shrubs for landscaping to avoid invasiveness issues. These findings will help growers, landscapers and homeowners chose only those ornamental Physocarpus cultivars that are disease resistant. It was determined that great variation exists in reproductive capacity among cultivars of Japanese barberry. In Connecticut, bans on barberry have been tabled until this data has been generated, in recognition of the fact that not all genotypes of barberry may be reproductively potent. By allowing low risk cultivars of barberry to be utilized, both the economic and environmental impacts can be minimized. Reproductive capacity of Euonymus alatus cultivars was also found to be variable from genotype to genotype, but no existing cultivars were found to be fruitless. Furthermore, some cultivars which have been reported to be sterile in plant catalogs and

gardening information were found to be very capable of sexual reproduction by this research. Genetic analysis of feral barberry populations showed that purple-leaved landscape forms of the Berberis thunbergii have introgressed very little into the invasive populations. Some evidence of purple-leaved genetics was found, but it was minimal. Only one plant with purple foliage was found in the feral populations that were studied. Substantially more genetics were present from Berberis vulgaris that was once widely distributed throughout the Northeast. In one additional, unique location, parentage analysis was used to document how a purple-leaved landscape plant may spread from the landscape setting into surrounding unmanaged areas to initiate an invasion or contribute to an invasive population.

Total Actual Amount of professional FTEs/SYs for this State

Year:2008	Extension		Research	
	1862	1890	1862	1890
Plan	67.0	0.0	58.0	0.0
Actual	94.5	0.0	58.0	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 continues to be based on characteristics of an engaged institution, as well as the criteria for excellence in Extension.Faculty and staff planning is reviewed within the department, the college and the University.Review of selected projects is also conducted by peer institutions and key stakeholders.Peer review for Hatch, McIntire-Stennis and Animal Health Projects focuses on matching projects with identified priorities through review by scientists, administrators and as appropriate, stakeholders.

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

Collaborative efforts with a wide array of public agencies, commissions, non-profit agencies and community groups provides stakeholder input on a continuous basis.Among the relationships are: The Connecticut Food Policy Council, Connecticut Farm Bureau, Connecticut Department of Agriculture, Connecticut Departments of Social Services, Public Health, Consumer Protection, etc.College faculty and staff, both Extension and research work closely as team members on projects, programs and as members of Boards, Commissions and Councils.

The State Extension Partners Council, comprised of various state-wide 4-H organizations, County Extension Councils,Master Gardener Association, etc.mets regularly with with College leadership to discuss current and emerging issues and how they can be addressed by the College of Agriculture and Natural Resources and Cooperative Extension.

The College has sponsored Leaders Forums during which focus group type sessions provide an opportunity for stakeholders to provide direct input. Extension participation in a variety of conferences, trade shows, and other public events provides direct contact with citizens who are non-traditional participants.The College sponsored Fall Cornucopia event brings the general public (1500 plus) to campus for interaction with faculty and staff. Various research reports by other organizations such as The Connecticut Voices of Children report provide detailed statistics on needs and trends in the state.

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

State-wide program teams work closely with advisory groups comprised of end users, stakeholders, and related service providers and collaborators.For example, the Agricultural Risk Management Advisory Committee devoted a full meeting to identifying agricultural concerns and issues. County Extension Councils have undertaken various needs assessments to identify county issues and trends. A considerable amount of programming in Connecticut is train the trainer, in collaboration with other agencies and organizations,which provides access to needs and issues identified by non-traditional groups. As noted previously, post meeting assessments ask about additional needs that should be addressed.

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

Stakeholders, such as commodity producers, town officials and 4-H leaders, provide input through personal contact, end of program assessments, association meetings, and surveys.Use of internet based surveys has continued to increase.Faculty and staff participation on state boards, such as the Food Policy Council, various pesticide committees, the Invasive Plant Working Group, as well as professional organizations such as the Family and Consumer Science Association, provide direct and indirect contact with both traditional and non-traditional stakeholders. Various web pages offer the public an opportunity to ask questions, which are tracked as trend data.

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 considered as programs are considered and planned.Input is one factor in initiating new programs, sunsetting others, and in applying for grants. Stakeholder opinions are considered in program methodology (face to face versus on-line, for example), location of events, and timing.

Brief Explanation of what you learned from your Stakeholders

Stakeholders have issues at family, business and community level.Recent input has focused on the challenges of the economy for families, businesses and communities, the labor situation for agricultural producers, food safety,

farmers' market regulations, access to USDA funding by farmers (navigating crop insurance requirements, for example), obesity and other nutritional concerns, and volunteer recruitment efforts.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1965183	0	1053050	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	1430297	0	648316	0
Actual Matching	1430297	0	648316	0
Actual All Other	5587308	0	6480713	0
Total Actual Expended	8447902	0	7777345	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous years				
Carryover	16867	0	486046	0

V. Planned Program Table of Content

Program #1

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 Components	25%		25%	
703	Nutrition Education and Behavior	35%		35%	
704	Nutrition and Hunger in the Population	20%		20%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	5%		5%	
724	Healthy Lifestyle	10%		10%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	12.0	0.0	10.0	0.0
Actual	19.0	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
161886	0	78129	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
161886	0	78129	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1305265	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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	4500	13000	125	500
2008	5127	16500	650	4967

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	3	5	
2008	1	25	26

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Fact sheets, bulletins and newsletters

Year	Target	Actual
2008	44	40

Output #2

Output Measure

- Websites developed

Year	Target	Actual
2008	2	1

Output #3

Output Measure

- Media releases

Year	Target	Actual
2008	23	35

Output #4

Output Measure

- Books and monographs

Year	Target	Actual
2008	4	1

Output #5

Output Measure

- Workshops and conferences hosted

Year	Target	Actual
2008	3	41

Output #6

Output Measure

- Presentations and short courses

Year	Target	Actual
2008	60	59

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Understanding of basic dietary processes vis-a-vis nutrition and/or health
2	Public policy adoption of health management strategies (# of strategies adopted)
3	Reduced (%) levels of obesity by target populations

Outcome #1

1. Outcome Measures

Understanding of basic dietary processes vis-a-vis nutrition and/or health

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The consumption of eggs has been reduced due to the perceived association between dietary cholesterol and risk for coronary heart disease. However, epidemiological data suggest that there is no correlation between egg consumption and coronary events. In contrast, eggs are a good source of carotenoids including lutein and zeaxanthin, which are potent anti-oxidants protecting against macular degeneration. Eggs may also play a role in decreasing appetite.

What has been done

Two clinical trial were conducted utilizing carbohydrate restricted diets with and without eggs to evaluate the contribution of eggs in the alteration of plasma lipids, in the circulating inflammatory cytokines and in decreasing appetite. The study involved 28 participants who were assigned to an egg or non-egg intervention using carbohydrate restricted diets for 12 wk.

Results

Clinical interventions using eggs indicate that 66% of the population does not experience a significant increase or no change in plasma cholesterol after egg consumption. Those individuals (33% if the population) who experience an increase in plasma cholesterol is in both lipoproteins LDL and HDL in such a way that the LDL/HDL ratio is maintained. In addition the size of both LDL and HDL increase with eggs providing a means to transport the carotenoids present in eggs. Eggs have also been shown to decrease appetite thus they can be a nutritious food that can be used in weight loss interventions. All subjects experienced significant decrease in body weight, triglycerides and inflammatory cytokines. However, only the egg group presented a significant increase in HDL cholesterol and in plasma lutein. Also,the egg group presented a significant increase in adiponectin, an adipokine involved in insulin sensitivity. In the second study we evaluated the contribution of macronutrient composition to appetite. 22 subjects consumed two types of breakfasts, an egg-based or a bagel-based breakfast one week apart. All the subjects experienced a significant decrease in appetite as assessed by kcal consumed all through the day, during egg intake.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	2

3c. 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. In 2005, in partnership with the Hispanic Health Council and Hartford Hospital, Dr. Rafael Perez-Escamilla secured $8.25 million over 5 years for an to establish the NIH-funded Connecticut Center for Eliminating Health Disparities among Latinos. Year 3 of this grant was completed on June 30, 2008.

What has been done

The CEHDL Diabetes Peer Counseling Randomized Trial is progressing well, with 187 consented participants. CEHDL affiliates receive communications via email, CEHDL website (www.cehdl.uconn.edu) which has received 15,000 hits, and the newsletter. The CEHDL third annual conference, held in May, 2008 (Reducing Mental Health and Addiction Disparities in Connecticut and Beyond) attracted over 140 people. Sixty people attended the CEHDL Community Forum in April, 2008, which featured a facilitated dialogue on depression, educational sessions and wellness activities. Ten seminars were sponsored by CEHDL. Fifteen abstracts based on CEHDL-affiliated research were presented at scientific conferences. CEHDL is actively promoting health disparities training. CEHDL awarded a fellowship to Roberto Cruz, a minority graduate student pursuing an MPH at UConn, continues to fund previous fellowship recipients, and is supporting 5 CEHDL summer undergraduate interns at Hartford Hospital.

Results

In early 2008, CEHDL Community Core, based at the Hispanic Health Council (HHC), partnered with HHC youth program to launch a new, innovative project titled Youth on Health! YOH! offers Hartford low income, urban youth direct experience in health disparity research, peer education, and advocacy, and provides exposure to diverse careers in health care and public health. By engaging youth in a series of participatory, educational opportunities, YOH! illustrates the impact health disparities have on participants, their families, and the community, and demonstrates solutions at the individual, community and systemic level.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
704	Nutrition and Hunger in the Population
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
724	Healthy Lifestyle

Outcome #3

1. Outcome Measures

Reduced (%) levels of obesity by target populations

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In 2005, one in four (26%) Connecticut high school students were obese (11%) or overweight (15%). In some Connecticut communities, almost 25% of children are obese. Connecticut's adult obesity rate rose from 12% in 1990 to 20% in 2005. More than half (58%) of Connecticut adults were obese or overweight in 2005. Obese children face increased risks of Type 2 diabetes, hypertension, stroke, asthma and heart disease. Obesity played a major role in the 41% increase in diabetes among U.S. adults from 1997 to 2003. Obesity-related health problems in Connecticut added $665 million in Medicaid and Medicare costs in one year. Presented with so many possible causes of the obesity epidemic and only limited evidence about what works to combat childhood obesity, EFNEP is focused on involving both children and parents in obesity-prevention programs and educating families to improve nutritional and physical activity that are most likely to be effective.

What has been done

Hartford County area limited resource families and youth were reached and served by hands on workshops, (Development of material such as handouts, games and power point presentation in Spanish/reading labels and portion sizes) to better serve Hispanic Families. Presentation and individual counseling offered at family centers, schools, and other centers. A total of 108 Nutrition Education Sessions: 295 Youth and 122 Adults, Assessment tool used was ERS 24-hour Recall and Behavior Checklist. Nutrition curriculum adapted to participants needs and offered in both languages Spanish and English, Extension System curriculum such as lead and others were also included to meet their need. Examples of collaborators include: Center for Youth, Family Resource Center Sanchez School and the Family Resource Center, Betances School, the Maria Sanchez Clinic, the Village for Families and Children: Family Resource Center Mary Hooker School Trust House Family Learning Center, Head Start Parent Education in Manchester, Pathways/Senderos in New Britain, the New Britain General Hispanic Counseling Center, Hartford Hispanic Health Council, and the Hartford Public Library .

Results

With the use of ERS Behavior Checklist participants are showing great improvement in planning and being aware of what they are feeding their families. They are also showing 96% behavior changes in dietary intake, food resource management and food safety knowledge, skills and behavior, documented by ERS computerized data system. After Nutrition Education Series, families are aware of impacts that relevant social, environmental, and policy contexts that influence eating habits of their children. The importance of having control in their household is a start to a solution; what and how much they offer their children for meals and snack. 57 Parents/caregivers completed 6-8 sessions of series and obtained Certificates for participation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle
703	Nutrition Education and Behavior

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

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)
- Time series (multiple points before and after program)

Evaluation Results

Grant funded project, Increasing and Improving the Meat and Poultry Pathogen Reduction and HACCP Training Options for Plants in the Northeast: This is year 2 of this project. A mail survey was sent to 1163 Northeastern meat and poultry processors to assess needs in the Northeast.A national meeting, Preparing Small and Very Small Meat and Poultry Establishments for the Future of HACCP: A Cooperative Approach was held April 30, 2008.A PowerPoint presentation was developed to inform participants of survey results.Three focus groups were held as part of the meeting to elicit suggestions for addressing the needs of small and very small meat and poultry processors for information and training.
301 surveys were returned for a completion rate of 26%.Results were tabulated and shared at a national meeting in Philadelphia on April 30.Survey results will be used to further inform the project group and USDA/FSIS regarding demographic information, assessment of the need of the target group for education and information and knowledge of meat and poultry HACCP principles.Several key points identified based on frequency of responses alone include:1) 46% process ready to eat products; 2) 74% have been in business for over 20 years; 3) 41% have non-English speaking employees; 4) 49% of those that do not have a training program stated that they had no time for training, 45% had no funds to pay training costs and 32% had no resources to support training; and 5) the total knowledge score for all topics addressed in the knowledge section was 63%, indicating the need for HACCP training even at basic levels.Further analysis will be conducted and reported on in the next program year.Fifty three persons attended the national meeting, including regulatory (FSIS and State), academic and industry personnel.Three focus group sessions resulted in the development of guidance to help meet the needs of small plants for training and information.Results will be tallied and used to develop a "white paper" report for USDA/FSIS, the industry and academics.

Key Items of Evaluation

Program #2

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	35%		35%	
603	Market Economics	15%		15%	
605	Natural Resource and Environmental Economics	35%		35%	
606	International Trade and Development	15%		15%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	4.0	0.0	4.0	0.0
Actual	3.2	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
21562	0	167052	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
21562	0	167052	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
414718	0	157435	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

A mix of research and Extension activities addressed identified issues through economic assessments, program offerings, partnering and counseling.Conferences, one on one counseling, workshops, tours, working groups of professionals and producers are among the educational strategies employed.

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	550	1500	0	0
2008	400	3300	0	0

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	4	
2008	0	4	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Web sites developed

Year	Target	Actual
2008	1	1

Output #2

Output Measure

- Media articles

Year	Target	Actual
2008	3	2

Output #3

Output Measure

- Workshops and conferences hosted

Year	Target	Actual
2008	5	13

Output #4

Output Measure

- Presentations and short courses

Year	Target	Actual
2008	10	10

Output #5

Output Measure

- Books and monographs

Not reporting on this Output for this Annual Report

Output #6

Output Measure

- Conference abstracts

Not reporting on this Output for this Annual Report

Output #7

Output Measure

- Fact sheets, bulletins and newsletters

Year	Target	Actual
2008	4	5

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Natural resource management policies adopted and/or amended at national, state, regional and local governmental levels
2	Number of new and/or strengthened partnerships with governmental agencies, NGOs and/or corporations resulting from research and Extension programmatic activities in the area of economics,marketing and policy
3	Acreage under crop insurance (% increase)
4	Adoption of recommended risk management strategies by defined target audience (% of audience)
5	New food policies adopted/amended at the national, state, regional and/or local level by governmental, non-profit and or corporate entitties related to pricing, local buying, distribution and availability

Outcome #1

1. Outcome Measures

Natural resource management policies adopted and/or amended at national, state, regional and local governmental levels

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The impact of water diversions from streams and of water releases from reservoirs on downstream flow, i.e. Instream Flow, in a river is a critical issue in Connecticut. The amount and timing of instream flow is especially important for the fisheries and other biological organisms within the stream ecosystem. Connecticut has a large number of water supply reservoirs owned and operated by water companies or municipalities. The operation of these reservoirs in releasing a portion of the incoming and/or stored water in the reservoir is currently being discussed as part of the CT Department of Environmental ProtectionÂ's Instream Flow Scientific and Technical Workgroup.

What has been done

The CTIWR modeling effort provided a flexible, rapid-prototyping, simulation modeling environment to the CT DEP Instream Flow Scientific and Technical Workgroup (IFSTW) to inform the process of developing regulations for reservoir downstream flows. The iterative development approach and software tools used in this project allowed staff to quickly change the relationships between the main components of the dynamical reservoir system, and easily assess the impact of various policy scenarios. In the first phase of this effort, CTIWR developed the tools and ran scenarios to see how the different release rules impacted the flow characteristics of the output stream. The second phase of the work looked at how the availability of water for human use is impacted by different release rules, and began the process of defining tradeoffs between preserving natural flows and satisfying human demand for water.

Results

This modeling work supported the development of water management policy that could potentially affect all public water supply reservoirs in the State of Connecticut as well as the state of the ecosystems downstream of those reservoirs. The model can be used as a tool to optimize water use to support human demand and ecosystem functions. A simulation model created by CTIWR was used by the CTDEP Instream Flow Scientific and Technical Work Group in developing water management policies that could potentially affect all public water supply reservoirs in the State of Connecticut and their downstream flows. The model has been used to identify those release policies best suited for different watershed sizes, storage ratios and hydrologic characteristics and assess potential climate change impacts on reservoir management.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There is a need to improve the economic viability and profitability of CT agriculture in an increasingly urban state - 6 of 8 counties are Macropolitan and 2 are Micropolitan. Work with other agricultural service providers, regulators and policy makers is essential.

What has been done

Partnerships have been strengthened through on-going programs and particularly the Risk Management program. A 34 member advisory group provides an opportunity to collaborate among the state and federal agencies and NGO's. Membership consists USDA, FSA State and County Directors, USDA, NRCS, CT Farm Bureau Assoc and County Associations, CT Dept. of Agriculture, Working Lands Alliance, Connecticut Farmland Trust, crop insurance agents, First Pioneer Farm Credit, an attorney and several producers, CT-Women's Agricultural Network, and City Seed. A number of these individuals have volunteered in organizing programs and as speakers and educators in project programs. These individuals also assisted in providing advice on program content and format and helped in suggesting speakers.

Results

Conferences, one on one sessions and workshops have been widely promoted by partner groups. Conference and workshop evaluations have shown that participants have increased their knowledge of the topic addressed, such as food land preservation tools, record keeping, and marketing. Several participants have begun the transition to organic certification, and several others have begun to improve their record keeping.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics
606	International Trade and Development
602	Business Management, Finance, and Taxation
603	Market Economics

Outcome #3

1. Outcome Measures

Acreage under crop insurance (% increase)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Risk Management is critical in today's economy and today's society. Risk Management education programs help producers focus risks that they can address. Reducing or managing risk in labor, food production, marketing, and financial areas can enable a business to increase their potential of success.

What has been done

A plan of work was developed addressing: a survey of existing crop insurance and risk management education materials and curricula which were utilized in crop insurance and risk management education programs in Connecticut; a crop insurance and risk management curriculum designed to address crop insurance and risk management educational needs of Connecticut agricultural producers and advisors; an education and information program delivery plan was developed and implemented. Educational activities included: three crop insurance recordkeeping workshops, one-on-one advising sessions for producers, two state-wide conferences (Ask-the-Experts and Agricultural Marketing), partnerships with two limited resource farmer organizations, displays and presentations at growers meetings, educational material distribution through 10 Extension educators, development of farm risk management publications and direct mailings to agricultural producers and advisors.

Results

Crop insurance liability coverage continues to increase in Connecticut according to federal data. Producers and others are beginning to see the benefits of having insurance, as weather related crop injuries have been covered, enabling farmers to continue to farm.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
603	Market Economics

Outcome #4

1. Outcome Measures

Adoption of recommended risk management strategies by defined target audience (% of audience)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	40

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

CT producers and farmers operate with many constraints, such as high land and labor costs. Managing risk appropriately helps to balance the uncontrollable with what can be controlled.

What has been done

The conference Ask the Experts and A Marketing Tour: Expanding into New Markets were held. 4 day-long one-on-one advising sessions provided producers with an opportunity to meet with a professional to discuss questions on crop insurance, transition to organic farming, integrated pest management, estate planning, business planning, farm energy conservation and dealing with local officials. Three crop insurance record keeping workshops were also held.

Results

An estimated 200 producers learned new marketing strategies, how to work with local officials, how to comply with organic certification, and how to improve their record keeping.

4. Associated Knowledge Areas

KA Code	Knowledge Area
603	Market Economics
602	Business Management, Finance, and Taxation

Outcome #5

1. Outcome Measures

New food policies adopted/amended at the national, state, regional and/or local level by governmental, non-profit and or corporate entitties related to pricing, local buying, distribution and availability

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There is a need for inspected, certified livestock slaughter/meat processing facilities in Connecticut to meet the needs of small scale meat producers who can not market their product unless it meets various levels of government oversight/inspection.

What has been done

Chaired and conducted CT Food Policy Council eight hearings and meetings on meat processing needs in the state. Connecticut farmers, state and local food safety regulators, meat processors and service providers examined lack of fully inspected slaughter facilities in the state.

Results

Connecticut Livestock producers created a non-stock corporation and filed papers with the CT Secretary of State for the Connecticut Meat and Poultry Producers Association, 'to promote the viability of the local meat and poultry industry and to support local and sustainable agriculture' The Association will provide leadership and direction regarding a slaughter facility.

4. Associated Knowledge Areas

KA Code	Knowledge Area
603	Market Economics
606	International Trade and Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

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

1. Evaluation Studies Planned

- After Only (post program)
- Before-After (before and after program)
- Time series (multiple points before and after program)

Evaluation Results

Program evaluation was conducted at the one-on-one advising sessions, the "Ask the Experts Conference", the Marketing Tour, and the crop insurance record keeping workshops.Seventy one producers and 21 service providers attended the four one-on-one sessions.When the participants were asked if the workshop met their expectations, the average score for those that responded ranged from 4.3 in one location to 4.8 in another location out of a maximum score of 5.A sample of producers attending the 3 crop insurance record keeping workshops reported that the sessions met their expectations, with anaverage score of 4.2 out of a maximum score of 5.25 producers and 7 service providers attended the Marketing Tour.When the participants were asked if the tour met their expectations, the average score for those that responded was 4.7 out of a maximum score of 5. Producers attending the Ask the Experts Conference reported that the conference met their expectations with an average score of 4.3 out of a maximum score of 5.

Key Items of Evaluation

Program #3

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%		10%	
803	Sociological and Technological Change Affecting Individuals, Families and Communities	10%		10%	
806	Youth Development	70%		70%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	17.0	0.0	2.0	0.0
Actual	20.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
703125	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
703125	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1090266	0	49297	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Extension programs including train the trainer, workshops, conferences, camps, 4-H clubs, school-enrichment programs, web-based educational programs.

2. Brief description of the target audience

Youth, schools, families, agency personnel, volunteers

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	4000	1500	24000	3500
2008	3245	3600	21643	3800

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	4	1	
2008	2	1	3

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Presentations and short courses

Year	Target	Actual
2008	80	137

Output #2

Output Measure

- Websites developed

Year	Target	Actual
2008	1	1

Output #3

Output Measure

- Curricula Developed

Year	Target	Actual
2008	1	3

Output #4

Output Measure

- Media Contacts

Year	Target	Actual
2008	20	25

Output #5

Output Measure

- Newsletters and marketing materials

Year	Target	Actual
2008	15	17

Output #6

Output Measure

- After-school programs

Year	Target	Actual
2008	5	16

Output #7

Output Measure

- eXtension committee participation

Year	Target	Actual
2008	1	1

Output #8

Output Measure

- Books and monographs

Year	Target	Actual
2008	1	0

Output #9

Output Measure

- Conference abstracts

Year	Target	Actual
2008	1	3

Output #10

Output Measure

- Workshops and conferences hosted

Year	Target	Actual
2008	2	5

Output #11

Output Measure

- Fact sheets, bulletins and newsletters

Year	Target	Actual
2008	10	70

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Participation in community service projects by youth and/or adults participating in program efforts (% of total defined audience)
2	Increased knowledge and skills in one or more of nine 4-H program emphasis areas by participating youth (% change)
3	Increased exploration of career opportunities by participating youth (% change)
4	Increased awareness and/or adoption of leadership knowledge and skills by adult volunteers working with youth (% change)
5	Increased endowment of 4-H Centennial account ($)
6	Increased awareness of value of 4-H to Connecticut by targeted segment of general public (% change)
7	Increased awareness by non-profit organizations of 4-H value (% increase) as defined by new and/or enhanced partnerships, grant funding, publicity, referrals

Outcome #1

1. Outcome Measures

Participation in community service projects by youth and/or adults participating in program efforts (% of total defined audience)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	75

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Involvement in an informal program of citizenship education provides youth with challenges, experiences, support and help which foster a positive attitude toward current and future citizen and community responsibilities. CES developed a process, standards and opportunities in which youth and leaders recognize the value and importance of community service.

What has been done

4-H volunteer leaders engage 4-H youth in community service projects as part of their club program. Fairfield County 4-H Development Committee has developed incentives, awards and mini-grants to encourage both group and individual community service projects. Community service projects are an integral part of traditional 4-H county-wide activities, such as the annual County Fair. A service project is also part of state 4-H Teen Conference.

Results

Youth involved in the 4-H After School program made 613 presents for Seniors during the holiday season, and Youth involved in the 4-H after school program made over 300 valentine cards for US troops. During state 4-H Teen Conference, teens developed and assembled over 500 kits for youths in the after school program. During one Fair, 4-Hers, working in small groups, assembled over 75 emergency toiletry packets (shampoo, rinse, comb, toothbrush, toothpaste, and lotion) and donated to the Homes for The Brave, a shelter for veterans in Bridgeport. 4-Hers solicited toiletry packet supplies from partners Target, Joanne Fabrics, Xmas Tree Stores, Wal-Mart, a local dentist, & Fairfield County Extension Council. 12 youth and 3 4-H groups received recognition for their 9 community service projects. Over 558 hours were contributed by 4-Hers to better their communities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families and Communities

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	32

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Biological sciences education in elementary and secondary schools is being limited by the types of living creatures they are allowed to study in the classroom. Chick embryos are still one of the species allowed for live study. In-Vitro observation of the chick embryo is one of the highlights of this program. The main objective is to increase student interest in biological/animal science by introducing an exciting project early in their educational experience.

What has been done

Volunteer teachers and extension educators help organize workshops and the teachers oversee and teach the projects in their schools. Fertile eggs and incubators were made available to the teachers. A web site from UConn is available for teachers and students at http://web.uconn.edu/poultry/4-H%20Poultry/index.html
Two teacher workshops were held. More than 32 teachers representing grades 1 through 12 attended; 12 were new to the project. Most were from semi-urban areas and learned the basics of managing a classroom incubator and concepts of embryology. They were also taught how to set up the in-vitro observation unit for observing chicks growing outside of the shell.

Results

These teachers have average enrollments of 20 students in their classrooms. This translates to about 600 new students participating each year. Classrooms doing the project need fertile eggs and many are purchased from the UConn Poultry Farm. In an average year, more than 300 dozen fertile eggs are sold, at an average value of $7/dozen. Students exposed to incubation and embryology programs early in their educational experience are more open to rearing poultry as a 4-H/Youth project and as an adult and have a tendency toward the study of science. .

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #3

1. Outcome Measures
Increased exploration of career opportunities by participating youth (% change)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Involvement in workforce preparation projects provide youth with challenges, experiences, support and help which promote positive and realistic outlooks on work. It also fosters the development of skills recognized as critical for entrance into the workforce such as- creative thinking, decision making, problem solving, knowing how to learn, responsibility, self-management, integrity/honesty, dependability, punctuality, participates as member of a team, works to satisfy customers' expectations, and works well with men and women from diverse backgrounds.

What has been done

CES/4-H works to integrate workforce preparation skills into existing programs and activities. Summer Youth employment programs offer a valuable opportunity for workforce training. The marketing and distribution of the 'R.I.S.E. (Respect and Integrity through Skills and Education): A Workforce Readiness Program for Youth' is a focus.

With partners, the City of Danbury, the Fairfield County Extension Council and the County 4-H Development Committee, UConn Fairfield County 4-H provided 12 hours of classroom training on workforce topics to 100 economically disadvantaged youth in the City Summer Youth Work program. Community businesses taught workshops on career exploration, success on the job, applications, and interviewing.

Results

Teens in the City of Danbury Summer Youth Work program report they:
78% Learned that a resume is a personal marketing tool
79% Learned that what I write in Cyberspace could affect a future job
80% Learned that it important to ask 1-2 questions during an interview
71% Learned that using credit is like renting money
85% Learned how to create a good first impression for a job interview.
83% Learned that it is important to be on time for your job.
83% Learned the importance of cooperation when doing a job.
86% Learned ways to be a better team member.
70% Learned how to work with people that I donÃ‚Â’t always like
86%. Learned that being absent or tardy can jeopardize my job.
80% Learned that paying the minimum monthly payment on a credit card balance is costly.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #4

1. Outcome Measures

Increased awareness and/or adoption of leadership knowledge and skills by adult volunteers working with youth (% change)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	39

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Involvement in an informal leadership educational program, with a variety of subjects, provides young adults with challenges, experiences, support and help which foster a positive attitude towards their futures and provides them with coping skills to be successful in today's world.
Older teens/young adults need hands-on opportunities to gain leadership experiences in the 4-H program, to be able to acquire the skills and motivation needed to take on future leadership roles in college, their work and in the community.

What has been done

In one county, 110 registered 4-H Club volunteer leaders provided leadership opportunities to older teens. The Litchfield County 4-H Foundation provided financial support in excess of $10,000 for teen leadership activities, and educational programming. Of the 31 4-H clubs in Litchfield County, 29 list officers on their annual enrollment, with 122 youth currently serving as officers in their 4-H clubs. Ten teens serve as officers of the Litchfield County 4-H Fair Association. Three teens joined the State 4-H Citizenship Day planning committee. Twenty-four teens provide leadership for the 4-H program, as junior leaders, and two college aged summer assistants (Litchfield County 4-H alumni) are hired for 4-H summer programming.

Results

25 teens learned leadership skills helped them to plan, organize and run the Litchfield County 4-H Fair, and increased their abilities in leadership roles in local 4-H clubs. Three teens took the initiative to apply for state 4-H awards, based on their leadership experiences. As a result, two of them earned state recognition as representatives to the National 4-H Conference Program (April 2008). 24 teens, as junior leaders, assisted adult volunteer in club programming and educational activities, giving more youth one on one attention and acting as mentors while doing project work. Three teens were recognized for leadership with awards to participate in national and international events. Two teens worked at recreation sites around Litchfield County as 4-H Summer Assistants. They taught lessons on nature, nutrition, world culture, and farm animals. Over 300 youth were reached in this summer's series. Evaluations from the sites indicate that the programs are informative and presented in an engaging manner. The programs can be challenging to teach in a playground setting, but exposure to the programs helps promote 4-H. Libraries are also hosting summer programs with very positive feedback on the quality of the teaching and materials. 8 sites from the previous year requested programs for 2008.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #5

1. Outcome Measures

Increased endowment of 4-H Centennial account ($)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30000	39494

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #6

1. Outcome Measures

Increased awareness of value of 4-H to Connecticut by targeted segment of general public (% change)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The 4-H program has traditionally encouraged, and in some cases, required youth members to participate in community service activities. Participation and involvement in community based activities teaches youth to become caring members of their community and world and encourages this behavior throughout their lives. It also provides the public with another view of 4-H beyond the typical fair photos.

What has been done

The Windsor First Town Veterinary Science 4-H Club and the First Town 4-H Service Club worked together to raise substantial funds to purchase, raise and professionally train a Labrador Retriever puppy each year. The goal is for the trained dog to then be placed with a person with disabilities whose life will be enhanced by having a service dog. If the recipient is selected or known prior to training, this allows for the dog to be trained to accomplish specific tasks for the needs of that individual. The 4-H club conducts several fund raisers throughout the year in order to raise the funds for housing, feeding, caring for and training the dog; they hire a professional dog trainer to accomplish the training.

Results

The group has successfully placed two dogs with persons of need, and is currently raising funds to purchase a third animal. The guide dog project requires work with many outside organizations. Obtaining a dog, funding the trainer at a cost of $15,000, and learning to plan and implement a major event, the dog walk, are major commitments the club members undertake to meet their goal. Concurrently, members learn about publicity, fundraising, organizing an event, and additional responsibilities. The general public is informed about 4-H events and activities as well as the general 4-H program through the efforts of the dog walk project of the First Town Veterinary Science Club Approximately 50 4-H youth participate in the dog training activity each year; many others also assist with creating booths and activities held at the annual Dog Walk event. Individual and group members learn and implement organizational skills, communication skills, finances, written communications and successfully working in a group. The club works with local media not only to advertise their events, but to place human interest stories and other communications in the local newspapers. This informs the general public not only about the need for service dogs, thus providing educational outreach information, but also about the 4-H program and the variety of topics which might be 4-H projects

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #7

1. Outcome Measures

Increased awareness by non-profit organizations of 4-H value (% increase) as defined by new and/or enhanced partnerships, grant funding, publicity, referrals

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	35

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Willimantic is a small city, very urban, with a large Hispanic population. In a community plagued by poverty, crime and substance abuse, LIFT (Learning, Interaction, Friends and Talents) provides a safe and structured place for students to participate in enrichment activities and homework time otherwise not available in one of the most disadvantaged areas of the state.

What has been done

LIFT is funded by Windham Public Schools/Extended Day, The Bishop's Grant for Children, Liberty Bank, 4-H Urban funds, and a bank consortium grant from Liberty Bank Foundation, SBM Charitable Foundation, New Alliance Foundation, INC. & SI Financial Group Foundation, Inc. and Windham Middle School PTSO,private donations and Christ Church, Pomfret. Windham Middle School paraprofessionals, community members, Windham high school and Windham Technical high school students, and largely college students from UConn and Eastern CT State University. Staff statistics are 596 volunteer hours from Intro to Education classes, 309 (an unfortunate loss of 80%, due to funding cuts) hours paraprofessional staff, 696 (a 24% loss) hours students labor, 1404 hours work/study, 435 volunteers hours from UConn, ECSU, and community, 453 paid hours through EastConn Youth Employment program for High School students, and 990 volunteer hours from High School students.

Results

About 85% of LIFT students fall at or below poverty level.With the addition of a daily math-facts review, the LIFT students have increased their knowledge of math. Daily reading ensures the students keep up reading and Language Arts skills. LIFT 7th graders participated in a drug and alcohol awareness program, painting a mural depicting the dangers of smoking in the 7th & 8th grade wing of Windham Middle School. The new LIFT 6th graders participated in the All-Stars program conducted by Windham Youth Services and Windham Middle School Guidance Counselors, promoting positive choices and self-direction, culminating in a special celebration attended by many parents. The students received All-Star T-shirts and rings. The students were able to articulate how setting goals, now can help them to achieve their desired successful adult lifestyles. Last year's sixth grade students engaged in an All Stars follow-up program, to reinforce lessons learned in the first year of the program. Last year, LIFT students painted a fabulous 12 ft. mural of activities done in LIFT and the 4-H Pledge and was featured in a full color spread in the CT Episcopal Diocese newspaper, and was cited several times in the school assessment report by the State of CT.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- 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)
- Before-After (before and after program)
- During (during program)
- Case Study
- Other (Project reports)

Evaluation Results

The 4-H camps are owned and operated by the New London County 4-H Foundation, Inc., the Windham 4-H Foundation, Inc, the Middlesex County Camp, Inc., and the Hartford County 4-H Camp Board, Inc.These groups raise the money needed to run programs and maintain their camp properties in many different ways.They are considered "partners" with CES. 3783 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 98% of camper parents that their child's camp experience was excellent or good.Parents clearly thought camp made an impact on their child's or teen's life in all 12 areas.These are all important life skills which have been designated as important outcomes of the camp experience.

61.5% felt that camp had "much impact" on increasing self confidence.59% felt that camp had "much impact" on making new friends.Previous studies have demonstrated that campers and staff develop lifelong friendships at camp.43.7% felt that camp has "much impact" on being more willing to try new things.This is an area that is critical to the growth and developmentof youth and adults.

47.8% felt that camp has "much impact" on independence.In our current society, more youth have had the experience of being more independent by attending day care, visiting relatives who live at a distance, or managing on their own while parents work.They are also "tied" to parents more with cell phones and increased communication.Camp provides a safe environment where youth have the support of adult counselors and staff and the freedom to explore without direct parental guidance.

41.3% felt that camp has "much impact" on their awareness and appreciation of the natural environment.As they "live closer to nature" campers learn to understand their impact on the natural environment.

45.9% felt that camp has "much impact" on increasing their self confidence.Camp life is structured in a way that helps youth feel good about who they are and what they are achieving.When youth feel good about themselves they are willing to engage in new things.

Key Items of Evaluation

Program #4

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%		40%	
124	Urban Forestry	20%		20%	
135	Aquatic and Terrestrial Wildlife	40%		40%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	**1890**	**1862**	**1890**
Plan	3.0	0.0	2.0	0.0
Actual	1.7	0.0	3.3	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**
48516	0	11788	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
48516	0	11788	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
116779	0	329932	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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	2500	5500	0	0
2008	3350	5400	0	0

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	1	1	
2008	1	1	2

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Fact sheets, bulletins and newsletters

Year	Target	Actual
2008	5	72

Output #2

Output Measure

- Short courses

Year	Target	Actual
2008	2	5

Output #3

Output Measure

- Websites developed

Year	Target	Actual
2008	1	1

Output #4

Output Measure

- Books and monographs

Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Conference abstracts

Year	Target	Actual
2008	1	1

Output #6

Output Measure

- Workshops and conferences hosted

Year	Target	Actual
2008	2	95

Output #7

Output Measure

- Presentations and short courses

Year	Target	Actual
2008	45	50

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of governmental and/or private sector entitties utilizing GIS approaches resulting - in part - from research and/or Extension programming
2	Number of qualified tree wardens appointed/reappointed by municipalities
3	Municipal Shade Tree Ordinances developed and/or revised
4	Stewardship Plans Developed
5	Increased understanding of fish and wildlife population patterns and/or behavoir (# of patterns and/or behavoirs)

Outcome #1

1. Outcome Measures

Number of governmental and/or private sector entitties utilizing GIS approaches resulting - in part - from research and/or Extension programming

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Last Green Valley, primarily a rural region with historic village centers,is located within the east coast megalopolis, and has been under increasing development pressure in recent years. These rural communities lack professional planning staff and have limited capacity to address land use, community growth and conservation issues. Land use decision-making is done largely by volunteer boards and commission without much training.

In 2000, GVI conducted a needs assessment survey of our target audiences (land use decision-makers, large landowners and land trusts) and in 2005 we conducted a follow-up survey. Both surveys showed a strong interest in learning more about natural resource, land use and community design issues with the 2005 survey showing an even greater interest in community planning issues. Top topics of interest included open space and natural resource protection, creative forms of development and innovative zoning techniques.

What has been done

The Green Valley Institute hosted 79 workshops this year. They include land protection programs for landowners, natural resource inventories & co-occurring resource analysis , and helping towns establish new Conservation Commissions. Also, helping communities develop build-out analysis and Cost of Community Services Studies to improve land use decision making and introducing them to innovative regulations to improve community growth patterns were among the issues addressed.

Results

GVI impacts include the protection of 7,412 acres by landowners since 2001, two new Conservation Commissions, two towns received NRI maps, and eight towns developed co-occurring resource analysis. Lebanon set aside $100,000 for open space protection and is working on conservation subdivision regulations, Coventry is working on design guidelines for the Route 44 commercial corridor, and Sprague implemented a River Corridor Overlay District and Chaplin working on one. According to a realtor follow-up survey: 93% can better assess natural resources; 86% have shared land protection strategies; 50% have used digital maps; 50% have recommended conservation subdivision. Impacts of the Borderlands Project have yet to be determined. However, even the development of the pilot teams has had the impact of getting folks to work together who are often on opposite sides of the table. There have been four adoption and/or revision of recommended land use public policies by governmental entities. Ten governmental and/or private sector entities utilized GIS approaches resulting in part, from research and/or Extension programming.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Number of qualified tree wardens appointed/reappointed by municipalities

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	5

3c. 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, etc.) 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.

What has been done

Volunteers learned urban and community forestry including tree biology, tree care, fund raising, media relations, community affairs, meeting management, tree law, and marketing. An annual even, the Meskwaka Tree Project 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. Partners include USFS, DEP, and Connecticut College Arboretum.

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.

4. Associated Knowledge Areas

KA Code	Knowledge Area
124	Urban Forestry

Outcome #3

1. Outcome Measures

Municipal Shade Tree Ordinances developed and/or revised

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	6

3c. 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 posses. 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. An annual Tree Warden School and Certification Program was created to provide Tree Wardens with a voluntary educational opportunity to acquire this knowledge.

What has been done

Partners included the Connecticut Department of Environmental Protection, Division of Forestry (DEP) and the Tree Wardens Association of Connecticut, Inc. (TWACT) board of directors Tree Wardens learned current 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

A significant, yet unanticipated outcome of this program is that 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. The program is serving as a model for the urban and community forestry program efforts in Maine and Vermont. Both these states have laws that, like Connecticut, require the appointment of Tree Wardens in municipalities but do not require any minimum qualifications.

4. Associated Knowledge Areas

KA Code	Knowledge Area
124	Urban Forestry

Outcome #4

1. Outcome Measures

Stewardship Plans Developed

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In Connecticut, 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 economy. They also clean our air and water, provide habitat for wildlife, and provide recreational opportunities for nearly a million citizens each year. Almost 85% of Connecticut 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

Objective: Our program targets 115,000 private forest landowners in CT. Its goal is 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.

Results

With $22,000 from an anonymous donor to the UConn Foundation, $5,000 from Connecticut Forest & Park Association, $5,000 from the CT DEP Division of Wildlife, Extension faculty and staff, 160 trained and active statewide forest owners who volunteer as educators, along with
partners including the DEP Divisions of Wildlife and Forestry, the Connecticut Forest & park Association, the Yale School of Forestry & Environmental Studies, and UMass Extension developed a comprehensive stewardship program. This resulted in 2,504 people attended educational tours of the managed forests belonging to program volunteers, or one of 38 educational programs organized and/or taught by volunteers. 26 new volunteers were recruited and completed 30 hours training. There were also 42 published newspaper, newsletter & periodical articles, 1 public radio appearance by volunteers. This resulted in 3,622 acres of new or updated stewardship plans as well as knowledge & information gained by at least 720 additional forest landowners.

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife
123	Management and Sustainability of Forest Resources

Outcome #5

1. Outcome Measures

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

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

To contend with the 1999 lobster mass mortality in Long Island Sound (LIS), an adaptive management strategy was presented to the Atlantic States Marine Fisheries Commission to institute a female lobster 'V' notch program to reduce female take, increase recruitment and financially aid impacted fishermen. For lack of this tack, the commission would be forced to raise the legal size, further disadvantaging the remaining lobster industry. Connecticut value for the lobster resource before the mortality was ~$40 million, now is reduced to 30% the mid 1990s landings. It was necessary to work with the industry and the Connecticut legislature to pass a bill and secure $1 million to accomplish the goal.

What has been done

Teams of student interns were trained by DEP and the committee to sail with designated lobstermen, record population data, and v-notch (a process to remove a chad from the female lobster right uropod with special pliers, record the size, from which the dollar reimbursement to lobstermen was calculated, and return the notched lobster to the local in east-mid-west sector of LIS). This protected the v notched lobster through 2-3 reproductive moult periods by non-take statutes and also was designed to retain the genetic characteristics of the unique LIS lobster stock. Student interns learned fishing techniques, marine resource management, and scientific data keeping. They also received payment for their time on the job. Special equipment was purchased for the field work: GPS units. Vernier calipers, log books, foul weather gear, survival suits for winter excursions, and 4-man life rafts to meet CG and insurance guidelines.

Results

The program received exceptional media coverage in press conferences, TV features and all the major newspapers bordering LIS. And to date, it achieved ~ 70% of the required mark of 60,000 female lobster w/v-notches. Carry-over of state funds as financial aid to fishermen and students is the heart of the program and a credit to the state for recognizing the need and acting at our request. For the future we have identified grant programs, federal sources and congressional contacts to continue the cooperative effort in 2009. A final sidelight is the renewed cooperation of major lobster producers with DEP-marine fisheries this project has fostered. Previously there was reluctance to conduct fishery dependent population assessment with the agency due to growing suspicion the managers were insensitive to the major economic losses. The Connecticut Seafood Council is a member and has strongly endorsed and aided committee efforts by political and administrative assistance.

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

The retirement of a key program person at the end of this program year will have impact on future program implementation, if the state economy results in restrictions on filling positions.

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)
- Time series (multiple points before and after program)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

Program #5

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%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	9.0	0.0	7.0	0.0
Actual	9.8	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
163693	0	22532	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
163693	0	22532	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
525177	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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	500	1250	0	0
2008	2400	1300	0	0

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	3	4	
2008	2	5	7

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Fact sheets, bulletins and newsletters

Year	Target	Actual
2008	10	12

Output #2

Output Measure

- Web sites developed

Year	Target	Actual
2008	0	0

Output #3

Output Measure

- Presentations and short courses

Year	Target	Actual
2008	55	86

Output #4

Output Measure

- News releases and media appearances

Year	Target	Actual
2008	10	10

Output #5

Output Measure

- Books and monographs

Year	Target	Actual
2008	1	0

Output #6

Output Measure

- Workshops and conferences hosted

Year	Target	Actual
2008	2	7

Output #7

Output Measure

- Conference abstracts

Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Requests and/or use of developed land cover data by governmental and/or private sector entities
2	Adoption and/or revision of recommended land use public policies by governmental entities
3	Acres of land permanently protected and managed

Outcome #1

1. Outcome Measures

Requests and/or use of developed land cover data by governmental and/or private sector entities

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Local land use decision makers, often untrained volunteers, need support and knowledge to make decisions that balance growth and natural resource protection with the economic means of communities.

What has been done

Various extension and research teams have developed a range of models and other tools, including GIS, that allow volunteer community leaders to examine options for their communities in the context of various trends and growth patterns. Towns (and state of CT) are now considering implementing innovative regulations - transfer of development rights, form-based zoning and mixed use overlays. Many are also, considering implementing wastewater treatment alternatives to allow for more compact development patterns.

Results

Three communities utilized GVI-assisted resource inventories or co-occurring analyses in their town Plans of Conservation & Development or town Open Space and Conservation Plans. There have been four adoption and/or revision of recommended land use public policies by governmental entities, as well as requests and/or use of developed land cover data by governmental and/or private sector entities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land

Outcome #2

1. Outcome Measures

Adoption and/or revision of recommended land use public policies by governmental entities

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	20	22

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The impacts of poorly planned land use on the natural resources, economic vitality, and local character of our nation's communities are well documented. Local land use decision makers in Connecticut municipalities need information and tools to assist them in planning the growth of their communities while protecting natural resources, particularly water resources.

What has been done

Over 60 educational workshops for local officials were conducted by request, on a variety of topics. Municipal towns included Waterford, North Stonington, and Winchester. The Connecticut NEMO Update newsletter was published featuring the results of the Municipal Initiative and highlighting upcoming projects. NEMO in collaboration with CT DEP Bureau of Water Protection and Land Reuse worked to investigate the relationship of watershed impervious surface to the diversity and abundance of aquatic invertebrates, a common indicator of water quality and stream health. NEMO created a web-based Low Impact Development (LID) Inventory tool for Connecticut communities. The website allows local decision makers to tour various LID installations around the state and learn specifics about the technique, its installation and maintenance.

Results

Examples: The town of Winchester included the information from the NEMO series into their Plan of Conservation and Development, adapting their regulations to allow for environmentally responsible design and to modify road design to lessen impacts on water quality. The town is in the process of updating the zoning regulations. Waterford is updating regulations and policies to include Smart Growth principles and reduce the impact of both development and redevelopment on natural resources.
Killingworth is completing a community resource inventory to be used as a basis of a town plan update and has formed an Open Space Planning Subcommittee that will use the resource inventory to prioritize lands for preservation. The Planning and Zoning Commission is also working to make changes to their zoning and subdivision regulations based upon the NEMO workshops. Nearly 1000 engineers, town staff, land use commissioners, state agency representative learned about the CT Storm water Quality Manual. The result is that many towns are incorporating the practices outlined in the manual into their regulations. The professionals in the development field have also begun to use the manual as a standard reference text. The upshot of both the publication and the subsequent training workshops is that both the decision makers and the development community have a single source on which to design and evaluate development proposals. The CRI Online website has generated over 5,000 unique visitors during this reporting period that have accessed the website and downloaded local resource maps. Through the National NEMO Network, five states (Rhode Island, Maine, Minnesota, North Carolina and South Carolina) will be emulating the CRI website for their states. On average over 4,000 unique visitors have used the storm water websites. Many towns have used the examples and case studies on the sites to implement regulatory and development changes

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land

Outcome #3

1. Outcome Measures

Acres of land permanently protected and managed

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	3000	2400

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Last Green Valley is primarily a rural region with historic village centers. The region, located within the east coast megalopolis, has been under increasing development pressure in recent years. These rural communities lack professional planning staff and have limited capacity to address land use, community growth and conservation issues. Land use decision-making is done largely by volunteer boards and commission without any training.

In 2000, GVI conducted a needs assessment survey of our target audiences (land use decision-makers, large landowners and land trusts) and in 2005 we conducted a follow-up survey. Both surveys showed a strong interest in learning more about natural resource, land use and community design issues with the 2005 survey showing an even greater interest in community planning issues. Top topics of interest included open space and natural resource protection, creative forms of development and innovative zoning techniques.

What has been done

The Green Valley Institute hosted 79 workshops this year. They include land protection programs for landowners, natural resource inventories & co-occurring resource analysis , and helping towns establish new Conservation Commissions. Also, helping communities develop build-out analysis and Cost of Community Services Studies to improve land use decision making and introducing them to innovative regulations to improve community growth patterns. Transfer of Development Rights program was presented to the Responsible Growth Task Force (appointed by the legislature) at the State Capital

Results

7,412 acres have been protected by landowners since 2001, two new Conservation Commissions formed, two towns received NRI maps, and eight towns developed co-occurring resource analysis. Lebanon set aside $100,000 for open space protection and is working on conservation subdivision regulations, Coventry is working on design guidelines for the Route 44 commercial corridor, and Sprague implemented a River Corridor Overlay District and Chaplin working on one. Towns (and state of CT) are now considering implementing innovative regulations - transfer of development rights, form-based zoning and mixed use overlays. Many are also, considering implementing wastewater treatment alternatives to allow for more compact development patterns. According to a follow-up survey: 93% can better assess natural resources; 86% have shared land protection strategies; 50% have used digital maps; 50% have recommended conservation subdivision. Impacts of the Borderlands Project have yet to be determined. However, even the development of the pilot teams has had the impact of getting folks to work together who are often on opposite sides of the table. There have been four adoption and/or revision of recommended land use public policies by governmental entities, as well as requests and/or use of developed land cover data by governmental and/or private sector entities. Ten governmental and/or private sector entities utilizing GIS approaches resulting in part, from research and/or Extension programming. Qualified tree wardens appointed/reappointed by municipalities, municipal shade tree ordinances developed and/or revised, and Stewardship plans have been developed.

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- 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)
- Case Study

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

Program #6

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	10%		10%	
202	Plant Genetic Resources	20%		20%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	10%		10%	
205	Plant Management Systems	40%		40%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	6.0	0.0	10.0	0.0
Actual	8.9	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
190691	0	109550	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
190691	0	109550	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
409598	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
2008	0	0	0	0

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

Patent Applications Submitted

Year	Target
Plan:	1
2008 :	{No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	2	5	
2008	{No Data Entered}	{No Data Entered}	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Fact sheets, brochures and newsletters

Year	Target	Actual
2008	30	0

Output #2

Output Measure

- Web sites developed

Year	Target	Actual
2008	1	0

Output #3

Output Measure

- Presentations and short courses

Year	Target	Actual
2008	45	0

Output #4

Output Measure

- News releases and media events

Year	Target	Actual
2008	35	0

Output #5

Output Measure

- Books and monographs

Year	Target	Actual
2008	1	0

Output #6

Output Measure

- Workshops and conferences hosted

Year	Target	Actual
2008	4	0

Output #7

Output Measure

- Conference abstracts

Year	Target	Actual
2008	2	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Adoption of recommended BMP approaches by defined targeted industry and growers (% of participating entities)
2	Awareness of recommended BMP approaches by defined participating industry and growers (% of participating entities)
3	Understanding of basic plant production processes (#)

Outcome #1

1. Outcome Measures

Adoption of recommended BMP approaches by defined targeted industry and growers (% of participating entities)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	25	220

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Commercial greenhouse growers face a number of issues that impact environmental quality and sustainability. Applied research and development of recommendations to improve crop management, crop productivity, and to create new production opportunities is necessary to assist producers knowledge, foster economic competitiveness, and promote effective and environmentally responsible production practices.

What has been done

1351 Connecticut growers received recommendations on aspects of pest management, crop nutrient management, or crop cultural management via phone, FAX or e-mail. 2970 Commercial greenhouse growers & their employees received training at programs sponsored by, or planned in cooperation the University of Connecticut Ornamental Horticulture Extension personnel

Results

Based on information learned at the 2008 Perennial Plant Conference, growers estimated that they would reduce business expenditures from $0-$60,000 with an average of $12,300. Also, growers estimated that they would increase sales from $0-$200,000 with an average of $45,714. 127 Greenhouse Growers received pesticide applicator re-certification credit at extension sponsored training in Connecticut

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Awareness of recommended BMP approaches by defined participating industry and growers (% of participating entities)

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Dollar spot (Sclerotinia homoeocarpa) is arguably the most destructive turfgrass disease throughout the United States. The pathogen attacks all turfgrass species and more time and money is spent managing dollar spot than any other turfgrass disease. Despite the importance of the S. homoeocarpa, many basic biological aspects of the pathogen remain unknown and management strategies often revolve around the use of fungicides. A focused effort to improve our understanding of this pathogen and to provide new and/or improved management strategies was initiated in 2005.

What has been done

Research studies focused on the biology of Sclerotinia homoeocarpa and alternative control strategies for dollar spot, Nozzle-Type options, Application Timing, and Fungicide Resistance have been conducted from 2005 through 2008, and will continue into 2009. Funding has been received from the University of Connecticut Research Foundation, $14,000; New England Regional Turfgrass Foundation, $57,569; and United States Golf Association,$6,000, as well as $20,00 of industry support.

Results

Data from multiple years of study has revealed that proper selection of application technology and techniques can result in a reduction in the use of pesticides on golf courses, while at the same time reducing disease levels. Results from this study presented throughout New England and nationally have resulted in a shift in application nozzles for use on fairway pesticide application. Results of this study have led to a half-day seminar to be presented at the 2008 Golf Course Superintendents Association of America. This research was also the focus of an online TV edition on TurfNetTV. This work also resulted in the development of a 4 hour seminar presented at the Golf Course Superintendents Association of Americas national educational meeting.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Understanding of basic plant production processes (#)

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The approaching commercialization of transgenic grasses for turf and biofuels has triggered debate about the potential for gene flow, plant dispersal, and environmental hazards. For example, USDA is considering an application to allow commercialization of genetically-engineered herbicide-resistant (HR) creeping bentgrass. Creeping bentgrass (Agrostis stolonifera) is a common, non-native turfgrass that inhabits a myriad of environments, shows weedy characteristics, and hybridizes with other closely related species. If HR creeping bentgrass is approved, the likelihood of the HR trait entering feral bentgrass populations is high, and coupled with herbicide selection pressure could mean increased abundance and/or spread into new habitats. The HR trait could also interfere with land management and removal of invasive species.

What has been done

To help fill gaps in knowledge, five types of experiments are being conducted to assess potential ecological risk: 1) gap colonization studies in natural and agricultural sites to understand Agrostis fitness under herbicide selection pressure, 2) habitat suitability modeling to predict the presence of bentgrasses at the landscape scale, 3) stress tolerance studies in four bentgrass species to understand distribution and weediness, 4) population genetics using molecular markers to characterize hybridization between cultivated and feral bentgrasses, and 5) transects to characterize distribution of bentgrasses and switchgrass along ecological gradients in Connecticut.

Results

This research supports ecological risk assessments and regulatory decision-making with regard to genetically-modified perennial grasses that will be used as turfgrass and biofuels crops. Publication of one full length review article: Auer, C. 2008. Ecological risk assessment and regulation of genetically-modified ornamentals. Critical Reviews in Plant Science, which has been widely cited; one federal grant proposal awarded: USDA Biotechnology Risk Assessment Grant, March, 2008. This grant proposal requests $300,000 for three years. This project is using three approaches to study ecological risk for genetically-modified switchgrass (Panicum virgatum) and herbicide-resistant creeping bentgrass (Agrostis stolonifera) in the New England region. If successful, the research will provide tools for predicting the movement of transgenes into native or naturalized grass populations. The projects will help regulators and others understand the potential impact of transgenic perennial grasses on natural plant communities and ecosystems. In addition, the projects will help predict the effects of transgenic grasses on managed lands such as farm fields, pastures, utility right-of-ways, roadsides, and public open space; University of Connecticut, Research Advisory Council, Large Faculty Grant Program, $19,631; three abstracts (posters) for regional and national scientific meetings.

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

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

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

Program #7

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%		10%	
215	Biological Control of Pests Affecting Plants	10%		10%	
216	Integrated Pest Management Systems	80%		80%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	7.0	0.0	2.0	0.0
Actual	5.7	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
62460	0	4424	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
62460	0	4424	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
473549	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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	2500	12000	0	0
2008	3025	5800	0	0

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

Patent Applications Submitted

Year	Target
Plan:	1
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	1	1	
2008	2	5	7

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Websites developed

Year	Target	Actual
2008	1	1

Output #2

Output Measure

- Presentations and short courses

Year	Target	Actual
2008	35	42

Output #3

Output Measure

- Fact sheets, bulletins and newsletters

Year	Target	Actual
2008	25	26

Output #4

Output Measure

- Media contacts

Year	Target	Actual
2008	25	23

Output #5

Output Measure

- Books and monographs

Year	Target	Actual
2008	1	1

Output #6

Output Measure

- Conference abstracts

Year	Target	Actual
2008	1	1

Output #7

Output Measure

- Workshops and conferences hosted

Year	Target	Actual
2008	2	3

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Increased adoption (%) of recommended BMPs by targeted consumer populations
2	Increased adoption (%) of recommended BMPs by targeted grower populations
3	Pesticide use reduction (%) by participating growers
4	Increased certification (%) by pesticide applicators

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Invasive non-native plants such as purple loosestrife (Lythrum salicaria) are a serious concern because they grow and establish quickly over wide areas and decrease the abundance of native species, reducing biological diversity in wetlands, meadows, forests, and other natural areas. IPM methods can be used to control invasive plants in backyards, in parks, and in natural landscapes. IPM technologies include the use of biological, mechanical, cultural, and chemical controls. Galerucella leaf-feeding beetles are approved for biological control of purple loosestrife, and these beneficial insects have been introduced into Connecticut wetlands since 1996. The beetles feed primarily on purple loosestrife but do not prefer other kinds of plants. Feeding injury by the beetles helps to reduce purple loosestrife populations that invade wetland habitats in Connecticut and throughout the United States.

What has been done

The Purple Loosestrife Biological Control Program, which includes the Beetle Farmer Program, is funded in part by the U.S. Department of Agriculture and the University of Connecticut. Two external grants ($27,00), two undergraduate students assisted with the program and numerous volunteers, including students, teachers, municipal staff, and members of conservation organizations received training during more than 32 presentations, 75 field visits, field demonstrations, workshops, educational exhibits, and other presentations and 16 public press articles; step-by-step instructions to raise and release the beneficial beetles were provided during the workshops. 5 full-day classes on invasive plants taught for the 2008 Master Gardener Training Program. Educational information appeared on four web sites: University of Connecticut IPM, the Connecticut Invasive Plant Working Group (CIPWG), The Connecticut Agricultural Experiment Station, and the U.S. Department of Agriculture. The Beetle Farmer list serve (BEETLE-L),provides more than 350 participants with timely information -biological control updates and general invasive plant information. A presentation was videotaped for purple loosestrife biological control training for regional Department of Transportation staff.

Results

During the past four years, more than 710 volunteers (Â“Beetle FarmersÂ”) were recruited and received training on purple loosestrife biological control for this invasive plant. Together with the Galerucella beetles (the biological control agents that control purple loosestrife)reared for several years at the University of Connecticut Research and Educational Teaching Facility, the Beetle Farmers and Extension faculty have to date collectively reared and released over 1.4 million beetles into 100 wetlands where purple loosestrife control was needed. Beetle Farmers and purple loosestrife biological control are topics that are now included in new IPM curriculum materials for grades 4 and 5; this subject area is part of several lessons in previously published IPM curricula for grades K/1, 2/3, and 7/8.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	150

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There is a need to create and maintain a safe, secure and highly CT competitive agricultural system, while protecting natural resources and the environment for a healthy and well-nourished population, through farmer education. Enabling farmers to learn and experience sustainable, profitable and environmentally-sound, food production practices to maintain safe and secure food. Keeping Connecticut producers current on some of the latest and most innovative ideas and technology, helps keep their farms profitable, while protecting the environment in a highly urban state. The objective is to provide Connecticut and New England vegetable farmers with cutting-edge solutions to their pest management and crop production problems and to help keep them competitive on the local, regional and national level.

What has been done

1,335 people attended a 3-day New England Vegetable and Fruit Conference & Trade Show in Manchester, NH. 175 growers attended The Greenhouse Tomato Conference; a near-record 163 growers and service representatives attended the Annual CT Vegetable and Small Fruit Growers Conference. The updated 2008-2009 New England Vegetable Management Guide has essential information and color photos for almost every pest listed for 42 different commodities. 2,000 copies have been sold and is also free on the web (www.nevegetable.org). The UConn vegetable telephone/internet pest message provides reports on insect monitoring, disease occurrence, and management practices during the growing season (4,000 calls/hits/year). Over 110 growers participated in 4 vegetable/fruit twilight meetings. A newsletter for commercial vegetable and fruit growers (Crop Talk) reaches 860 growers/educators quarterly. Thirteen invited presentations/posters on pest management were made at 11 meetings/conferences to hundreds of growers, legislators and educators. An applied grant/research program was conducted to help drive effective programming. Over $155,000 in grants was received to provide IPM, nutrient management, and reduced tillage outreach programs and research new corn earworm thresholds for Bt sweet corn.

Results

Post-conference evaluations were completed by 206 people. Of the respondents, 94% said that information they obtained at the conference would help them improve pest management, 89% said it would improve soil or nutrient management, and 76% said it would help improve farm profitability. A new source of information was obtained by 85% of respondents, and 79% said they would adopt a new practice in the following year as a result of attending the conference. A 309-page conference proceedings summarizing 94 presentations was published and distributed to attendees and posted on-line at www.nevbc.org Greenhouse Tomato Conference: Forty-two percent of the participants completed evaluations and 84% thought that they would benefit economically as a result of attending. Forty-four percent felt they were more prepared to implement sustainable horticultural practices, while 32% wrote down a specific change they would make as a result of participating in the conference: make better use of fertilizers, irrigation equipment, pruning methods, grafting, choose better varieties, use biological control, install better houses, lighting and heating, and improve sanitation to help reduce pesticide use.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Pesticide use reduction (%) by participating growers

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Pesticide use, when even low, by growers, is of great concern in an urban state, where farms are often totally surrounded by residential areas, schools and businesses. Encouraging farmers to continue strategies to reduce pesticides is environmentally, politically, and economically wise.

What has been done

14 commercial vegetable growers participated in USDA NRCS EQIP IPM sponsored training and 7 additional growers were trained in IPM or nutrient management techniques (not EQIP participants).

Results

Of the 21 full-season IPM field training and USDA NRCS EQIP program participants, 7 participated in the sweet corn IPM program. These 7 growers reduced the amount of active ingredient they used on 188 acres of sweet corn by a total of 348 pounds of A.I. (1.8 lb/acre or 44%). They increased their sweet corn yields by 10% and saved $86,800 ($462/acre) by reducing pest damage. All of the growers improved yields and/or saved pesticide A.I. or nutrients on many other crops, but impacts were not always quantified.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

Increased certification (%) by pesticide applicators

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	358

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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. There are 644 private applicators certificates issued in CT and 2,719 commercial certificates. Each applicator must earn 12 credits in five years to re-certify. One credit equals one hour of instruction on pesticide safety education and pest management.

What has been done

The Pesticide Safety Education Program provides education and training for individuals who seek re-certification as private pesticide applicators, as well as for individuals seeking certification and re-certification as commercial ornamental and turf and golf course supervisory pesticide applicators. Similar workshops the Master Gardener training program and numerous grower groups. 14 re-certification programs for private applicators were conducted, focused on pesticide storage, pesticide recordkeeping, integrated pest management, pesticide certification and recertification requirements, invasive species, vegetable, small fruit, bedding plant and poinsettia pest identification and management were presented farm family pesticide safety. 603 growers attended recertification meetings. 69 growers attended bedding plant meetings; 36 growers attended seminars on resistance management and indicated that they learned new information that they would be able to apply this growing season. Thirteen growers learned how exposure to pesticides occurs to other family members on the farm;Three short courses were conducted in different locations around the state. Each course consisted of 8, three-hour classes, totaling 24 hours of classroom time. A course study manual was revised and printed. The CT Dept. of Environmental Protection (DEP) administered certification exams. Oral exams were administered to 28 individuals for their state supervisory pesticide applicator certification. 96 individuals participated in the Ornamental and Turf Short Course.

Results

Two hundred ninety four certificates of attendance for re-certification credit were issued. Sixty-nine growers attended bedding plant meetings; 68 attendees completed evaluation forms and 44 received pesticide recertification credits. Of those, 97 % rated the program as good to excellent, 44 growers were able to identify two specific items of information that they learned and would use this upcoming production season. 170 Students attended the Pesticide Safety/ IPM lectures in the Master Gardener Program for 2008.

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

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

1. Evaluation Studies Planned

- After Only (post program)
- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

Program #8

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	10%		10%	
111	Conservation and Efficient Use of Water	10%		10%	
112	Watershed Protection and Management	20%		20%	
132	Weather and Climate	10%		10%	
133	Pollution Prevention and Mitigation	40%		40%	
141	Air Resource Protection and Management	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	5.0	0.0	7.0	0.0
Actual	4.7	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
72567	0	93090	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
72567	0	93090	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
342052	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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	1100	3000	0	0
2008	3294	3200	0	0

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	1	4	
2008	1	2	3

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Fact sheets, bulletins and newsletters

Year	Target	Actual
2008	15	15

Output #2

Output Measure

- Training manuals and instructional CDs developed

Not reporting on this Output for this Annual Report

Output #3

Output Measure

- News releases/articles

Year	Target	Actual
2008	10	15

Output #4

Output Measure

- Websites developed

Year	Target	Actual
2008	1	1

Output #5

Output Measure

- Books and monographs

Not reporting on this Output for this Annual Report

Output #6

Output Measure

- Conference abstracts

Year	Target	Actual
2008	1	1

Output #7

Output Measure

- Workshops and conferences hosted

Year	Target	Actual
2008	4	79

Output #8

Output Measure

- Presentations and short courses

Year	Target	Actual
2008	45	48

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Adoption of recommended sustainable landscape/turf BMP approaches by defined commercial and/or residential target audiences (% of target population)
2	Development of new models
3	Number of agricultural nutrient management plans adopted by defined target audience
4	Number of rain gardens installed by defined targeted audience/s
5	Awareness of recommended sustainable landscape/turf BMP approaches by targeted commercial and/or residential audiences (% of audience)

Outcome #1

1. Outcome Measures

Adoption of recommended sustainable landscape/turf BMP approaches by defined commercial and/or residential target audiences (% of target population)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Turf grass 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 turf grass fertilizers. This research program is evaluating new technologies that will improve N fertilizer recommendations for turfgrass, whereas another section of the research deals with lower-input grass species. 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.

What has been done

A 3-yr funded research project entitled Changing Homeowner Lawn Care Behavior to Reduce Nutrient Losses in New Englands Urbanizing Watersheds was funded by USDA-CSREES as a multi-state research/extension project involving five different institutions from New England. A component is evaluation of new soil tests for use in guiding N fertilization of turf. Additional funding was obtained from the Connecticut Department of Environmental Protection for an education project entitled Nitrogen Fertilizer Reductions on Coastal Lawns Through Training and Education. Five presentations on the research data and implications were made to turf grass industry groups. Three technical reports were published in Turf grass Science Research Report. A Master of Science thesis was produced and submitted for publication in a scientific journal.

Results

The 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 hand-held reflectance meters and existing soil nitrate tests 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. 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. 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 turf grasses in the urban and suburban landscape.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Development of new models

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Living installations, or soft structures made of woody plants, provide ecological functions and aesthetic appeal. The construction of living structures made of willow (Salix) stems as play elements introduce of children to the arboricultural practices of planning, planting, watering, growing, pruning and tending techniques in an entertaining manner while providing them with basic agro-forestry experiences. Understanding and working with willow biology is important for the success of the structures, and the basic principles of the technique can be blended into a science curriculum. The introduction of trees as sources of recreation into urban environments raises the social value of trees, promotes experiential learning and cultivates strong emotional attachment. Observation of the effects of weather and water on the living structure complements the science curriculum.

What has been done

Two experimental gardens were installed in Storrs, Connecticut, to evaluate the potential and limitations of constructing living structures of willow stems as play elements for children. Basic arboricultural aspects including plant selection, establishment, and maintenance are addressed. Detailed designs were developed and the final refinement of the structures was accomplished with the help of an artist from Canada. A portfolio of modules, ranging from simple arches, wigwams and arbors to domes, fences, tunnels, and mazes was developed. These forms were selected based on major criteria that included simplicity of construction and low maintenance. The integration of the modules into a more complex environment was accomplished in the blueprint Childrens Mini-Village. Illustrated instructions were designed for an inexperienced individual with detailed steps for the construction process.

Results

T. A. Volk (SUNY ESF) donated willow stems for this project from biomass plantations in New York totaling over $2,000. Peer reviewed as well as popular publications resulted in contacts from school teachers, representatives from youth camps, agricultural stations, abused animal farms etc., indicating wide interest and broad implementation for these designs in future time.

4. Associated Knowledge Areas

KA Code	Knowledge Area
141	Air Resource Protection and Management
132	Weather and Climate
102	Soil, Plant, Water, Nutrient Relationships
112	Watershed Protection and Management

Outcome #3

1. Outcome Measures

Number of agricultural nutrient management plans adopted by defined target audience

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	13

3c. 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) which becomes soluble and can move with rain runoff into 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

Farmers are learning to manage manure environmentally as well as agronomically. The majority of P is coming onto the farm in purchased feed - rather than fertilizer. Farmers have decreased the amount of P in the rations, but cattle are only about 50% efficient at removing P from feed, thus 50% of P in the diet passes through the animals and ends as manure applied to crop land, accumulating P in the soil. There is limited opportunity to move manure off the farm, particularly liquid dairy manure. Farms collect data to document their management practices for the first year. GIS maps of the farm are developed. These maps ensure that data collected in the field is accurate. Everyone can use the same names or numbers for fields to minimize data inconsistencies. These maps are made available to the farm in 3' X 5' wall maps and as notebooks that can be used in the field. The plan consists of field by field recommendations for manure applications, fertilizer applications, and any soil testing or plant tissue testing that might be needed.

Results

No commercial dairy farm on the project has enough land to spread manure under a strict P standard. All dairy farms (from 15 - 1571 cows)worked with have at least some excess manure (300,000 - 1,300,000 gallons). Without the development of off farm uses for manure farms are unable to comply with an environmental P standard. Based on the data from this program, EPA provided $2,000,000 to develop regional dairy manure projects designed to move nutrients off the farm and into other markets. These funds have been awarded to two Litchfield County dairy farms to develop and market new horticultural planting pots made from manure, and to develop a composting operation. Implementing a NMP forces a farm to increase its manure hauling costs by requiring the farm to carry manure further from the barn. Thirteen farms traveled a total of 60,299 miles to spread manure. Hauling costs per farm ranged from $101 to $109,168. Complying with a nutrient management plan more than doubles the manure hauling cost for a farm. Farmers obtained soil test results on an average of 81 percent of their crop fields.

The 13 farms represent 8,091 dairy animals, 160 beef cattle, 15 sheep, 5 horses and 2 swine. Together these livestock produce 8,789 tons of solid manure and 28,530,846 gallons of liquid manure annually. Plans were written to spread this manure on 1,157 fields, consisting of 5,879 acres of field corn, 449 acres of alfalfa, 2,788 acres of grass, 282 acres of soybeans, 32 acres of vegetables, 318 acres of pasture, and 141 acres of minor crops. Of the 9,888 acres being managed under Nutrient Management Plans:

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

Number of rain gardens installed by defined targeted audience/s

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	25	25

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

With the continued development of Connecticut, management issues related to residential water systems and landscapes becomes a concern. Excess nutrients pose a threat to many water bodies. While nitrogen is considered the limiting nutrient in estuaries and phosphorus in fresh waters, residential runoff is considered a source of both. Major coastal watersheds show increasing concentrations of nitrogen attributed to various causes including wastewater treatment facilities effluent, lawn fertilizer residue, septic systems, atmospheric deposition and runoff, which are all related to population growth and its associated land development patterns. Lawns, in addition to contributing nutrients to waters are estimated to use between 50-90% of outdoor water during the summer months. Both water quality and water availability can be issues of concern.

What has been done

Master Gardener training programs have included Managing the Home Landscape for Water Quality and Managing Home Water Systems; educational presentations for the public such as Rain Garden For Water Quality, and Understanding the Water Cycle, an educational presentation for students; and Enviroscape demonstration for adults and youth entitled understanding Nonpoint Source Pollution Communities. Educational information is now available on two websites: www.sustainability.uconn.edu and www.healthyhomes.uconn.edu. East Lyme Hole-in-the-Wall Parking Lot Demonstration Site - invited to partner on the design of the turf and planting demonstration components. This site will be used to inform town residents, commission members from within and outside of E. Lyme, industry/practitioners, agency representatives and others. The site is currently in development.Green-Blue Summit: Clean Waters Through Residential IPM The turf component of this 2-day conference was targeted to community leaders, scientists, Extension educators, landscape and turf professionals, lawn and home care retailers, and others to address connections between water quality and residential pest management. The Green-Blue Summit focused on achieving clean water through residential integrated pest management (IPM) and nutrient management in turf.

Results

65% of youth participating in water quality program increased their understanding of the water cycle and another 85% of youth participating in the water quality program learned something new about water and the water cycle. 90% of turf program participants were willing to try fescue in the future while 99% of turf program participants said they are willing to get their soil tested in order to determine nutrient requirements. Another 30% of turf program participants would consider using white clover to reduce nitrogen fertilization. 96% of Master Gardener participant responses indicated that they learned something new about water quality and management of the home landscape and 88% of Master Gardener participant responses indicated that they would change a landscape practice related to water quality issues. Other impacts include the development of the Target Neighborhood Association Board, which sanctions and supports outreach program on Homeowner Lawn Care Practices, and the development of the CT Think BLUE, Be GREEN Campaign.
On the web, the Residential Water Quality web site (www.sustainability.uconn.edu) has received over 49,000 hits since September 2006. The Private Well Water website: Water on the Move (www.healthyhomes.uconn.edu) has received over 400 hits since September
2007. Over 15,000 Rain Garden Brochures have been distributed to individuals, organizations and towns.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management

111	Conservation and Efficient Use of Water
102	Soil, Plant, Water, Nutrient Relationships
133	Pollution Prevention and Mitigation

Outcome #5

1. Outcome Measures

Awareness of recommended sustainable landscape/turf BMP approaches by targeted commercial and/or residential audiences (% of audience)

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Fairway topdressing surfaced approximately 20 years ago in the Pacific Northwest 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. A major agronomic benefit has been improved drainage, which has lead to less disease and firmer fairways (Baird, 2005). The benefits to fairway topdressing seem unanimous, 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. Less disease means less pesticide or other chemical inputs.

What has been done

Tri-State Turfgrass Research Foundation ($20, 266), Connecticut Association of Golf Course Superintendents ($5,000), Metropolitan Golf Course Superintendents Association ($10,000) Blue Fox Run Golf Course located in Avon, CT offered portions of their fairways for extracting undisturbed soil samples, Burning Tree Country Club offered portions of their fairways for on-site research and several sand suppliers have donated topdressing materials. This research is currently ongoing, but is designed to address questions specific to the New England region, by using undisturbed soil samples and topdressing materials native to the region.

Results

Preliminary results are indicating significant differences in turfgrass performance for the sand types selected for topdressing and the rates the sands are applied. Once this study concludes , the results will help superintendents make better sand selection choices and application rate decisions that may save golf courses considerable time and money as well as address some environmental issues. 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.

4. Associated Knowledge Areas

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

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

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

Program #9

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	40%		40%	
305	Animal Physiological Processes	10%		10%	
306	Environmental Stress in Animals	5%		5%	
307	Animal Management Systems	15%		15%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	**Extension**		**Research**	
	1862	**1890**	**1862**	**1890**
Plan	2.0	0.0	5.0	0.0
Actual	3.8	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**
0	0	111824	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	111824	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
502197	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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	500	1200	100	200
2008	633	1150	120	650

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	2	3	
2008	2	3	5

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Books and monographs

Year	Target	Actual
2008	1	1

Output #2

Output Measure

- Conference abstracts

Year	Target	Actual
2008	1	1

Output #3

Output Measure

- Workshops and conferences hosted

Year	Target	Actual
2008	3	3

Output #4

Output Measure

- Fact sheets and bulletins

Year	Target	Actual
2008	5	7

Output #5

Output Measure

- Websites developed

Year	Target	Actual
2008	1	2

Output #6

Output Measure

- Presentations and short courses offered

Year	Target	Actual
2008	20	21

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Specific characteristics of genomes identified
2	Fundamental understandings of animal growth identified
3	Public policy actions supporting biotechnology adopted and/or amended by governmental and other entitities at international, national, regional, state and local levels.
4	Treatment methods developed for human and/or animal diseases
5	Adoption of recommended BMPs by targeted producers and/or industry sectors (% of target audience)
6	Animal production regulatory procedures adopted and/or amended by governmental agencies at national, regional, state and local levels.

Outcome #1

1. Outcome Measures

Specific characteristics of genomes identified

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Responding to current and emerging disease problems, and providing diagnostic and extension services for official state control programs in mastitis, brucellosis, salmonellosis and avian influenza, pullorum disease and mycoplasmosis is key to maintaining a safe food supply in the state. Testing programs for locally important and emerging diseases such as Lyme disease, West Nile virus encephalitis, chronic wasting disease, etc. are critical to human health. Laboratory diagnostic and consultation service, as well as state and federal regulatory surveillance testing for the diseases of agricultural, avian, companion, laboratory wildlife and aquatic animal species is vital to the stateÃ‚Â's agriculture. Improved diagnostic tests and disease epidemiology, pathogenesis and prevention generate new knowledge

What has been done

Main service activities are performed at the Connecticut Veterinary Medical Diagnostic Laboratory (CVMDL), principally at the Molecular Diagnostic Laboratory where we develop and implement genetic based diagnostic technologies for evaluating specimens from routine necropsies and clinical submissions, as well as surveillance samples for current and emerging diseases (i.e.: avian influenza).

Results

Genetic based diagnostic tests have been developed or adapted at the research laboratory working together with CVMDL personnel and collaborators, including investigators within the department, graduate students, and interns . These techniques are currently used in the laboratory in research activities. Tests such as real-time reverse transcription polymerase chain reaction (real time RT-PCR), real time-PCR, and conventional reverse transcription polymerase chain reaction (RT-PCR) and polymerase chain reaction (PCR) have been developed to assess needs of CVMDL virology and microbiology labs. Laboratory technicians at the Molecular Diagnostic Laboratory have been trained in other techniques such as cloning and sequencing, needed for proper identification of animal pathogens.

4. Associated Knowledge Areas

KA Code	Knowledge Area
304	Animal Genome

Outcome #2

1. Outcome Measures

Fundamental understandings of animal growth identified

2. Associated Institution Types

•1862 Research

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1	1

3c. 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. This works couples with our previous work on using exogenous somatotropin to stimulate growth rate in growing beef cattle. Our goal is to more clearly define changes in the somatotropic axis with age to utilize exogenous somatotropin more efficiently.

What has been done

We have analyzed weekly samples for the first year to more clearly identify times that somatotropin may have a greater impact. We are also investigating the ontogeny of the somatotropic axis in genetically divergent beef cattle.

Results

To date we 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. We have also shown changes in GH, IGF and IGFBP from birth to one year of age in males and females. Our hope is that by more clearly identifying age-related changes in the axis, we 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.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
305	Animal Physiological Processes
301	Reproductive Performance of Animals

Outcome #3

1. Outcome Measures
Public policy actions supporting biotechnology adopted and/or amended by governmental and other entitities at international, national, regional, state and local levels.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Risk assessment entitled Animal Cloning: A Risk Assessmenton the potential risks presented by cloning food-producing animals was conducted by FDA. Among the goals of the risk assessment were the determination of whether somatic cell nuclear transfer (SCNT, the process used to produce the clones being considered in the risk assessment) poses any unique risks to animals involved in cloning relative to other assisted reproductive technologies (ARTs), and whether foods derived from animal clones or their progeny pose consumption risks greater than those posed by foods derived from their conventional counterparts. This guidance document describes FDA recommendations regarding the introduction of edible products from animal clones and their progeny into the food and feed supply. To the extent any parts of SCNT or animal clones, based on being derived from SCNT, meet the requirements for regulation as new animal drugs under the Federal Food, Drug, and Cosmetic Act (Act), this guidance also sets out FDA enforcement policy that FDA intends to exercise its enforcement discretion.

What has been done

The study on the safety of food products from cloned animals have been used by the FDA for their policy making of Guideline No. 179 GUIDANCE FOR INDUSTRY USE OF ANIMAL CLONES AND CLONE PROGENY FOR HUMAN FOOD AND ANIMAL FEED http://www.fda.gov/cvm/Guidance/Finalguideline179.htm To reach our objectives, 1 faculty member, 2 research teams consisted of 4 graduate students, 2 post-doc, 1 research technician, 4 visiting scientists, and 3 undergraduate students. Together the teams published 12 peer-reviewed papers, 1 review article, and 21 conference abstracts and submitted another full-length manuscript. The faculty member gave 5 invited talks and continued research collaboration with scientists in within the university and in other institutions such as University of Illinois, Univ. Missouri-Columbus, and USDA-ARS, University of California-Davis and in other countries such as Brazil, India, China, France, Japan, Taiwan, the Philippines and Thailand.

Results

The guidance document describes FDAÃ‚Â's recommendations regarding the introduction of edible products from animal clones and their progeny into the food and feed supply. To the extent any parts of SCNT or animal clones, based on being derived from SCNT, meet the requirements for regulation as new animal drugs under the Federal Food, Drug, and Cosmetic Act (Act), this guidance also sets out FDAÃ‚Â's enforcement policy that FDA intends to exercise its enforcement discretion.

4. Associated Knowledge Areas

KA Code	Knowledge Area
304	Animal Genome

Outcome #4

1. Outcome Measures

Treatment methods developed for human and/or animal diseases

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	1

3c. 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. There is a need to understand the effects of those under-studied PCBs, and at comparing the immunotoxicity of PCBs between species and to assess the value of the current methods to quantify the health risks associated with exposure to PCBs.

What has been done

This work was initially supported by an EPA Science to Achieve Results (STAR) program grant, with continued support from NOAAÃ‚Â's Oceans and Human Health Initiative. A system was developed to experimentally expose cells of the immune system to PCBs in vitro. This approach allowed the study of cells from different species of marine mammals as well as humans, for which in vivo exposure would raise significant ethical and logistical constraints. This allowed study of the effects of different chemicals compared to unexposed control cells without the significant limitations associated with confounding variables such as age, sex, lifestyle, genetics and other that fraught in vivo and epidemiological studies in outbred species. The work quantified the immunotoxicity of different classes of PCBs in different species, as well as examined the value of current methods used in risk assessment based on the results of our in vitro studies.

Results

Demonstrated for the first time were(1) the marked differences between species in immunotoxicity of PCBs, and (2) the direct immunotoxic effects of non dioxin-like PCBs. While the non dioxin-like PCBs appeared to modulate immune functions more than the dioxin-like congeners in general, some immune functions in some species (such as phagocytosis in bottlenose dolphins, beluga whales and humans) appeared to modulated specifically by the non dioxin-like congeners. It is interesting to note that those changes were not seen using mouse cells. These studies demonstrated the importance of testing in the species of interest, as these effects, which are absent in mice, would never have been discovered had tests not been performed in humans and marine mammals. Those findings cast doubt over the current methods for risk assessment which extrapolate results of tests in mice to assess risk in humans and other species. The UConn lab has for the first time, in collaboration with the NOAA lab in Charlestown,SC, modeled the exposure of an population of humans accidentally exposed to PCBs relative to the effects of PCBs on immune functions of human cells (as determined in our lab) to determine the proportion of the population that would suffer a given magnitude of effects. This represents the first attempt at species-, congener-, and immune-specific risk assessment for PCBs in humans based on cell/function-specific data. The transfer of the risk assessment paradigm to the cell level rather than relying on extrapolation from mouse studies is novel, and promises more accurate and relevant assessment of the risk associated with exposure to PCBs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems

Outcome #5

1. Outcome Measures

Adoption of recommended BMPs by targeted producers and/or industry sectors (% of target audience)

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The viability of Connecticut farms is dependent on the profitability of each product the farm may consider marketing. The traditional farm dream is to grow plants and animals, without consideration of price or even market choice, with a net income to live a quality of life. The state Dept. of Ag. farm grant requires that a business plan is submitted with the application. Applicants were attempting to expand, diversify, or replace obsolete facilities. Many had never looked at their finances,often struggling to continue the farm, often with the assistance of their spousal income. By examining their farm income and expenses, the farm family can make better decisions about the consequences of additional borrowing of funds to match the state grant.

What has been done

Business Planning Spreadsheet was developed using Excel software, to aid farmers to evaluate their income and expenses. Using the returns over variable costs, the farms determined which fixed costs (or dreams) they could realize with the number of units to be sold at a certain price. This spreadsheet tool was introduced to advisory boards and farmer committees.

Results

Eight farms developed business plans including cash flow projections for farm projects needing financing, including cheese processing, pasteurized milk sales, baling/ wrapping round bales, retail of beef cuts, new heifer facility, new dry cow facility, new milking facility, and new greenhouse for growing tomatoes. Three of the farms received grants from the state Department of Agriculture, of $40,000 each or $120,000. One farm received a low interest loan from the state Department of Economic Development for $25,000. Some farmer decided not to apply, realizing that the 'free' money had consequences that did not necessarily fit in with their farm family goals. Of the eight farms completing their business plan with the support of the Extension educator, four decided not to apply for the grant money: One farm decided to search for used equipment rather than increasing debt.
One farm decided that the new milking facility would lead to high debt for a currently debtless enterprise.One farm is attempting to increase sales of beef by selling USDA inspected cuts to Farmers Markets, rather than build an ice cream stand on a limited land base. One farm decided to save money before borrowing their share of the project expenses.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
306	Environmental Stress in Animals
302	Nutrient Utilization in Animals
307	Animal Management Systems

Outcome #6

1. Outcome Measures

Animal production regulatory procedures adopted and/or amended by governmental agencies at national, regional, state and local levels.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1	6

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A Poultry, game and pet birds diseases and control program is essential to the security of the food supply, public confidence and the economics of food production. Poultry, game and pet bird disease diagnosis, prevention, treatment and control program are based at the University of Connecticut in conjunction with various state agencies. Food-borne pathogen contamination of poultry Eggs and products must be monitored for early detection of problems. Salmonella enteritidis reduction and control is essential at the poultry farm level.

2. Surveillance program:
Avian Influenza surveillance and control program. Presentations at the Connecticut Poultry Association meetings and New England Round Table Conference, strategies of control and vaccination program in North Atlantic states.

What has been done

Conducted and supervise the intern animal pathologists during postmortem, histopathological and bacteriological examinations of poultry and pet birds at the Connecticut Veterinary Medical Diagnostic Laboratory. Provided recommendations on treatment and vaccination programs. Made poultry and game bird farm visits in the State of Connecticut. Visited poultry farms to discuss health and poultry management with poultry producers to prevent further losses due to diseases. Answered telephone calls from poultry, pet bird and game bird farmers. Provided information on current poultry vaccination and medical treatment programs for various viral and bacterial infections. Worked with various state agencies in regard to regulatory practices.

Results

No outbreaks of Salmonella food-borne outbreaks related to eggs and egg products from the Connecticut commercial Egg farms. As a result of the Avian Influenza and exotic Newcastle disease surveillance program, all the poultry in the New England is free of highly pathogenic avian influenza and exotic New castle disease virus. Total Egg laying commercial flocks of 3.5 millions were protected from the spread of Avian influenza, exotic Newcastle disease, infectious bronchitis infection, Infectious Coryza, Colibacillosis and Pasteurellosis.
A continue education program on biosecurity, disease and surveillance have lead to avian influenza, exotic Newcastle disease, Salmonella and other diseases free poultry flocks in Connecticut and in New England states.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

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

1. Evaluation Studies Planned

- After Only (post program)
- Before-After (before and after program)
- During (during program)
- Case Study

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

Program #10

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%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	9.0	0.0
Actual	2.6	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
5797	0	49927	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
5797	0	49927	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
407707	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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	200	1200	0	0
2008	230	1150	0	0

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

Patent Applications Submitted

Year	Target
Plan:	1
2008 :	3

Patents listed

A patent (patent number 7,332,170) has been granted. A utility patent application (docket No. 0054.08) has been submitted to the US Patent and Trademark Office. An International Patent Application (reference number 800-295WO) has been filled for a previous application (ref# 11/805,278) submitted on May, 2007.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	1	7	
2008	1	6	7

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Workshops and conferences

Year	Target	Actual
2008	1	1

Output #2

Output Measure

- Fact sheets, bulletins and newsletters

Year	Target	Actual
2008	5	5

Output #3

Output Measure

- Websites developed

Year	Target	Actual
2008	1	1

Output #4

Output Measure

- Animal cases examined

Year	Target	Actual
2008	1200	1501

Output #5

Output Measure

- Disease surveillance programs implemented

Year	Target	Actual
2008	1	1

Output #6

Output Measure

- Books and monographs

Year	Target	Actual
2008	1	1

Output #7

Output Measure

- Conference abstracts

Year	Target	Actual
2008	0	0

Output #8

Output Measure

- Presentations and short courses

Year	Target	Actual
2008	10	12

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Development of new recombinant vaccines
2	New diagnostic tests and approaches developed
3	Animal protection-related actions/procedures adopted and/or implemented by governmental and other entities at the international, national, regional, state and local levels.

Outcome #1

1. Outcome Measures

Development of new recombinant vaccines

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The focus is to understand mechanisms underlying two important viral diseases of swine, Classical Swine Fever and Porcine Reproductive Respiratory Syndrome, that affect greatly pork production, in United States and around the world. Classical Swine Fever is a foreign animal disease caused by a high consequence virus (Classical Swine Fever Virus or CSFV) and is in the list of select agents as an agricultural biological threat together with Foot and Mouth Disease Virus and African Swine Fever Virus.Porcine Reproductive and Respiratory Syndrome (PRRS) is a domestic disease of swine that severely affects the US pork industry. USDA has estimated that the economic losses caused by PRRS are close to 600 million dollars per year.

What has been done

We learned that glycosylation sites within glycoproteins E0, E1 (manuscript in preparation) and E2 of CSFV are important for the life cycle of the virus in cultured swine cells and in infected animals. Interestingly changing certain amino acids in these glycoproteins, that are naturally targeted within the cells for addition of sugars (Arginine to Alanine), result in attenuation of highly virulent strain Brescia. These areas of the genome associated with CSFV virulence could be further modified to introduce genetic/serologic markers to produce live attenuated vaccines that once inoculated into pigs would be distinguished from infections produced by field strains of the virus.Our quest is to identify PRRS virus genetic determinants that affect interactions with swine macrophages, primarily infected host cell in vivo, and how the virus through this interaction modulates the innate immune response. We have learned that different viral genes alter swine macrophage mRNA levels upon infection. Genes involved in response to cellular stress, signaling, T-cell activation, chemotaxis, cellular attachment, apoptosis, and virus growth were identified.

Results

Some viral genes might be modified to induce a specific response in infected swine macrophages. In turn such findings could be the base for designing more efficient live attenuated vaccines that would allow swine to mount an effective immune response against the virus. Participation, invited by the US Department of Agriculture, in an international workshop on Classical Swine Fever aimed to assess control tools and research gaps held in Hannover, Germany, April 2008, organized by the EU Community Reference Laboratory for CSF and the US Agricultural Research Service, USDA. A project proposal was approved by the USDA will supply this research with funding for the next four years [FOREIGN ANIMAL DISEASES: IMMUNE PROTECTION AND DIAGNOSTICS] ARS, USDA. July 2008-July 2012. ($2,117,812). A patent(number 7,332,170)based on this research has been granted. A utility patent application (docket No. 0054.08) has been submitted to the US Patent and Trademark Office. An International Patent Application (reference number 800-295WO) has been filled for a previous application (ref# 11/805,278) submitted on May, 2007.

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases

Outcome #2

1. Outcome Measures

New diagnostic tests and approaches developed

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Mycoplasma gallisepticum is the most economically significant mycoplasmal pathogen of poultry, causing significant economic losses on poultry farms from chronic respiratory disease, reduced feed efficiency, decreased growth and decreased egg production. The carcasses of birds sent to slaughter may also be downgraded. M. gallisepticum infections are notifiable to the World Organization for Animal Health (OIE). This organism has been eradicated from most commercial chicken and turkey breeding flocks in the United States; however, it remains endemic in many other poultry operations. Since 1994, M. gallisepticum conjunctivitis has become an emerging disease in finches, resulting in major declines in eastern U.S. house finch populations, and was recently reported in western house finch populations.

What has been done

For Mycoplasma gallisepticum, the means of attachment; cytadherence molecules and host cell receptors, as well as control mechanisms of variably expressed cell surface proteins involved in cytadherence and/or evasion of the host immune response. The genome sequencing and annotation of the low passage virulent strain R of M. gallisepticum (Rlow) has been completed; currently utilizing the genomic data to study gene expression and functional genomics; currently performing comparative genomic evaluations of the virulent Rlow genome to both, the avirulent M. gallisepticum Rhigh genome as well as the vaccine strain, F strain genome, both of which were recently sequenced. The comparative genomic analysis of these strains will shed light on the mechanism(s) of pathogenesis employed by this important agricultural pathogen. We have recently undertaken another project with an overall objective to sequence and compare the complete genomes of 8 M. gallisepticum house finch isolates from 1994 until the present and from different locations in the U.S. during the epizootic. Whole genome sequencing and comparative genomic analysis of historical and contemporary isolates of M. gallisepticum, both temporally and spatially, from house finches will reveal details about the molecular evolution of M. gallisepticum as a consequence of emergence and spread of this pathogen within a new host population.

Results

Based on progress of this research, we now participate in a 3-institute consortium comprised of The University of MissouriÃ‚Â's Program for the Prevention of Animal Infectious Diseases (PPAID) and the USDA Plum Island Animal Disease Center. This creates tremendous strength in the areas of infectious diseases, microbiology, immunology and molecular biology, setting the necessary framework for the development of improved vaccines, therapeutics and diagnostic tests to control infectious diseases that threaten the United States food animal industry. It has also enabled us to seek funding for larger projects that were unattainable for any single laboratory to pursue successfully.

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases

Outcome #3

1. Outcome Measures

Animal protection-related actions/procedures adopted and/or implemented by governmental and other entities at the international, national, regional, state and local levels.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

When scientific research involves animals, reliable results depend on superior animal care and use programs, accredited by Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC). AAALAC-I engages scientists, managers and administrators in an independent, rigorous assessment of their institutional animal program resulting in better research practices and outcomes. Although animal research is a controversial issue for some, most people support biomedical research if conducted in a humane manner. AAALAC accreditation is voluntary and goes beyond the minimums required by law. It tells the public that the institution is committed to the responsible, humane and justified care and use of animals in science.

What has been done

Over 100 Standard Operational Procedures (SOPs) and Policies were developed in conjunction with Animal Science and the Office of Animal Research Services Departments, currently awaiting IACUC and Departmental approval. Development of adequate record keeping (such as Animal Health Records, Facility Maintenance Records, Animal Tracking Records, Daily Environmental Monitoring) consistent with AAALAC standards. Identification of deficiencies and development of solutions/suggestions for improving the agricultural animal care program at UConn towards achieving AAALAC accreditation.

Results

Achieving AAALAC International accreditation will ensure and promote the University commitment to the highest standards of animal care and use in research and teaching.

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases

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)
- Before-After (before and after program)
- Case Study

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}