

Connecticut Annual Report of Accomplishments FY2001

Goal 1 An Agricultural System that is Highly Competitive in the Global Economy

The Connecticut program was particularly active and successful in the area with a wide variety of plant and animal agricultural efforts conducted during the reporting period.

Plant research efforts yielded a system for regenerating and transforming rhododendron tissue using microprojectile bombardment (gene gun) designed to produce disease resistant rhododendrons created with patented genes and transformation processes. Resistant plants will nearly eliminate the need for chemical controls for root rot. Research to develop plants more tolerant of drought and progressive salination of soil produced two patents to support findings.

Animal research efforts saw scientists in the College's Center for Excellence in Vaccine Research study how pathogens develop and the immune responses to pathogens, with the goal of developing safe and effective vaccines for agriculturally important animals. Research on the regulation of ovary function in sheep and cows revealed ways to inhibit the effects on endothelin-1. These findings have potentially huge implications for the treatment of a variety of reproductive problems in women as well as in agriculturally important animals.

A DNA based vaccine for PRRS was applied to swine in a ongoing vaccination/challenge study. Also a plasmid that expresses swine IL-2 has been successfully constructed. Thus far, two DNA vaccine carrying PRRSV ORFs 5 and 7 which are functional have been constructed. The gene coding for swine IL-2 has been cloned. Cloning of swine IL-4 is under way. The application of IL-2 as an adjuvant for DNA vaccines in swine will be a good contribution in vaccinology for this species.

Connecticut Veterinary Diagnostic Laboratory scientists developed new diagnostic tests to respond to Connecticut's emerging disease needs, including tests for West Nile Virus in horses and other animals, an improved diagnostic test for equine ehrlichiosis, serotyping for salmonella of domestic animal species, a test for Johnes' disease of cattle and improved test for Lyme disease in horses and dogs.

Extension efforts to deal with poultry pests through reduced fly and pest populations were found to be effective, with costs savings realized by many producers. Surveillance programs to monitor poultry and other birds' diseased resulted in control of Marek's disease, ILT, IBDV, and infectious bronchoitis infection. All poultry were free of Avian Influenza.

Research and Extension efforts in the areas of turfgrass and greenhouse production provided useful information to producers and managers through new methods designed to produce products that are of market quality and environmentally protective of groundwater, energy use, and human health.

Marine mammal research efforts paid off with the development of a model using severe combined immuno-deficient (SCID) mice to evaluate the immunogenicity and protection provided by different vaccine candidates without jeopardizing the health of any live marine mammal. Extension efforts helped to catalyze efforts to create an Aquaculture Innovation Center designed to press modern aquaculture techniques into functional production systems.

Benefits to clientele and stakeholders who participated in this goal area were many; including the development of new vaccines for testing, introduction of new and valuable ornamental crops for production and marketing in the State, and development of factual information to better describe the current state of the dairy industry in Connecticut and New England.

In summary, our assessment of accomplishments is considerable, and is measurable in terms of the previously submitted 5-year Plan of Work. Total expenditures, by source of funding, and full-time equivalents for this goal are:

Goal 1		
Funding Source	Expenditures	FTEs
Smith-Lever	202,763	3.12
Hatch	102,020	2.15
Multi-state research	159,163	3.35
State funds	6,444,646	126.71
Competitive grants	1,510,624	33.12
McIntire-Stennis	-	-
Total	8,419,216	168.45

Goal 1 An Agricultural System that is Highly Competitive in the Global Economy

Key Theme - Agriculture Profitability

a. Activity - Poultry pests increase the risk of disease in poultry and thus need to be controlled. Poultry pests reduce profitability by contamination of feed, spreading of disease and destruction of property, and are therefore necessary to control. Flies and rodents from farms may enter neighboring properties and cause nuisance or health problems for the non-farm community. As insecticides and pesticides are added and removed from the marketplace producers need to know about the products and how to safely use them.

b. Impact - Education programs to educate poultry farmers about proper pest management reduced fly and pest populations due to better pest management by CT and New England poultry producers. Savings ranging from \$100 to \$5,000 were reported by farmers resulting from decreased loss due to pests.

c. Source of Federal Funds – Smith-Lever b and c

d. Scope of Impact - State specific

Key Theme - Agriculture Profitability

a. Activity - Alternative agricultural activities on Connecticut Dairy Farms is an emerging issue in Connecticut. A survey of dairy farmers through a USDA Fund for Rural America Project entitled: "Agriculture in New England: Strengthening Economic, Environmental, and Community Impacts" determined the extent to which Connecticut dairy farmers are involved in alternative and non-traditional activities and the extent to which they use alternative marketing strategies for milk or other farm products.

b. Impact - Survey results show that most Connecticut dairy farms will require some combination of increased profitability from milk sales, off-farm income, and alternative on-farm income in order to maintain strong, vital operations in the future. Of the 124 respondents, 69 or about 56% indicated some level of involvement in alternative or non-traditional activities and 55 indicated no involvement whatsoever. In spite of the wide variety of and prevalence of alternative farm-based activities, survey data indicate that these activities represented a very small part of household income. Survey results show that while there is clearly a group of dairy farmers who are engaged in and committed to alternative on-farm income opportunities, many (30%) require income from off-farm employment, particularly as a way to provide health, retirement, and other related benefits.

c. Source of Federal Funds - Fund for Rural America

d. Scope of Impact - State specific

Key Theme - Agriculture Profitability

a. Activity - The Northeast Dairy Compact is a program established by the U.S. Congress and the U.S. Department of Agriculture. It stabilizes and slightly elevates the price of milk purchased from farmers for fluid bottling purposes. The Northeast Dairy Compact stabilized the raw milk price that farmers received for fluid uses at \$1.46/gallon in July of 1997. Critical research and extension questions are whether this program has elevated prices to consumers and whether this program has increased farm income. Another critical issue is the impact of mergers and acquisitions during the 1997-2000 period upon the processing and retailing structure in the New England area. A key question is whether increasing concentration in the milk marketing channel has enabled such firms to widen the farm to retail spread beyond what is needed to cover the increased cost of processing and distributing fluid milk. Since late 1997 the Food Marketing Policy Center at the University of Connecticut has been assembling information and market data to evaluate the Dairy Compact program within the context of the changing structure of the New England milk marketing system.

b. Impact - Results are contained in the University of Connecticut Food Marketing Policy Center Research Monograph #1 at www.are.uconn.edu/fmktc.html. Our research reached virtually the entire United States and generated a response from numerous key participants in the U.S. milk industry. Since posting the report on our website we have had over a 1,000 visits to the site. A primary impact of our study was a very strong political response in support of the dairy compact by the Vermont congressional delegation. Senator Leahy cited this study in his speech concerning the nomination of the Assistant Attorney General for Antitrust before the Senate Judiciary Committee in mid-May. Several leading newspapers including the New York Times and the Hartford Courant have cited the Northeast Dairy Compact as a critical issue of great interest to Senator Jefford's and possibly one reason why he left the Republican Party.

c. Source of Federal Funds - Special Grant

d. Scope of Impact - State specific

Key Theme - Agriculture Profitability

a. Activity - Research on "Inference of Transition Probabilities from Aggregate Economic Data," and its application in "The Analysis of Factors Affecting Northeast Agriculture". The issue is to discover covariance matrix for the estimates using quadratic programming, which has been considered not available or awkward to obtain. The second issue is its application in the inference in the Northeast agricultural analysis.

b. Impact - Discovered the formal procedure of computing the covariance matrix, which was then applied to an analysis of consumer behavior. Working papers include the methodology of Markov inference and also of nonlinear spatial equilibrium analysis in

estimation, inference, and empirical applications. The Markov program posted in the internet received several requests from many countries and universities, including Columbia, Korea, Turkey, Australia, Arizona State University, and University of Tennessee in the recent past. The Northeast Agriculture itself is a multi-state setting involving New England, New York, New Jersey, Virginia, and Maryland as a region plus other regions of the States in regional trade of agricultural commodities. The aggregate data for the last four years were updated and have been used for testing for the consistency and integrity of the model and the empirical results.

c. Source of Federal Funds - Special Grant

d. Scope of Impact - State specific

Key Theme - Biotechnology

a. Activity - The rhododendron crop produced in Connecticut may be valued at as much as \$75 million. A root rot disease caused by the fungus *Phytophthora cinnamomi* causes significant plant death and requires application of fungicides to control disease incidence. Costs associated with *Phytophthora* root rot may exceed \$10 million annually in Connecticut. More efficacious, cost effective and environmentally-friendly ways of controlling rhododendron root rot are needed. We are creating transgenic rhododendrons carrying an antifungal gene that should make plants resistant to the root rot disease, as well as other common rhododendron diseases. In addition, we are developing a diagnostic assay employing the polymerase chain reaction (PCR) that will accurately determine if plants are infected with *Phytophthora cinnamomi*.

b. Impact - We have developed a system for regenerating and transforming rhododendron tissue using microprojectile bombardment (gene gun). We have also forged an agreement with Sanford Scientific, creators of the gene gun, which allows us freedom to operate with gene gun technology and gives us access to a substantive portfolio of trait genes and genetic components. This legal agreement allows us to readily distribute and market disease resistant rhododendrons created with patented genes and transformation processes. We have created several transgenic rhododendrons that have shown resistance to *Phytophthora* in vitro. We are in the process of testing the resistance of these plants to root rot in the greenhouse. We are currently working to simplify the PCR test to make it easy and cost effective for routine testing of dying rhododendrons. Although it is still too early to bring either root rot resistant rhododendrons or a *phytophthora* diagnostic assay to the nursery industry, our progress to date has been encouraging and suggests that we will be succeed. The ability to accurately test a crop of rhododendron for *phytophthora* will allow growers to apply chemical control measures in a cost effective and environmentally sensitive manner. Resistant plants could nearly eliminate the need for chemical controls for root rot in rhododendron. Significant dollar savings would be realized by commercial growers as well as homeowners.

c. Source of Federal Funds - Smith-Lever b and c/Hatch

d. Scope of Impact - National

Key Theme - Emerging Infectious Diseases

a. Activity - Efforts in research and fund seeking are targeted at present vaccines for PRRS a swine disease affecting severely the industry. More recently, West Nile virus has become an important area of interest both at the diagnostic and research levels. A BSL-3 facility is now in place and enables us to handle this virus under proper containment. The areas of research at present include: vaccine design and testing of protective immunity. DNA vaccines encoding the pseudorabies virus and porcine reproductive respiratory virus genes have been constructed and tested. The use of cytokines such as IL-2 as DNA vaccine adjuvants is an area of active research.

b. Impacts - A DNA based vaccine for PRRS has been applied to swine in a ongoing vaccination/challenge study. Also a plasmid that expresses swine IL-2 has been successfully constructed. Thus far, two DNA vaccine carrying PRRSV ORFs 5 and 7 which are functional have been constructed. The gene coding for swine IL-2 has been cloned. Cloning of swine IL-4 is under way. Previous work in our laboratory with a DNA vaccine carrying pseudorabies virus IE180 gene that was adjuvanted with IL-2 plus results generated with ORF5 and 7 in mice and swIL2 in vitro has been attached as preliminary data for a large grant submitted to USDA-NRI which is currently under review. The application of IL-2 as an adjuvant for DNA vaccines in swine will be a good contribution in vaccinology for this species. Achieving an effective vaccine against PRRS will have a positive impact in production and productivity of the swine industry. Regarding West Nile virus, the first isolation of West Nile virus from a hawk occurred, 3 papers were published on West Nile, the first BSL-3 laboratory was implemented and approved in the University.

c. Source of Federal Funds - Storrs Agricultural Experiment Station, special USDA grant by the University of Connecticut CEVR group in collaboration with the University of Missouri is supporting the DNA vaccination/challenge studies in swine.

d. Scope of Impact - Multi-state

Key Theme - Animal Genomics

a. Activity - Research is focused on illuminating the grey area between genetics and physiology through investigating genetic regulation of pituitary growth hormone (GH) release in dairy cattle, which is controlled by the interaction of two hypothalamic hormones, growth hormone-releasing factor (GRF) and somatostatin (SRIF).

b. Impact - On the physiological side, we have demonstrated that GRF-induced GH release is related to genetic merit for production traits in dairy sires through a series of experiments. On the genetic side, we are characterizing and searching for polymorphisms in several genes involved in GH regulation, including GH, SRIF, GRF, GRF receptor and SRIF receptors type 2 and 5. Using a population of dairy sire we have found a correlation between two single nucleotide polymorphisms present in GRF gene and fat percent and protein yield.

c. Source of Federal Funds - Hatch

d. Scope of Impact - State specific

Key Theme - Animal Genomics

a. Activity - Research to examine the potential roles of endothelin-1 in bovine corpora luteal function has been conducted for the past five years. We have found that endothelin-1 plays a central role in the process of luteolysis in the cow and the ewe. We have identified methods by which we can inhibit the effects of endothelin-1 through the use of specific endothelin receptor antagonist administration.

b. Impact - These findings have potentially huge implications in the treatment of a variety of reproductive problems in women as well as agriculturally important animals. The outcomes of this work have resulted in many published manuscripts including "Inter-relationships between endothelin and prostaglandin F in corpus luteum function" (Milvae RA. 2000. Reviews of Reproduction 5: 1-5). We are in the process of applying for a "use patent" for use of our findings in the fields of human and veterinary medicine.

c. Source of Federal Funds - Hatch

d. Scope of Impact - State specific

Key Theme - Animal Genomics

a. Activity - Basic and practical research in the areas of reproductive physiology and animal biotechnology, particularly cloning and transgenic technology.

b. Impact - Successfully attracted over \$7,000,000 extra-mural support from the USDA, the State of Connecticut (CII), the Rockefeller Foundation, and the pharmaceutical industry, such as Alexion, Biotechnology Research and Development Corporation (BRDC), PPL Therapeutics and Genzyme Transgenic Corporation etc. In 2000, two of our papers were selected as the cover paper in two prestigious journals: Biology of Reproduction (cover issues of January to

June 2000) and the Proceedings of the National Academy of Sciences (PNAS, the February 1, 2000 issue). More recently our paper on clone telomere was published in Nature Genetics.

Our recent success on cattle has been covered extensively by various news media around the world. These include CNN Headline News, BBC News, NPR News, New York Times, Washington Post, Wall Street Journal, US News & World Reports, Chicago Tribune, Boston Globe, London Times, Associated Press, Reuters, Agency France Press, China Press and Xinhua News Press etc. UConn has committed to capitalize on our success to establish a Connecticut Center for Regenerative Biology with an investment of 5 additional tenure-track faculty and \$5,000,000 funds.

c. Source of Federal Funds - Hatch

d. Scope of Impact - State specific

Key Theme - Plant Genomics

a. Activity - Abiotic stresses such as drought and progressive salination of soil threaten to compromise agriculture productivity in many regions. Plant vacuoles play a central role in cellular mechanisms of adaptation to these stresses. We have engineered Arabidopsis thaliana plants to overexpress the vacuolar pyrophosphatase H⁺ pump, AVP-1. Transgenic plants tolerate high salinity (250 mM), drought, and are larger than wild type plants. AVP-1 overexpression also increases solute accumulation and water retention. The shoot and root regeneration capability of leaf explants of the transgenic plants is dramatically enhanced when compared to wild type. We are involved in two major areas of research. One, in improving the tolerance of plants towards abiotic stresses like high salinity and drought. We are up-regulating pumps and transporters that endow these plants to enhanced their capability to accumulate solutes in their vacuoles. This increased accumulation capability helps the plant to sequester more efficiently toxic cations, such as sodium. The other major research area deals with the regulation of plant growth. We have achieved via transgenesis to increase capability of our transgenic plants to make cells. This engineered capability renders larger plants. We are currently characterizing the molecular basis of this new phenotype. We are testing the universality of this phenomenon by generating transgenic Petunia and Rhododendron plants.

b. Impact - There are three patents that support the impact of our findings:

Drought/Freeze Resistant Transgenic Plants by Roberto Gaxiola

August 17, 2000. Attorney's Docket No: 883933.0029

Stress Resistant, Oversized, Transgenic Plants Capable of Growing in Salinized Soil by Roberto Gaxiola August 22, 2000. Attorney's Docket No: 0399.2004-001

Enhanced Meristematic Activity by Overexpression of Tonoplast Pyrophosphatase by Roberto Gaxiola March 24, 2001. Attorney's Docket No: 883933.0057

c. Source of Federal Funds - Hatch

d. Scope of Impact - State specific

Key Theme - Ornamental/Green Agriculture

a. Activity - Turfgrass represents one of the largest agricultural commodities in the Northeastern US, and the industry is growing rapidly in response to increasing urbanization of the region. In certain instances, turf receives comparable or greater amounts of fertilizers and pesticides than cropland. This has raised concerns for water quality in turf areas that receive fertilizers and pesticides. Research evaluated the effects of different fertilizer sources, timing of fertilizer application, fertilizer rates, and clipping management on the leaching losses of nitrogen from turf used for various purposes.

b. Impact - Results indicate that turf and water quality can be maintained with earlier fertilization of turfgrass in the fall than is currently practiced. This is important as application of nitrogen fertilizers past September 15th increases the potential for nitrate leaching from turf and yet it is a common practice is to apply nitrogen fertilizers to turf around Thanksgiving in New England.

c. Source of Federal Funds -USDA-NRICGP \$85,000; PPI/FAR \$4,000, Hatch

d. Scope of Impact - State specific

Key Theme – Ornamental/Green Agriculture

a. Activity - Commercial greenhouse growers face a number of issues that impact environmental quality and sustainability. Applied research was conducted to develop recommendations to improve crop pest management and productivity, and to create new production opportunities.

b. Impact - Strong interest in environmentally sensitive greenhouse production practices by producers across Connecticut was evidenced by 65 growers who attended poinsettia cultivar trials at the University of Connecticut, 375 growers who attended the 2001 Perennial Plant Conference, 600 Connecticut growers who received the semi-monthly Yankee Grower: The University of Connecticut Journal for Profitable Horticulture, 910 Connecticut growers who sought and received recommendations on aspects of pest management, crop nutrient or cultural management via phone, FAX or e-mail, 200 Connecticut growers who received direct diagnostic advice via grower visits and walk-in consultations, 210 New England regional growers who received instruction on Plant Growth Regulators, and 35 Connecticut high school vocational agriculture students who participated in the Annual Floriculture Plant Day.

c. Source of Federal Funds - Hatch/Smith-Lever b and c

d. Scope of Impact - Multi-state

Key Theme - Aquaculture

a. Activity - Eastern Long Island Sound has the potential to produce quantities of high quality shellfish (clam, oyster, scallop, mussel, steamers) of considerable commodity value (i.e. \$90/bushel). The Connecticut Interagency Aquaculture Coordinating Committee identified the transfer of the former UConn Marine Research Laboratory in Noank as a step to aid public/private aquaculture and resource enhancement by creation of an experiment station type, Aquaculture Innovation Center. Efforts were made to work closely with shellfish companies (8+) to formalize the cooperative and resource pilot funding. CES helped organize participants and attract substantial private interest (Legal Seafoods). Potential dollar values of the cooperative might approach \$1.5 million. The collaboration of several small companies in the cooperative forms a nucleus to press modern aquaculture techniques into functional production (breeding, cage culture, tray lot management, selective marketing).

b. Impact - Several hundred acres of seabed are being utilized for culture (“aquatic agriculture”) including expanded Mohegan usage, and the employment and local stock enhancement capabilities have increased ten-fold. The shellfish aquaculture policy issues (sea-bed leasing, departmental authority, hatcheries, dredging impacts) are being evaluated and implemented by key CES individuals in Rhode Island and New York, with substantial input from the “model” Connecticut shellfish program.

c. Source of Federal Funds - NOAA

d. Scope of Impact – State-specific

Key Theme - Animal Production Efficiency

a. Activity - Jersey dairy cows are increasing in number, since they produce milk with higher concentrations of milk protein than Holstein cows. The importance of nutritional research to support the development of proper nutritional programs cannot be understated. Proper ration formulation and nutritional management is essential for maintaining the health and producing ability of the dairy herd. Equally important is the economics associated with nutritional management since feeding costs make up at least fifty percent of the costs of producing milk. Recently, the pricing of milk has changed to include a price for the protein contained in milk. This has increased the emphasis on enhancing milk protein output in order to increase profitability. Research focused on specific nutritional topics that are relevant to the dairy industry in Connecticut and New England.

b. Impact - Research determined that Jersey cows have a different pattern of tissue energy loss in early lactation relative to Holstein dairy cows. Another study has been initiated to determine if the feeding program prior to calving can impact the protein content of milk in early lactation of Holstein cows.

c. Source of Federal Funds - Hatch

d. Scope of Impact - State specific

Key Theme - Animal Health

a. Activity - Marine mammals are highly visible animals with a high social and economical value. With the globalization of the 21st century, marine mammals, as other species, are exposed to an increasing diversity of pathogens. Efforts are needed to develop methods (such as vaccines) to protect those animals. Nevertheless, marine mammals remain very impractical species to do research with, for logistical, economical and ethical reasons. Research was conducted to develop a surrogate model to study the immune response of marine mammals without using actual marine mammals.

b. Impact - Developed a model using severe combined immuno-deficient (SCID) mice to study the response of marine mammal immune cells in a mouse model. We have demonstrated that marine mammal immune cells survive into and circulate in blood and spleen of reconstituted SCID mice. In addition, we vaccinated such reconstituted SCID mice and showed evidence that the marine mammal cells (in SCID mice) responded to the vaccine. Our results prove the concept that a surrogate system, marine mammal-reconstituted SCID mice, is adequate to test the response to a vaccine for marine mammals. Those results were presented to the marine mammal program of the US Navy in San Diego, where an ongoing project is the development of DNA vaccines for their marine mammals. This visit resulted in the development of a collaboration to evaluate the immunogenicity and protection provided by different vaccine candidates without jeopardizing the health of any live marine mammal. On a larger scale, this effort may result in the testing and development of vaccines for marine mammal pathogens worldwide, resulting in healthier animals.

c. Source of Federal Funds - NOAA

d. Scope of Impact - State specific

Key Theme - Animal Health

a. Activity - The Connecticut Veterinary Diagnostic Laboratory provided service in veterinary diagnostics to Connecticut and regional veterinarians and animal owners. Special emphasis was placed on emerging diseases of importance in Connecticut and

enhancement of relationships with other Connecticut agencies concerned with animal and public health.

b. Impact - New veterinary diagnostic tests have been developed to respond to Connecticut emerging disease needs, such as multiple tests for West Nile Virus in horses and other animals, an improved diagnostic test for Equine ehrlichiosis, serotyping for salmonella of domestic animal species, Johnes disease of cattle and improved tests for Lyme disease in horses and dogs. Working relationships with the Connecticut Depts of Agriculture, Public Health, Environmental Protection and USDA APHIS Veterinary Services have been enhanced. Veterinarians have consulted laboratory staff on disease diagnosis and testing issues; emerging disease talks were given to the general public. Nine new veterinary diagnostic tests were developed to respond to Connecticut emerging disease needs, including: Ehrlichia equi recombinant protein western blot, Salmonella serotyping, K-99 e. coli antigen politest, Johnes Disease, ElisaWest Nile Virus IgM capture, ElisaWest Nile Virus RT- PCR, West Nile Virus Viral Isolation, West Nile Virus plaque reduction assay. Improved microbial identification (esp. aquatic microbes) via Biolog system.

c. Source of Federal Funds – Smith-Lever b and c/Hatch

d. Scope of Impact - State specific

Key Theme - Animal Health

a. Activity - To address a need from the zoo and aquarium industry to provide high-quality and reliable, expert diagnostic services pertaining to the anatomic pathology of aquatic animals, particularly fish. Provided expert diagnostic pathology services to aquariums and to use this case material as teaching material to develop the aquatic animal teaching archive of the Department.

b. Impacts - Developed pathologist-client relationships with 7 aquariums from across the United States, e.g. from Mystic Aquarium and The Maritime Aquarium in Connecticut to Underwater World Pier 39 in San Francisco. Reported on more than 300 aquatic animal cases in 2000-2001. Aquatic animal pathology cases are now an integral part of the teaching material for resident veterinarians training in anatomic pathology, and visiting interns from other institutions have come to the Department of Pathobiology in order to participate in this unique teaching opportunity.

c. Source of Federal Funds - Grants

d. Scope of Impact - State specific

Key Theme - Animal Health

a. Activity - The diagnosis of disease allows prompt decision making in terms of treatment and or control. The focus are viral diseases. The objective is to recover and identify viruses causing disease.

b. Impact - Since the beginning of the outbreak in August 1999 researchers have been involved in necropsies, processing of tissues for recovery and identification of West Nile virus, interviews with the press and public in general, submission of requests for funds for research on West Nile virus and preparation and submission of manuscripts for publication. Participated actively and directed the calibration of some diagnostic tests for West Nile that were applied in last years surveillance. The work yielded the first West Nile virus isolation from a crow in Connecticut, the first isolation of West Nile virus in winter from a hawk, a publication in Science, a publication of the hawk virus isolated in winter in the Journal of Clinical Microbiology a publication in Microbes and Infection, several requests for funding to internal and external funding agencies. Also a BSL-3 laboratory for work with West Nile virus has been implemented and approve officially. Many newspaper articles and TV news have and continue covering our activities with West Nile virus.

c. Source of Federal Funds - State Grants

d. Scope of Impact - State specific

Key Theme - Animal Health

a. Activity - Diagnosis of poultry diseases at the Diagnostic Laboratory of the Department of Pathobiology involved postmortems, gross pathology, bacteriological, serological and histopathological examination, diagnosis and treatment and preventive recommendations. Periodic commercial poultry farm visits were conducted, required for monitoring of important poultry diseases such as avian influenza, velogenic Newcastle disease, infectious bronchitis, mycoplasmosis, infectious laryngotrachitis, infectious bursal disease, Marek's disease and other. Emphasis on biosecurity was stressed at the local and regional meetings. Ongoing volunteer program of testing for the presence of Salmonella enteritidis (SE) in laying hens. Local and regional poultry meetings are held every year for the awareness of biosecurity and possible rodent population contaminated with SE were emphasized. Educated 400 Poultry Producers for the protection against diseases in poultry. Provided 1,200 consultative services/diagnostic tests on poultry/pet birds/et.

b. Impacts - Outbreaks of Marek's disease, ILT, IBDV, and infectious bronchoitis infection were successfully controlled by proper diagnosis and biosecurity and vaccination programs. Total Egg laying commercial flocks of 4.5 millions were protected from the spread of IBVD, Coryza, Colibacillosis and Pasteurellosis. Surveillance of regulatory disease were reported to public health, Agriculture, and APHIS. Constant surveillance of poultry diseases provides a more nearly disease-free area for the production of quality products in

Connecticut. Outbreaks of ILT, and IBV, were successfully controlled by proper diagnosis and biosecurity and vaccination programs. To protect poultry from a periodic Avian Influenza (AI) out breaks/and suspected flocks in Pennsylvania, New Jersey and New York a continued education program on biosecurity and disease surveillance by blood tests against AI was put in place in Connecticut. So far all poultry in Connecticut is free of Avian Influenza.

c. Source of Federal Funds - Hatch

d. Scope of Impact - State specific

Key Theme - Home Lawn and Gardening

a. Activity - There is strong public support for actions to protect and enhance the natural, historical, and developed environment. Individuals can take actions that will have positive environmental and community consequences. 230 students enrolled in the Master Gardener program. 205(89%) became certified Master Gardeners after completion of 65 hours of in-class instruction and at least 60 hours as interns in Extension Centers and /or community settings. Master Gardeners made 5,856 in-office contacts with members of the public via telephone, mail, and walk-ins resulting in diagnosis of a wide variety of plant problems (insects, plant ID, etc.).

b. Impacts - Master Gardeners conducted 140 outreach projects in the areas of community food production, therapeutic gardening, and sustainable landscaping. Educational efforts across Connecticut resulted in a wide variety of impacts, including:

- The first ever statewide community gardening conference held in Fall 2001.
- A nature-related curriculum was made a budgeted part of the program at a short-term detention center in Norwalk for young girls (12-16).
- Increased awareness and use of culinary herbs, especially by community residents on restricted diets as a result of Master Gardener educational efforts to develop a herb garden and brochure on herb growing at the Hebron Interfaith Human Service Food Bank.

c. Source of Federal Funds - Smith-Lever

d. Scope of Impact - State specific

Goal 2 A Safe and Secure Food and Fiber System

The Connecticut program was particularly active and successful in this area with a wide variety of efforts conducted during the reporting period.

Extension education programs were focused in the critical area of Listeriosis, with a major conference designed to look at the Listeria problem from a variety of viewpoints – microbiology, pathogenicity, and risk assessment. Conference attendees, who ranged from food industry professionals to federal regulators, universally rated the conference in the very good to excellent category with participants receiving an array of tools to effectively deal with this issue.

Research efforts to utilize recombinant DNA technologies successfully developed more accurate rapid procedures to detect Salmonella and SE infection in laying hens. These methods will cut the Salmonella detection times from many days to a few hours.

Hazard Analysis Critical Control Point (HACCP) system Extension education efforts focused on the area of cheese making as the development and implementation of cheese HACCP strategies is an emerging multi-state issue in New England. Efforts were designed to help cheesemakers increase their adoption of recommended food handling practices through the use of HACCP-based approaches. Program attendees uniformly gave the program an excellent or very good rating.

Benefits to clientele and stakeholders who participated in this goal area were many, including effective HACCP plans for produces of value-added products such as cheese, and enhanced knowledge levels of diseases such as Listeria.

In summary, our assessment of accomplishments is considerable, and is measurable in terms of the previously submitted 5-year Plan of Work. Total expenditures, by source of funding and full time equivalents for this goal are:

Goal 2		
Funding Source	Expenditures	FTEs
Smith-Lever	110,604	2.31
Hatch	-	-
Multi-state research	-	-
State funds	525,530	8.15
Competitive grants	-	-
McIntire-Stennis	-	-
Total	636,134	10.46

Goal 2 A Safe and Secure Food and Fiber System

Key Theme - Foodborne Illness

a. Activity - *Listeria monocytogenes* is a foodborne bacteria that has had a significant impact on the food industry in the last few years, especially ready-to-eat foods. This bacteria can cause serious infection in humans called Listeriosis. It is estimated that it is the cause of 2,500 serious illnesses and 500 deaths each year. Groups especially vulnerable to this infection include pregnant women, infants, young children, older adults and those with weakened immune systems. Listeria has recently become problematic in the food industry. Initially, it appeared to be a problem in seafood processing plants, but it seems to have become ubiquitous in a variety of food processing environments, including those involved in the processing of soft cheeses, ready to eat meats, including hot dogs and deli meats, and in fresh produce.

b. Impact - An Extension-sponsored conference which looked at the Listeria problem from a variety of viewpoints: microbiology, pathogenicity, and risk assessment, as well as foods and industries affected and strategies for dealing with the pathogen. 78 persons attended the two-day workshop, including State and Federal regulators, Extension professionals, sanitarians, the food industry, including retail, meat and poultry processors, seafood processors, veterinarians, pasta processor, laboratory professionals, and farmstead cheesemakers. Evaluations rated the workshop overall at 51% "very-good", while 42% stated "excellent." Comments included: "Excellent conference, excellent speakers"; "the seminar has given me an array of weapons to help win the battle."

c. Source of Federal Funds - Special Grants

d. Scope of Impact - State specific

Key Theme - Foodborne Pathogen Protection

a. Activity - Training is being given to students, veterinarians, and New England's poultry producers about the importance of *Salmonella* surveillance in table egg flocks. Awareness regarding biosecurity and possible rodent population contaminated with SE was described at various local and regional meetings. Proper rodent control programs have been described.

b. Impact - On going volunteer program of testing for the presence of *Salmonella enteritidis* (SE) in laying hens has contributed to more than 250 SE free flocks in the State of Connecticut. For the past few years no SE egg-borne outbreaks in human were traced back to Connecticut poultry laying hens. Recombinant DNA technologies are being used to develop more accurate rapid procedures to detect *Salmonella* and SE infection in environmental as well as in laying hens. We have developed DNA probes and polymerase chain reaction specific for *Salmonella*, and in the process of developing SE specific probes and PCR. These methods will cut the *Salmonella* detection times from many days to few

hours. Due to the awareness regarding biosecurity and control in rodent population practices, all of Connecticut commercial egg laying poultry flocks are free of SE infection.

c. Source of Federal Funds - Smith-Lever b and c

d. Scope of Impact - State specific

Key Theme - HACCP

a. Activity - Cheese making is a New England tradition. New England cheese products are widely distributed at fine retail establishments throughout the region and nationwide. Cheese was originally developed as a means of preserving raw milk in times of excess production and is generally considered to be a relatively 'safe' food. However, there have been several reported cheese-associated outbreaks of foodborne illness. Cheeses made with unpasteurized milk appear involved in the majority of reported outbreaks. It is recognized that in cheese manufacture, post-pasteurization contamination can occur. The development and implementation of cheese HACCP and/or risk reduction strategies in the cheese industry is an emerging multi-state issue that has relevance for New England. Currently, there is little interstate interaction among New England cheesemakers that would facilitate a logical approach for implementing risk reduction strategies in cheese plants. The project focused on helping cheesemakers increase their adoption of recommended food handling practices as it pertains to cheese; to use HACCP-based approaches to cheese manufacturing practices and processes and to increase their knowledge of risks and responsible practices in relation to cheese and microbial contamination.

b. Impacts - A two-day workshop for cheesemakers in New England, and a food safety manual for cheesemakers, for participants from VT, MA, NH, CT, and ME. 94% rated the conference as "excellent" (52%) or "very good" (42%). When asked if they increased their knowledge of a specific topic discussed during the conference, 61% gave a positive response when asked about "regulations", 61% for "food safety standards," 71% for "Good Manufacturing Practices," 71% for "Sanitation Standard Operating Procedures," and 52% for "Preventive or Control Measures."

c. Source of Federal Funds - Special Grants

d. Scope of Impact - Multi-state

Goal 3 A Health, Well-Nourished Population

The Connecticut program was particularly active and successful in this area, with a wide variety of efforts conducted during the reporting period.

A number of research efforts were implemented in the area of human nutrition. Research on the effects of various forms of exercise and nutrition interventions on protein utilization in young, healthy non-obese children will have direct impact on the development of appropriate guidelines for weight loss in obese children, as well as nutrient recommendations for obese and non-obese children participating in regular exercise programs.

Research on the maternal supply of Docosahexaenoic acid (DHA), a dietary fat important to the development of the central nervous system and eye, related to characteristics of sleep patterns in their infants has resulted in consideration by scientists in the nutrition community about putting DHA into infant formula.

Research on the relationship between dietary protein and protein utilization in endurance athletes was conducted that will provide a foundation for nutrition education materials on appropriate protein intake for individuals involved in habitual exercise programs.

Extension education efforts in the areas of children with special health care needs, especially low income groups, resulted in a joint effort between Cooperative Extension faculty, the CT Children's Medical Center and the UConn Health Center. Education to provide dietary adherence and health outcomes for medically at-risk infants and children resulted in changes in awareness and knowledge among 85% of food service directors and nurses, with children showing improved nutritional status and health outcomes.

The Expanded Food and Nutrition Education Program (EFNEP) provided community outreach and education across the state to low income homemakers. With the use of the ERS Behavior Check List, participants showed 94% behavior changes in dietary intake, food resource management and food safety knowledge.

A highlight of the reporting period was the Connecticut Family Nutrition Program for Infants, Toddlers and Children (FNP-IT) in the Hartford area which saw 9,500 children attending a food safety puppet show, and 10,000 children receiving food safety stickers, magnets, coloring books and 3,000 caretakers provided with nutrition and food safety education.

Benefits to clientele and stakeholders who participated in this goal area were many, including improved opportunities for newborn infants, and better knowledge of nutrition needs by low income inner-city residents.

In summary, our assessment of accomplishments is considerable, and is measurable in terms of the previously submitted 5-year Plan of Work. Total expenditures, by source of funding, and full-time equivalents for this goal are:

Goal 3		
Funding Source	Expenditures	FTEs
Smith-Lever	272,004	5.95
Hatch	-	-
Multi-state research	-	-
State funds	677,089	9.11
Competitive grants	660,405	15.84
McIntire-Stennis	-	-
Total	1,609,498	30.90

Goal 3 A Health, Well-Nourished Population

Key Theme - Human Nutrition

a. Activity - Nutrition Education for food stamp recipients is of major public health importance as food stamps can be used to purchase practically any food items regardless of their nutritional value. Target audiences are: a) Hartford's inner-city children and their caretakers, and b) Connecticut's and Southwestern Massachusetts Hispanic caretakers. The latest data from the Food Stamp Program indicates that by April 2001 81,691 households were receiving food Stamps in Connecticut. In Hartford, CT, 58% of food stamps recipients are Latinos. Objectives were to improve food choices and food handling practices at home through individual, small, and large group education as well as social marketing.

b. Impacts - Developed a food safety puppet show for children K-4th grade. Presented food safety puppet show to 3,500 children attending Hartford public elementary schools. Reached 6,500 additional children with 3 puppet shows previously developed by FNP-IT: Five Food Groups, Happy Heart, From the Farm to the Table. Reached 10,000 children with food safety stickers, magnets, coloring books distributed at schools, supermarkets, and health fairs. Reached 3,000 caretakers with nutrition and food safety education through 10 health fairs and numerous hands-on presentations. FNP-IT products and services continued to receive national recognition and very high quality scores from target audiences. Two FNP-IT staff members obtained advanced degrees, one MPH and one MSW, through their FNP-IT work. According to the ERS reporting system, 94% of EFNEP participants showed positive food behavior changes. These findings are based of pre and post tests 24-hour recalls.

c. Source of Federal Funds - Smith-Lever

d. Scope of Impact - State specific

Key Theme - Human Nutrition

a. Activity - Connecticut is one of the wealthiest states in the nation. Yet we have 3 of the poorest cities in the nation. Families with young children with incomes at or below 125% of federal poverty levels or with other resource limitations such as poor housing, inadequate access to food, limited reading skills or physical disability qualify. Hartford, the state capitol, is the eighth poorest moderate-sized city in the US Today approximately 45% of Hartford children live in poverty. The Expanded Food and Nutrition Education Program (EFNEP) provides nutrition education and community resources to families and youth who are living in poverty and facing barriers to balanced nutrition which include limited resources to buy food, poor access to supermarkets, limited food preparation and storage facilities. EFNEP collaborates with other Extension Services and Agencies to serve families according to their needs. EFNEP Helps Families

- Maximize Family Resources
- Promote Maternal and Child Health
- Meet Needs of Youth at Risk

- Empower Individuals, Families and Communities
- Build Parental Skills

b. Impact - With the use of ERS Behavior Check List, participants showed great improvement in planning and being aware of what they are feeding their families. They are also showing 94% behavior changes in dietary intake, food resource management and food safety knowledge, skills and behavior, documented by the ERS computerized data system.

c. Source of Federal Funds - Smith-Lever 3d

d. Scope of Impact - State specific

Key Theme - Human Nutrition

a. Activity - Endurance athletes traditionally adhere to a high carbohydrate diet (>50% kcal/day) in order to maintain muscle glycogen stores and to optimize performance during prolonged exercise. To date, however, the relationship between dietary protein and protein utilization in endurance athletes has not been fully characterized. Therefore, we compared the effects of feeding a moderate protein (1.8 g/kg/day) versus a high protein diet (3.6 g/kg/day) for four weeks on whole body protein and carbohydrate metabolism at rest, whole body and skeletal muscle protein turnover following exercise in endurance runners.

b. Impact - The results from this work will directly apply to recommendations for protein intake in healthy, physically active men and women. Findings will enlighten scientists, nutritionists, athletes, and the public regarding the actual effects of high protein diets on protein utilization by the body and by skeletal muscle. This information will ultimately provide a foundation for nutrition education materials on appropriate protein intake for individuals involved in habitual exercise programs.

c. Source of Federal Funds - Hatch

d. Scope of Impact - State specific

Key Theme - Human Nutrition

a. Activity – The prevalence of pediatric obesity is increasing in the United States. The tendency for obesity, as well as its associated risk factors (hypertension, diabetes, hypercholesterolemia) to track into adulthood has resulted in numerous efforts to treat the disorder. A research program focused on the effects of various forms of exercise and nutrition interventions on protein utilization in young, healthy non-obese children. Organized, chaired, and participated in minisymposium titled “Considerations for

exercise, nutrition, and growth in young children” at the 48th Annual Meeting of the American College of Sports Medicine, May 30 - June 2, 2001.

b. Impact - This work has direct impact on the development of appropriate guidelines for weight loss in obese children, as well as nutrient recommendations for obese and non-obese children participating in regular exercise programs. Characterization of the relationship between energy intake (diet), energy expenditure (exercise), and protein metabolism in obese and non-obese children will provide a scientific foundation for the development of guidelines for the management of pediatric obesity as well nutritional recommendations in support of exercise and growth in healthy children.

c. Source of Federal Funds - Hatch

d. Scope of Impact - State specific

Key Theme - Human Nutrition

a. Activity - Maternal dietary intake of lipids during both pregnancy and lactation impacts nutrient availability to the developing infant during gestation and in the early postnatal period via breastfeeding. Docosahexaenoic acid (DHA) is a dietary fat that is important to development of the central nervous system and the eye. The fetus and also the infant have little or no capacity to synthesize this fat and therefore both rely on the mother’s supply through transfer across the placenta or in the breast milk. Overall research objectives are to determine how maternal supply of DHA during pregnancy influences functional outcome for the infant or during lactation influences infant levels of DHA. It was determined that the amount of DHA that women consume during pregnancy was related to the characteristics of sleep patterns in their infants. The more DHA, the more mature was the central nervous system in the first 48 hours after birth. Previous work has demonstrated that this will relate to better scores on mental and motor scales at 6 months for the infants. The importance of cold-water marine fish as a dietary source of DHA for pregnant and lactating women has been presented at an international conference. Infants have no reserve pools of DHA and have limited ability to synthesize DHA. We have determined that for infants consuming lipids at levels provided by breast milk in our population of women, they are dependent on maternal DHA intake during the first 20 weeks of breastfeeding. In the 5 months of their first year of life, breastfeeding full-term infants are highly dependent on the maternal dietary intake of DHA for a source of DHA in the breast milk.

b. Impacts - The findings are being discussed by scientists in the nutrition community and recommendations for putting DHA into infant formula in the U.S. is under serious consideration. Health care providers and industries are beginning to advise their pregnant and breastfeeding women on the importance of including sources of DHA in their diets.

c. Source of Federal Funds - Grants

d. Scope of Impact - State specific

Key Theme - Human Health

a. Activity - Children with special health care needs, which now comprise approximately ten percent of the pediatric population, are given better survival rates due to technological advances in medicine. Among multi-ethnic, low income groups, rates of certain birth defects and conditions are higher than the general population. These include children with low birth weight, fetal alcohol syndrome, spina bifida, Down syndrome, asthma, HIV, and others. Because of the specialized training required, families of children with special health care needs in Connecticut have limited access to pediatric nutritionists who are qualified to screen and monitor their child's nutritional concerns. Through linkages between the University of Connecticut Cooperative Extension System and CT Children's Medical Center and UCONN Health Center project focus was directed to provide limited resource families of children with special health care needs and their providers access to targeted nutrition and feeding information. The project provides educational programs, workshops, and technical expertise with the goals to improve dietary adherence and health outcome for medically at-risk infants and children.

b. Impacts - There were changes in awareness and knowledge among 85 % of Food Service Directors and nurses regarding their responsibility to follow USDA regulations for school lunch as a result of attending the USDA Accommodation conference. There were changes in knowledge for 90% of the parents of children with metabolic conditions regarding their rights to accommodation for school breakfast/lunch. Limited resource families who attended nutrition programs developed increased skill in managing their child's special diet and making appropriate food choices. Children showed improved nutritional status and health outcome with a better understanding and adherence to dietary restrictions. Health care providers who attended trainings gained greater knowledge of nutrition and feeding problems among this population, and were able to better guide families to appropriate services and resources for managing their child's special diet.

c. Source of Federal Funds - Grants

d. Scope of Impact - State specific

Key Theme - Human Health

a. Activity - Coronary heart disease is the leading cause of death in the United States and elevated levels of plasma cholesterol are related to increased risk for coronary heart disease. Diet and changes in lifestyle, including exercise and cessation of smoking are the primary recommendations to lower plasma cholesterol. High plasma LDL cholesterol concentrations are associated with increased risk for cardiovascular disease. Dietary

soluble fiber has been shown to decrease plasma LDL cholesterol concentrations. The extent by which dietary soluble fiber lowers plasma cholesterol is related to the type of fiber, gender and the presence of other nutrients. It is important to understand the mode of action of soluble fiber and how it may reverse hyperlipidemia. The potential differences in response between men and women and between pre and postmenopausal women will permit to make more accurate dietary recommendations to hyperlipidemic individuals who are at risk for coronary heart disease.

b. Impact - 10 published papers in scientific journals plus 7 abstracts presented at Experimental Biology (American Society for Nutritional Sciences annual meeting).
“Mechanisms of plasma LDL cholesterol lowering by an ileal sodium co-dependent bile acid transporter inhibitor”.

c. Source of Federal Funds - Grants

d. Scope of Impact - State specific

Goal 4 Greater Harmony Between Agriculture and the Environment

The Connecticut program was particularly active and successful in this area with a wide variety of efforts conducted during the reporting period.

Integrated pest management (IPM) research and education programs were targeted at most major crops in Connecticut. IPM programs resulted in significant reductions in usage of various pesticides and/or use of less toxic materials or approaches in pest management while maintaining high quality, marketable products for wholesale and retail sale.

Protection of the urban forest resource was enhanced through involvement of Connecticut tree wardens at the annual Tree Warden School. Significant gains in knowledge and applicability to tree warden duties resulted in more informed and responsible decisions about the care and preservation of public trees. Unanticipated outcomes included an increased number of chief elected officials appointing more qualified people to the Tree Warden position. Also, the program is serving as a model for similar programs in Maine and Vermont.

Connecticut's 1.8 million acres of forest, which provide raw material for over 350 forest product firms, were better managed through training of 30 new volunteers in the Coverts program. The Coverts program now operates in 11 northeast states, all using the model developed originally in Connecticut and Vermont by CES.

Efforts to better preserve environmental quality and viable agriculture in the Quinebaug-Shetucket National Heritage Corridor, a 35 town region in eastern Connecticut and south-central Massachusetts, took a significant step forward with the introduction of several educational programs for local landowners and public officials. Efforts included "A New Introduction to the Natural World" – a weekend educational program for over 30 local officials who seek a stronger natural resource background, a four-day GIS training course for municipal staff and a new volunteer recruiting, and a training and placement system for volunteers.

A highlight in the goal area was Extension and research activities to address the emerging issues of land use and water quality protection through the use of remote sensing and related geospatial technologies. An infusion of NASA research monies (\$1.1 million) enabled the development of a model approach to implementing remote sensing in Connecticut and elsewhere in the northeast U.S. through the NAUTILUS program.

Benefits to clientele and stakeholders who participated in this goal area were many, including improved public policies at the local and regional level which will enhance land use decisions, wildlife management, improvements in water quality, and enhanced agricultural endeavors that are economically viable and environmentally protective.

In summary, our assessment of accomplishments is considerable, and is measurable in terms of the previously submitted 5-year Plan of Work. Total expenditures, by source of funding, and full-time equivalents for this goal are:

Goal 4		
Funding Source	Expenditures	FTEs
Smith-Lever	550,925	9.06
Hatch	99,513	1.80
Multi-state research	-	-
State funds	2,106,898	32.33
Competitive grants	586,560	11.20
McIntire-Stennis	21,163	0.20
Total	3,365,059	54.59

Goal 4 Greater Harmony Between Agriculture and the Environment

Key Theme - Water Quality

a. Activity - Nonpoint source pollution is the primary cause of water quality problems in Connecticut and the U.S. Urban runoff contributes to impairment of 5% of river miles, 8% of lake acres, 18% of estuaries, and 7% of wetlands. The effectiveness of management practices to reduce nonpoint source pollution are largely unknown. Target audiences are primarily state and Federal agency personnel as well as the citizens of Connecticut as contributors to nonpoint source pollution. A citizen educational component was focused on the Branford River Stewardship Project (BRSP) and Landscaping in the Norwalk River Watershed. The Residential Water Quality program is a train-the-trainer program.

In addition to the educational outreach, a research component – Paired Watershed Study, was being conducted in the Branford project to determine the impact of residential water quality education on the quality and quantity of stormwater runoff from residential properties.

b. Impact - The research results have changed the recommendations by state and Federal agencies on stormwater treatment devices and construction BMPs. A net result is that rain gardens are now being considered by several developments in Connecticut as a way of reducing stormwater impacts. In Branford two residents in the research watershed have installed rain barrels, one installed a rain garden (with a second in process), five established gutter diversions, and two households seeking lawn care providers sensitive to environmental issues. These and other BMPs were installed and water quality was monitored and analyzed. In addition, five 40-second TV were created for Connecticut Public Television (CPTV) with the basic tenant of sustainability within the suburban landscape. CPTV has put up a website at www.cptv.org where viewers can access text.

c. Source of Federal Funds - Smith-Lever

d. Scope of Impact - State specific

Key Theme - Integrated Pest Management

a. Activity - In Connecticut, the greenhouse industry is a significant and growing segment of the agricultural industry. In Connecticut, residents purchase more flowers and plants per capita than any other state in the US. Overall, the environmental horticulture industry in CT generated an estimated \$513 million sales in plant sales. In the enclosed greenhouse environment, pest populations can develop rapidly so there is a need for timely up-to-date information to make pest management decisions. There are many concerns related to the use of pesticides in the greenhouse industry including the overuse of pesticides, development of pesticide resistance, worker safety and pollution of ground and surface waters. ICM is the use of a variety of pest control methods designed to

protect public health and the environment and to produce high quality crops with the most judicious use of pesticides. When ICM methods are used, pesticide and nutrient risks are minimized.

b. Impact - Seven growers participated in full season IPM training programs. Field training focused on monitoring for key insects and diseases on a weekly or biweekly basis as needed. All growers stated that they would recommend the program to other growers. All participants increased their adoption of IPM practices. On average, the knowledge base increased by 20% among the seven participants. For the seven participating growers, 2.9 more pounds of insecticide active ingredient was applied to 2.8 acres of intensive greenhouse production. All growers rated their crop quality as very good to excellent. Although the pesticide use increased (due to the application of Marathon 60 WP for aphid and whitefly control), crop quality was maintained. Participating growers also used more environmentally friendly products such as insect growth regulators, horticultural oil, and other insecticides compatible in a IPM program. Many growers selected materials with shorter reentry interval, lessening worker exposure to pesticides.

c. Source of Federal Funds - Grants

d. Scope of Impact - State specific

Key Theme - Integrated Pest Management

a. Activity - Problems related to the use and misuse of pesticides in commercial vegetable production include pollution of ground and surface waters, unwanted food residues, farm profitability and inadvertent exposure of the public or applicator to chemicals. The Vegetable Crop IPM Program taught commercial growers how to use a variety of pest control options designed to minimize pesticide use and associated risks, while maximizing farm profitability. An Extension Agricultural Educator provided weekly IPM training for six commercial vegetable producers throughout the growing season. IPM training and increased farm profitability helps Connecticut maintain a cleaner environment, a source of safe food production and the open space that farmland provides.

b. Impacts - Growers reduced the number of pesticide applications they made to 170 acres of sweet corn and peppers by 32% and the amount of active ingredient they used by 811 pounds (4.8 lbs./acre or 58%). Thus reducing pesticide costs by a total of \$8,197 (\$48/acre). These farmers also increased their marketable crop yields by 9-12% by reducing pest damage which increased their gross farm profits by \$68,328 (\$402/acre). web site IPM articles, and a weekly recorded telephone/internet pest message (532 hits/calls on pest message and over 98,000 on IPM web page). Over 850 growers throughout New England subscribe to the Yankee Grower: New England Journal for Profitable Horticulture. Vegetable crops production and IPM training was conducted through a series of regional efforts by groups of Extension personnel from around New

England, and by cooperation between individual Specialists, Educators and other partners.

c. Source of Federal Funds - Grants

d. Scope of Impact - State specific

Key Theme – Integrated Pest Management

a. Activity - There is a growing need to develop and implement integrated pest management (IPM) systems that depend on biologically based tactics. For instance, more than 500 insect pests, 270 weed species and 150 plant diseases have become resistant to one or more pesticides (EPA, 1996). Moreover, concerns for human and environmental health and the cost of pesticide regulation stress the need for the switch to bio-intensive pest management systems. Such IPM systems rely on tactics such as host-plant resistance, biological control, and cultural controls. To contribute to the development of such IPM systems, research sought to understand tritrophic level interactions involving biological control agents as a good understanding of how plant traits influence natural enemies can lead to ways of improving their effectiveness. Research objectives were to ascertain the effects of plant morphological complexity on two insect predators commonly used in biological control efforts.

b. Impacts - This research should contribute to our understanding of how plant traits influence biological control agents. For instance, the results of this project indicate that coccinellids appear more susceptible to increases in plant morphological complexity while chrysopid larvae manage well when foraging on plants with varying morphology. The increased understanding of the interaction between plants and insect predators will allow us to better determine release rates of a given natural enemy or to choose the most appropriate insect predator for a given situation.

c. Source of Federal Funds - Grants

d. Scope of Impact - State specific

Key Theme - Integrated Pest Management

a. Activity - Peaches are grown in southern New England mostly for direct sales and in Connecticut there are an estimated 111 peach growers. Among the pest problems faced by growers are the “catfacing” insects. This complex of insects causes the most fruit injury and they are difficult to monitor because of their high mobility. We lack similar information for peach growers concerned about tarnished plant bugs and oak-hickory bugs which cause substantial injury to fruit. The main objectives of this project were to determine which color of sticky traps (white or pink) could be used to monitor both TPB

and of oak-hickory bugs in peach orchards and to develop an insect pest density vs. fruit injury relationship for use in determining an economic injury level.

b. Impacts - The results from this project indicate that both white and pink traps are useful monitoring devices of the plant bug populations. This will provide a relatively simple method to keep track of the pest population level.

c. Source of Federal Funds - Grants

d. Scope of Impact - State specific

Key Theme - Natural Resources Management

a. Activity - For nearly a century Connecticut state law has mandated that each city and town appoint a Tree Warden and that this public official is then responsible for all municipal trees. However, Connecticut state law does not specify what skills and knowledge Tree Wardens must possess. To protect both the public and the urban forest resource, Tree Wardens need knowledge of tree biology, tree care, hazard tree assessment, public participation, tree law, and meeting management. An annual Tree Warden School and Certification Program was created to provide Tree Wardens with a voluntary educational opportunity to acquire this knowledge.

b. Impacts - On scales of 0 (poor) to 4 (excellent), Tree Warden School participants rated the school program 3.6 in terms of knowledge gained, with 3.8 in the applicability of the information to their Tree Warden duties. In three years, 80 Tree Wardens and Deputy Tree Wardens have gained new knowledge concerning Tree Warden duties and responsibilities. This means that Certified Tree Wardens are now better able to make informed and responsible decisions about the care and preservation of public trees while protecting the public from hazardous ones. 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. This 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.

c. Source of Federal Funds - RREA

d. Scope of Impact - State specific

Key Theme - Natural Resources Management

a. Activity - Connecticut is the fifth most densely populated state yet retains fifty-nine percent forest coverage. This extreme population density causes factors that not only shorten the lives of municipal trees (along streets, in parks, around schools, for example) but also create hazardous ones. In spite of being a wealthy state, Connecticut municipalities typically do not adequately fund municipal forestry/tree care operations, thereby undermining the health of public and jeopardizing public safety. Volunteers who receive quality and timely community forestry education and training are able to augment community forestry efforts. The Meskwaka Tree Project is one of the more important facets of the urban and community forestry initiative and was created to provide such necessary urban and community forestry educational opportunities and programmatic support.

b. Impact - Since 1992 over 160 urban and community forestry volunteers have been trained. Participants have come from 57 Connecticut communities and three states. Since 1992, volunteers have been the initiator or participant in the following example outcomes: 38 communities have written and passed shade tree ordinances; 28 shade tree commissions have been established; about 1,700 new public trees have been planted; twelve towns have conducted volunteer organized shade tree inventories; two nonprofit community forestry organizations have been founded; and seven municipal memorial tree programs have been created. In the eleven years of the existence of the Meskwaka Tree Project, all participants have said they would recommend the program to other community forestry volunteers. Participants are required to return to their communities and perform community or state based urban and community forestry volunteer programs. The Maine Community Forestry Program has created an urban and community forestry program modeled after the Meskwaka Tree Project.

c. Source of Federal Funds - None

d. Scope of Impact – State specific

Key Theme - Pesticide Application

a. Activity - The Federal Insecticide Fungicide and Rodenticide Act, FIFRA directs the EPA to cooperate with USDA and use the services of the Cooperative Extension Services to inform and educate pesticide users about accepted uses and other regulations made under the Act. Private applicator re-certification training programs were held in 7 of Connecticut's 8 Counties.

b. Impacts - Overall, 18 educational programs were offered. As part of one general re-certification training program, the educator led the group through the process of developing a transgenic organism. Pre and post training evaluations indicated that prior to the training, 44% of the participants could define what a GMO was while post evaluations showed an increase to 74%. Prior to the training only one individual was

able to correctly describe what transgenic meant. Following the training 24 individuals correctly defined a transgenic organism as an organism containing genetic material (at least one gene) from another species. In total, 233 individuals (27% of all certified) received re-certification credit. An estimated 250 additional applicators received re-certification training and credits at regional meetings for which the University of Connecticut Extension System was a co-sponsor. Approximately 500 individuals received pesticide safety training, of these approximately 400 private applicators received re-certification credits.

c. Source of Federal Funds - EPA

d. Scope of Impact - State specific

Key Theme - Pesticide Application

a. Activity - 305 individuals sought state certification as Ornamental and Turf or Golf Course commercial supervisory pesticide applicators and only 98 passed the certification exam process. To enhance passage rates, the University of Connecticut Cooperative Extension System provided training for individuals seeking certification and re-certification as commercial ornamental and turf supervisory pesticide applicators in the State of Connecticut.

b. Impacts - 145 individuals participated in the Ornamental and Turf Short Course and 113 took the written state certification exam. Pre and post course written examinations indicated an average increase of scores by 38%. Participants' course evaluations rated the instructors and the short course as very good to excellent. 38 students successfully passed the written state certification exam (33%). This compares with an average pass rate of approximately 10–15% for individuals who do not participate in CES Ornamental and Turf short courses. Communication among numerous state and federal agencies has been maintained through the efforts of the pesticide coordinator. Working relations with the State of Connecticut Agricultural Experiment Station, the Department of Environmental Protection, the Connecticut Farm Bureau as well as commodity and industry groups have been maintained.

c. Source of Federal Funds - Smith-Lever

d. Scope of Impact - State specific

Key Theme – Forest Resource Management

a. Activity - Connecticut's 1.8 million acres of forest provide raw material for over 350 forest products processing and manufacturing firms, which employ 3,600 citizens and contribute over \$400 million annually to the state's economy. They also clean our air and water, provide habitat for wildlife, and provide recreational opportunities for nearly a

million citizens each year. Almost 90% of Connecticut's forest is privately owned. Research shows that Connecticut is losing some 6,000 acres of commercially harvestable forest annually to development and fragmentation, and that the average forested parcel size has declined 34% over the past 20 years. Our program targets Connecticut's private forest landowners. 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.

b. Impacts - 30 new volunteers trained at the Yale Forestry Camp on Great Mountain Forest, 88 forest & wildlife stewardship presentations to 1314 people, 42 newspaper, newsletter & periodical articles, 4 radio interviews, 1 television interview, Co-sponsorship and staff time from the DEP Divisions of Forestry and Wildlife, the Great Mountain Forest Corporation, UMass Extension and the Yale School of Forestry, 236 acres of new or updated stewardship plans, habitat improvement, timber stand improvements implemented on 1,791 acres, knowledge gained by 4,982 individuals, including at least 1,069 forest landowners. The Coverts Project operates in 11 northeast states, all using the model developed originally in Connecticut and Vermont by CES. UMass and UConn CES assist each other annually in training new volunteers; CT, MA, MD, NY, NH and PA share outreach materials.

c. Source of Federal Funds - Grants

d. Scope of Impact - State specific

Key Theme – Land Use

a. Activity - The Quinebaug-Shetucket National Heritage Corridor (QSHC), a 35-town region in eastern Connecticut and south-central Massachusetts, is officially recognized by the National Park Service as having natural, cultural and historic resources of national significance. Preserving environmental quality and viable agriculture in the QSHC (also called The Last Green Valley) in the face of growing development pressures, will require unprecedented inputs of education and information to four key audiences: private farm and forest owners, municipal commissioners and leaders, land trusts, and contractors/homebuilders/realtors, i.e. those who pro-actively convert open spaces to other uses.

b. Impact - \$116,285 in annual funding from the QSHC, 27 volunteers who provide counsel on a joint natural resources and agriculture committee of the Corridor, 60 trained municipal commission and land trust volunteers. An enhanced, Corridor-wide G.I.S. database on natural and agricultural resources, made available to Corridor COG's and towns on request for planning purposes; a land protection conference attended by 153 private landowners, owning collectively an estimated 5,500 acres; a follow-up protection

planning session attended by 12 landowners, owning collectively an estimated 1,050 acres; a weekend-long training module called “A NEW INTRODUCTION TO THE NATURAL WORLD”, offered annually to new and existing community volunteers who seek a stronger natural resource background and/or a rewarding volunteer opportunity; a 4-day G.I.S. training course for municipal staff and commissioners; a new volunteer recruiting, training and placement system in the Corridor, operated in concert with the Corridor land trusts; Co-sponsorship and staff time from the QSHC, NRME, NRCS, the Thames Basin Partnership Initiative, and the Windham Regional Council of Governments. Participants in the land protection workshop rated it 6.2 on a scale of 1 to 7 in its “overall value to you in planning for the future of your family land”. As a result of what they learned, 59% plan to inventory or appraise their family lands, 61% plan to develop protection plans with appropriate family members, and 51% plan to follow up with an estate planning or land protection specialist. A six-month impact evaluation will be mailed in September to all 153 participants. On scales of 1 to 7, participants in the weekend retreat rated the overall program 6.5 in terms of knowledge gained, and 6.4 in the applicability of the knowledge to their natural resource volunteer jobs. Eighteen of the participants are newly recruited volunteers who are now being placed in vacant volunteer slots around the Corridor. The QSHC is a two-state entity so programs are all offered to both state residents. Cooperation is also being developed with the Blackstone Heritage Corridor in RI and MA.

c. Source of Federal Funds - Smith-Lever

d. Scope of Impact - State specific

Key Theme - Land Use

a. Activity - Remote sensing and related geospatial technologies are indispensable tools with respect to land use planning. A problem exists, however, in that much remote sensing has been oriented toward applications at the regional, national, and global levels, whereas land use decisions are often made at the local and, in fact, parcel level. Many of these local planners and decision-makers are unaware of the potential of airborne and satellite-based remote sensing data. The establishment of a NASA-supported Regional Earth Science Applications Center (RESAC) named NAUTILUS (Northeast Applications of Useable Technology In Land planning for Urban Sprawl) addresses this audience of local land use commissioners, professional planning staff, nonprofit organizations, and others playing a key role in the land use decision making process. The specific objectives of NAUTILUS are to make the power of remote sensing technology available, accessible and useable to local land use decision makers as they plan their communities, and to educate the general public on the value and utility of geospatial technologies, particularly remote sensing information.

b. Impact - An infusion of NASA research monies (\$1,100,000) over a three-year period to support research assistants (3), graduate students (2), extension educators (2), and summer faculty in the conduct of this project. The awarding of digital remote sensing data valued at more than \$500,000 by way of the NASA Commercial Remote Sensing

Scientific Data Purchase Program. Innovative models for using remote sensing data for Impervious surface mapping, Forest fragmentation, Urban sprawl characterization, and Land use change detection. Internet-based delivery of research and applications products (<http://resac.uconn.edu>). Image Web Serving of airborne and satellite remote sensing data for New England. Interactive mapping of earth resources information using ArcInfo Internet Map Server. On-line Fact Sheets, Papers, & Presentations (<http://resac.uconn.edu/publications/index.html>). Poster and brochure on Connecticut's Landscape. Public displays of project work at the State Legislative Office Building Connecticut Family Science Fair. Participation in the Second Annual National GIS Day. Development of an entire suite of innovative analytical methods applied to remote sensing data. A "model" approach to implementing remote sensing at the local level to be adapted to other locations in the United States. The research being conducted under NAUTILUS has been recognized nationally as a model for developing and deploying remote sensing and GIS applications at the local decision-making level. A peer-reviewed paper stemming from this project (Arnold, C.A., Jr., D.L. Civco, S. Prisloe, J.D. Hurd, and J. Stocker. "Remote sensing-enhanced outreach education as a decision support system for local land use officials". Photogrammetric Engineering & Remote Sensing 66(10): 1251-1260), published in October 2000, was awarded the ESRI Award (First Place) for Best Scientific Paper in GIS, at the ASPRS Annual Convention, held in April 2001 in St. Louis. Additional partnerships have arisen from NAUTILUS including a cooperative research effort with the US Geological Survey, entitled 'Urban Land Use Gradient' and another with NOAA's Coastal Services Center.

c. Source of Federal Funds - Smith-Lever

d. Scope of Impact - Multi-state

Key Theme - Land Use

a. Activity - A research survey revealed that urban and rural residents are equally supportive of farmland preservation legislation and that more people in Connecticut visited a farmstand or pick-your-own operation during the past year than visited a beach. The research report was presented at a legislative breakfast at the state capitol.

b. Impacts - The state legislature made a more informed decision about public policy for agriculture by authorizing the use of bond funds to purchase development rights on agricultural land. In this case the research provided the legislators with better knowledge of their own public's opinion on the issue. Work is underway with the American Farmland trust in New York State on a similar survey.

c. Source of Federal Funds - None

d. Scope of Impact - State specific

Key Theme - Wildlife Management

a. Activity - Fishery biologists and agencies responsible for water stewardship are faced with the intensive task of developing instream flow requirements for fish and actions to preserve biotic integrity. Changes in instream flow can lead to alterations in habitat availability and in the fish communities that inhabit impacted waters. The physical habitat simulation (PHABSIM), commonly included as a component of IFIM, models the relationship between habitat suitability criteria (HSC) and hydraulic characteristics to estimate the amount of suitable habitat for different species and life stages of fish at different flows. Habitat suitability criteria are measurements of fish habitat suitability quantified as depth, velocity, substrate, and cover. One fish species that is commonly found throughout southern New England's rivers is the brown trout (*Salmo trutta*). Its wide geographic distribution and importance as a sportfish make brown trout an excellent target species for development of HSC. HSC have never been developed for brown trout in southern New England. The development and testing of HSC for brown trout within southern New England is important because of the large number of instream flow concerns.

b. Impacts - Habitat suitability criteria (HSC) were developed for adult (≥ 170 mm) brown trout (*Salmo trutta*) on the West Branch Farmington River, Connecticut. HSC were successfully transferred from the West Branch Farmington River to the East Branch Westfield River. These results suggest that depth and velocity HSC may transfer to other regional rivers with characteristics similar to the Farmington River.

c. Source of Federal Funds - None

d. Scope of Impact - State specific

Key Theme - Wildlife Management

a. Activity - Greater scaup ducks are moderately large Arctic diving ducks whose numbers in North America have declined for nearly 40 years. Greater Scaup winter in European (e.g. Great Britain, France, Netherlands, Belgium) estuaries where scaup are known to feed heavily on zebra mussels (*Dreissena polymorpha*) contaminated with heavy metals and organochlorines such as DDE and PCBs. North American Greater Scaup also have been shown to accumulate the same contaminants, especially on the wintering grounds. Greater Scaup typically wintered in waters of Long Island Sound and other Atlantic estuaries but since 1988 have been delaying their eastward migration to feed on zebra mussels in Lake Erie and Lake Ontario. Concern for the effects of ingested contaminants upon health, reproduction, population status and distribution of these ducks in North America and in Europe led to a pilot study to compare nesting populations in Alaska with those found in Iceland where nesting conditions are quite different. A few Alaskan and most Connecticut Greater Scaup and Lesser Scaup share a recently discovered kidney parasite (trematode). These parasites could influence scaup health and/or reproduction in several ways, and may reflect effects of contaminant residues.

b. Impacts - Our results thus far support current efforts by colleagues in Connecticut, South Carolina, Florida, Alaska, Iceland and Holland to collaborate on these and related research questions. A consensus statement by some of these same collaborators, and others, emerged from the Atlantic Coasts Contaminants Workshop in Bar Harbor, ME in June 2000 which summarizes evidence for relationships between contaminants, health and reproduction effects in wildlife and humans, and has been accepted for publication in Environmental Health Perspectives.

c. Source of Federal Funds - Grants

d. Scope of Impact - State specific

Goal 5 Enhanced Economic Opportunity and Quality of Life for Americans

The Connecticut program was particularly active and successful in this area with a wide variety of efforts conducted during the reporting period.

Considerable increases in knowledge about Sudden Infant Death Syndrome (SIDS) among families and care providers occurred as a result of formal education programs across the state conducted in conjunction with United Way of Connecticut/Infoline.

Childcare providers benefited greatly in better understanding about lead poisoning for children and youth in the City of Hartford. In addition, the Adventures of the Lead Busters Club was presented to 3,500 students in second and third grades in the City of Hartford with preliminary results suggesting that students are carrying the lead poisoning prevention message home.

Youth involvement in poultry continued to show increased levels of interest and activity, with enhanced knowledge levels in the area of humane methods for poultry raising. Economic impacts from various purchases are considerable. Urban youth in New Haven in particular benefited from production projects.

Involvement of Hartford School System youth in the annual Farm/City program resulted in pre and post test gains of 50% in the areas of biotechnology, IPM, wildlife, soils, dairy production and nutrition. Such gains are positive additions to skills necessary to do well in science, math and reading.

College economists assessed health costs of the use of solid fuels for cooking and heating in developing countries and estimated that such costs are the equivalent of \$30 billion annually, more than the combined Gross Domestic Products of the world's 20 poorest countries.

Parent education programs proved successful in better enabling "at risk" parents to understand themselves and their children and the dynamics that are involved with effective parenting. 90% of participant respondents reported their parenting skills improved substantially due to the program.

Connecticut's economic climate and welfare reform have increased the need for increased financial knowledge. Educational programs for "at risk" families indicated that 94% improved financial management approaches and were more communicative about financial management issues with spouses/partners.

Benefits to clientele and stakeholders who participated in this goal area were many; including improved family relationships, improved skills by youth entering the workforce, better actions by individuals and families to manage financial matters, and enhanced parenting techniques.

In summary, our assessment of accomplishments is considerable, and is measurable in terms of the previously submitted 5-year Plan of Work. Total expenditures, by source of funding, and full-time equivalents for this goal are:

Goal 5		
Funding Source	Expenditures	FTEs
Smith-Lever	951,934	18.23
Hatch	42,516	0.55
Multi-state research	-	-
State funds	788,919	12.66
Competitive grants	355,049	4.98
McIntire-Stennis	-	-
Total	2,138,418	36.42

Goal 5 Enhanced Economic Opportunity and Quality of Life for Americans

Key Theme - Community Development

a. Activity - Interactions between environment and health in Developing Countries is an emerging concern. Applied economic analysis focused on two main topics: (1) understanding the health benefits to women and children from reduced indoor air pollution from the burning of solid fuels; and (2) evaluating the effects of trade policy reforms on reducing malaria health risks. For burning of solid fuels, between 300-400 million households rely on solid fuels for cooking and heating in developing countries. Burning such fuels causes very high levels of indoor air pollutants. For malaria, malaria-related illnesses kill at least one million people per year in Africa, mainly children. Sleeping under an insecticide-treated bed net is one of the most important practical weapons available in the fight against Malaria in the developing world.

b. Impact - Research results estimate that these health costs could be the equivalent of about \$30 billion annually in the developing world. For reference, this amount is larger than the combined Gross Domestic Product of poorest 20 countries in the world. Tariffs on bed net imports increase prices and reduce their use. We estimate that reducing tariffs on ITNs can reduce prices by 7-30% depending on market conditions, which would lead to an increase in purchases by 3-26%. These numbers, while showing some positive effects of tariff reductions, are substantially lower than previously believed by health policy experts and health officials in Africa. Regarding indoor air pollution, a journal article is forthcoming in *Social Science & Medicine*. Regarding Malaria, a working paper on our analysis is available on the World Health Organization, Roll Back Malaria Website

c. Source of Federal Funds - Hatch

d. Scope of Impact - State specific

Key Theme - Youth Development/4-H

a. Activity - Farm/City. The Hartford School System has scored last on the state mastery tests. In order to improve these skills there has been a focus on math and reading skills. Poor scores have also affected the curriculum in other school systems within the area. In order to provide an opportunity for the students who are from schools within targeted areas with a minimal science program, the curriculum of the 2001 Connecticut Farm/City program held as a 4-H Farm Resource Center Program and was designed to work with science skills for children in the middle grades.

b. Impacts - Pre- and post- tests of 50% of the classes showed more than a 20-point increase in knowledge learned. 500 middle school youth from poor performing middle school (5-8 grades) participated in 6 hands on lessons: Biotechnology, integrated pest management, farm wildlife ecosystems, soils, dairy production, and nutrition. The

program will be repeated for the year 2002. The Farm curriculum demonstrated that Farm City is a program that can be provided to a middle school audience.

c. Source of Federal Funds - Smith-Lever

d. Scope of Impact - State specific

Key Theme - Youth Development/4-H

a. Activity - In order for youth to develop into adults of integrity who are coping, caring, competent and contributing members of society, they need the opportunity to interact with youth and adults who are role models in a variety of settings. A safe, quality educational camp experience enables youth to develop skills such as decision making, cooperation with others, self reliance and leadership. Many young adults of college age have the enthusiasm and desire to work with youth. When they receive experientially based training to develop an understanding of the needs of youth and skills to create programs which meet their needs, they most often develop into wonderful camp counselors. Volunteers who serve on 4-H camp boards are extremely dedicated and interested in doing what is best for youth and camp.

b. Impact - 3,956 youth attended a CT 4-H resident camp for at least a week last summer. An extensive survey was conducted with parents and campers. It was reported by 97.3% of camper parents that their child's camp experience was excellent or good. Several stated that camp made a positive impact on their child's life.

c. Source of Federal Funds - None

d. Scope of Impact - State specific

Key Theme - Youth Development/4-H

a. Activity - There is a great increase in the number of poultry being reared for non-commercial use in New England. In the spring of 2001 an average of 10,000 baby chicks were being shipped each week to small flock owners. Small flock owners are generally less experienced in the management of poultry and are more likely to mismanage the birds under their care, relative to proper nutrition, health care, humane treatment, breeding, transporting, etc.

b. Impacts - As a result of Youth and Non-Commercial Poultry Programs, there has been a marked increase in the number of people involved with poultry. An estimate is a 3 - 5% increase during the past 2 years. This resulted in 96 4-H youth involved in the 2001 State 4-H Poultry Show and Showmanship contest, a 10% increase over 2,000 and a 73% increase over 1998. There was also a major increase in adults involved with poultry projects. Of the 230+ contacts by phone or mail, about 50 of these are new to poultry

within the past year, seeking advise on purchasing, rearing, managing, etc. of small egg, meat or show bird flocks. The economic impact on CT is considerable. Small flock owners purchase 50 to 100 lb bags of feed at \$10 to 20 per bag. This is equivalent to \$400 per ton of feed. This increased profitability to businesses carries through to other products for poultry rearing. As a result of our programs, more than 200 individuals in the New England region learned better health and management techniques for rearing their poultry. Students at The New Haven Ecology Project's Common Ground High School, in New Haven, CT, have been learning the health care, feeding and management and processing into food of broiler chickens for the past ten or more years. As a result of this project, these inner-city students get the chance to learn how to grow their own food, for most of whom this is a first and an eye opening experience.

c. Source of Federal Funds - None

d. Scope of Impact - State specific

Key Theme - Youth Development/4-H

a. Activity - The animal rights movement has gained momentum and notoriety in the last twenty years and has been successful in making in-roads into the elementary schools to indoctrinate our youth into believing that farm animals are generally mistreated and abused by farmers.

b. Impacts - Information on humane methods of poultry production was disseminated at group meetings, by newsletter articles, and individual contact. The only measure of success of this type of program is a greater public awareness of how poultry are properly and humanely raised for food and fiber. More than 100 4-H youth are rearing poultry and other animals in a more humane way as a result of our programs on welfare, management and health. Poultry Showmanship contests test our 4-H youth's knowledge of the bird and its needs, and a marked improvement in the ability of the youth to explain how to tell a healthy, productive bird from an unhealthy, unproductive bird has been seen in the past two years.

c. Source of Federal Funds - None

d. Scope of Impact - State specific

Key Theme - Children, Youth and Families at Risk

a. Activity - Lead poisoning is a serious but preventable health problem. According to the President's Task Force on Environmental Health Risks and Safety Risks to Children (2000), nearly one million children in the United States are lead poisoned. Moreover, lead poisoning remains one of the top childhood environmental health problems today and without further action, over the coming decades large numbers of young children

may be exposed to lead in amounts that could impair their ability to learn and to reach their full potential. This program includes a training manual with fact sheets for childcare providers and information sheets for parents or guardians. Programs were conducted and funded by the Lead Poisoning Prevention Education Program of the City of Hartford and included development of a curriculum designed to teach young children about lead-safe behaviors.

b. Impact - 165 childcare providers participated in First Steps training sessions. Statistical analysis shows that participants improved their knowledge about lead poisoning for all twelve questions (significant differences at the .001 level were found). Equally telling were the qualitative responses: when participants were asked whether they would recommend the First Steps training to colleagues or others, all respondents answered "Yes."

c. Source of Federal Funds - Smith-Lever

d. Scope of Impact - State specific

Key Theme - Children, Youth and Families at Risk

a. Activity - Lead poisoning is a serious but preventable health problem. In cooperation with the Hartford Public Schools, Educators at the Hartford Health Department and the University of Connecticut have developed and launched an innovative program to help prevent lead poisoning among the city's children. Since October 2000, the Hartford Board of Education's health educators have been using this new curriculum designed to teach second and third grade students about the dangers of lead poisoning and about simple steps that the children can take to protect themselves and their younger siblings.

b. Impact - The Adventures of the Lead Busters Club is being used by 3500 students in second and third grades during the 2000-2001 school year. Preliminary findings suggest that students are carrying the lead poisoning prevention messages home and that they relate well to the characters. This curriculum is now available for sale with commitment to purchase from various government, state and local agencies across the nation.

c. Source of Federal Funds - CYFAR

d. Scope of Impact - State specific

Key Theme – Child Care/Dependent Care

a. Activity - Sudden Infant Death Syndrome (SIDS) has been identified in Connecticut as a priority health topic related to the child care community by the Connecticut Department of Public Health (DPH) and the United Way of Connecticut/Infoline. According to the most recent statistics 20% of SIDS cases occur in a child care setting. Therefore, child

care providers needed training about SIDS. CES in collaboration with DPH and Infoline, provided statewide training sessions about SIDS, risk reduction strategies, supportive family care, community resources and referrals, and impacts of SIDS on the community including the family, other children, and providers.

b. Impacts - Written program evaluation for 66 respondents show increased knowledge from knowing “a little” to knowing “a lot” after the training at 81% for knowledge about SIDS, 74% for risk reduction strategies, 67% for supportive family care strategies, 55% for community resources and 53% for being prepared to work with SIDS.

c. Source of Federal Funds - None

d. Scope of Impact - State specific

Key Theme - Leadership Training and Development

a. Activity - Youth team members set out to create legislation that would override local zoning regulations and enable 4-H'ers and FFA Members to have supervised livestock education projects on their own property of one acre or more. Along with meeting at the state Legislative Office Building many times, the Citizenship Team participated in workshops covering public speaking, persuasive writing and interacting with your legislator. Members of the Citizenship team testified to the state planning and development committee and met with state legislators to make them aware of the importance of the bill for youth development.

b. Impact - As a result of the program, the level of 4-H awareness among state legislators increased and the 4-H'ers developed a real understanding of how government works. Members of the team have expressed how empowered they felt by making their voices heard in state government and some also expressed an interest in pursuing a career in public policy.

c. Source of Federal Funds - Smith-Lever

d. Scope of Impact - State specific

Key Theme - Leadership Training and Development

a. Activity - The need to help poor families is not new. In the past, educators and others worked at fixing what was wrong with poor families. Within the last decade, the trend has been away from viewing poor families as having weaknesses or deficits toward helping them to see their strengths. UConn CES collaborates with community-based organizations to conduct the People Empowering People Program (PEP). PEP embodies this empowerment model of looking at individuals' and families' strengths by focusing on adults and older youths with limited financial resources in order to enhance their

ability to help themselves and their communities. Led by trained facilitators, the program builds on strengths of individuals by providing them with opportunities and resources.

b. Impacts - Fifty-four adults and 18 teens who graduated or will soon graduate from the PEP program demonstrated the following: 79% completed 7 of the 10 initial training sessions, 81% showed improved communication skills, 77% showed improved problem solving skills, 61% showed improved parenting skills, 93% worked as a team to accomplish project goals, 88% conducted at least one project, 89% increased their knowledge of community resources, 57% accessed two new community resources, 89% recognized new strengths or skills, 76% shared new skills or knowledge with at least two other people, 42% took steps toward economic self sufficiency, and 37% became socially active in their communities. It is estimated that these adults and teens donated over 370 hours benefiting more than 400 adults and children.

c. Source of Federal Funds - None

d. Scope of Impact - State specific

Key Theme - Parenting

a. Activity - Parent Education has been determined as a high need priority throughout Connecticut. This need has been documented by various state and community agencies and organizations including the Department of Children and Families. A four-part Parenting People Program was developed in response to community needs. This educational program focused on teaching parents about themselves, their children and the dynamics that are involved with effective parenting and the nurturing of children.

b. Impacts - Approximately 90 parents completed the program series with all the participants considered “at risk.” 80% of those who attended the first session completed the series and participated in a written program evaluation.

- 90% of the respondents reported that their parenting skills improved substantially as a result of attending the program;
- 10% of respondents reported that their parenting skills had improved somewhat as a result of attending the program;
- 100% of respondents reported that they were using or planned to use new skills as a result of attending the program. Skills include: increase the number of kind words spoken daily, become more moderate in parenting style, set at least one family rule and enforce it consistently, use more positive than negative messages, use a skill to prevent a misbehavior.

Since at least 50% of the participants were Hispanic and multiple requests had been made for Spanish translations this curriculum, including teaching guide and participant handouts, was translated into Spanish.

c. Source of Federal Funds - Smith-Lever

d. Scope of Impact - State specific

Key Theme - Parenting

a. Activity - Data suggests that a healthy and productive citizen in the 21st century will need to be: skillful in interpersonal communication skills and confident in his/her ability to express themselves with people from diverse and divergent backgrounds. 4-H will offer skill building workshops and programs in public speaking.

b. Impacts - 96 youth increased their skills in public speaking (material organization and delivery). Youth demonstrated their proficient use of public speaking skills by: 45 conducted a demonstration, illustrated talk, or speech during the Public speaking contest, Public Days at the Beardsley Zoo, or 4-H Night at the Redding Grange, 2 delivered oral reasons for horse judging placements at the State contest, 39 youth successfully conducted a loan presentation before a committee of three business volunteers for their youth run business, 39 youth successfully presented their business at the local Youth Entrepreneur Conference, 13 youth served as commentators at various 4-H activities. 3 youth were successfully interviewed on a ½-hour radio show on 99.9FM in Bridgeport.

c. Source of Federal Funds - None

d. Scope of Impact - State specific

Key Theme - Parenting

a. Activity - A community needs assessment conducted by community collaborators in the Greater Danbury area identified the need for increased parental involvement. CES developed an educational program for parents. A program entitled Children and School Success: What You Should Know was developed to meet this identified need to help parents understand their important role in their child's education and to assist them in developing the skills necessary for them to be successful in this area. During this time period 6 programs were conducted for approximately 60 parents and/or providers.

b. Impact - The participants at the COPES programs did not complete a written program evaluation. Many of those parents cannot write or need a translator. However, they gave verbal feedback to their facilitator. The feedback indicated that the participants learned new information and skills related to parent involvement. 100% of the participants planned to work on one new skill, which they would focus on this year. This became part of their plan that they worked on with their caseworker. E.g. Attend a parent teacher conference, set up a study area in the kitchen, read more myself, shut off the TV etc. Written program evaluations included the following: 25 of 27 evaluations indicated that participants learned about positive family attitudes related to learning, literacy and school

behavior; 98% of the respondents reported that they had learned new skills to help children develop positive study habits; 90% of respondents reported that they would increase their involvement in their child's school as a result of their participation in this program; 100% reported learning about the various types of involvement

c. Source of Federal Funds - 21st Century Grant

d. Scope of Impact - State specific

Key Theme - Parenting

a. Activity - With one out of two marriages ending in divorce, Family Courts have implemented court-connected educational programs for divorcing parents (Blaisure & Beasler, 1996). Connecticut was the first state to legislate mandatory programs of parent education for all couples with minor age children for a legal separation or divorce. Family issues create increased stress at home and in the workplace as evident by the divorce rate, violence in the schools and workplace. Divorce Education for CT Parents - A series of three Parenting Apart Workshops on restructuring the family, helping children cope with the divorce, and co-parenting were conducted in conjunction with the Litchfield Court and the School of Family Studies.

b. Impact - Findings from program evaluation indicate that parents in Litchfield County improved their parenting skills through participation in 6 hours of court ordered parenting classes as follows: 100% improved their knowledge of the 4-H program, 72% improved problem solving skills, 77% can talk about feelings, 77% improved social skills by participating in the group, 67% understand feelings about divorce, 83% used let's talk cues to communicate feelings, and 83% improved listening skills.

c. Source of Federal Funds - None

d. Scope of Impact - State specific

Key Theme - Family Resource Management

a. Activity - Identity theft emerged as the major financial crime in the 1990's with the increased ability to collect, compile, analyze and disseminate information. In 1998, the Government Accounting Office reported a 16-fold increase in this crime from 1992 to 1997. The Federal Reserve Bank reports that 1 in 4 adults will become a victim of identity fraud. The Federal Trade Commission (FTC) reported for the calendar year 2000 that identity theft ranked as the number one complaint received by their agency. A train-the-trainer program, Preventing Identity Theft: Protecting Your Privacy and Your Good Name has been developed to address this issue. The objectives of this program are to provide social service providers with the skills necessary to teach their clientele about avoiding identity fraud and what they should do if they are victimized.

b. Impacts - Train-the-trainer workshops have been conducted for 85 program participants, including social service agency staff and volunteers who work with senior citizens; housing authority personnel; assisted living facility staff; law enforcement officers; and municipal employees. Post-program surveys indicated that 95% increased their knowledge related to consumer privacy rights, and 90% increased their knowledge about ways to minimize the risks of identity theft. One hundred percent intend to share the information with their clientele and other agency staff members. Forty percent plan to conduct identity theft prevention programs for their clientele. Seventy percent plan to share the information gained with co-workers and 46% will reprint fact sheets in their agency newsletters. Forty-eight percent indicated that they intend to share the information with professionals at other agencies.

c. Source of Federal Funds - Smith-Lever

d. Scope of Impact - State specific

Key Theme - Family Resource Management

a. Activity - Connecticut's economic climate and welfare reform have increased the number of families seeking financial assistance and counseling from social service agencies. The target audiences for whom these programs were provided were limited resource families and individuals enrolled in programs sponsored by agencies working with families-at-risk. 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. Managing Your Money program series were conducted as part of the Communication of Parent Effectiveness Skills program (COPEs) at the Danbury Regional Commission on Child Care, Rights and Abuse. A total of 35 parents participated. Series topics included setting family financial goals; planning a budget; credit and debt management; reducing expenses; children and money; and resolving consumer problems.

b. Impact - As a result of participating in the Managing Your Money Series, 94% of participants indicated, on post-program surveys, that they felt better about communicating about money with their partners/spouses. 70% indicated that they had begun to teach their children about money through the use of allowances and 25% set financial goals and began savings accounts to reach these goals. In post-program interviews participants indicated that they would save for big-ticket items, such as television sets or furniture, rather than use rent-to-own options.

c. Source of Federal Funds - Smith-Lever

d. Scope of Impact - State specific

Key Theme - Family Resource Management

a. Activity - The economy has had a profound effect on Connecticut citizens. Consumer debt lead to the escalating rate of personal bankruptcies. Consumer expenditure by the elderly is expected to grow by as much as 20% by the middle of the next century due to the changing elderly population that retire earlier and live longer. Three times as many single females live below the poverty level than married couples. Connecticut cost of living ranks among the highest in the country, 20% higher than the national average. A major program was implementation of the final Women's Financial Information Program in New Milford, CT. During the past thirteen years thousands of women have participated in the WFIP course which features a lecture. Volunteers contributed over 2000 hours implementing the program including 6 speakers, 10 facilitators, and 2 program coordinators.

b. Impact - Findings from weekly and follow-up evaluations document the positive results this program has had on participants. A majority of participants adopted three or more financial practices to improve their financial management. Written responses document the empowering impact of this program on the participants. A planning grant was received to explore a new program Financial Program for Women using the AARP model in collaboration with RI and MA. The new AARP Women's It's Time Investing course will be pilot tested at two sites in Connecticut. Findings from weekly and follow-up evaluations document the positive results this program had on participants. (Findings are based on responses from 25 participants) show:

- 88% increased knowledge of money management
- 92% felt better about handling finances
- 76% revised or started a financial notebook
- 44% started an emergency fund
- 68% improved household record keeping
- 76% obtained credit in own name
- 52% reviewed legal documents and made changes
- 40% drafted or reviewed will
- 40% plan to consult a financial planner

c. Source of Federal Funds - Smith-Lever

d. Scope of Impact - State specific

Key Theme - Family Resource Management

a. Activity - "Choices" Money Management Workshop - A money management workshop on basic budgeting, credit use and sound money management strategies was conducted at 20 sites. Over 227 limited income adults and 20 youth learned money management skills. Participants in the workshop received a free workbook and calculator from the program sponsor Northeast Utilities. The collaborative agreement between Connecticut Light & Power provides a fee of \$135 to the Extension Educator to conduct the public service programs.

b. Impact - Findings from 145 program respondents at 14 sites indicate that 86% felt better about managing money, 79% set money management goals, 86% prepared a budget that works, and 83% opened a savings account for irregular bills.

c. Source of Federal Funds - Smith-Lever

d. Scope of Impact - State specific

Key Theme - Family Resource Management

a. Activity - Money 2000 was a national initiative of USDA/CSREES designed to promote savings and reduce debt. Reports from 29 states at the conclusion of the program in December 2000 reported an economic impact of \$19.5 million dollars. Connecticut participants received start-up record keeping information, quarterly monitoring fact sheets, and financial information designed to increase savings and/or reduce debt. Press releases were distributed statewide and a feature appeared on Channel 8 WTNH television. The national website www.money2000.org serves as a resource link for consumer questions about budgeting, investing and financial planning.

b. Impacts -

- At the conclusion of the MONEY 2000 program in Connecticut: 225 Connecticut residents enrolled in MONEY 2000 and committed to increased savings and reduce debts.
- 42 Connecticut resident reported saving \$176,840, including \$69,644 in increased savings and \$106,836 reduction in debts.
- A Connecticut participant reported she reduced debts by \$20,000 by paying off credit card debts.
- Another Connecticut participant reported, "This MONEY 2000 program is a terrific affirmation of how one can begin to realize economic freedom and still have a comfortable lifestyle. Emotional stress greatly reduced and increased restful sleep at night."
- A program sponsor at the Family Resource Center in Torrington reported, "A sure sign that people were positively impacted and intent on following through is they are still talking about 'saving \$2,000 by the end of the millennium' and 'paying themselves first.'" She distributed information about enrolling in MONEY 2000 to 300 families at the Vogel Wetmore School in Torrington.

c. Source of Federal Funds - Smith-Lever

d. Scope of Impact - State specific

Key Theme - Workforce Preparation - Youth and Adults

a. Activity - The economy has had a profound effect on Connecticut consumers. Today, \$250 billion is spent annually by youth ages 10-24. According to Teen Research Unlimited, teens spend \$84.00 a week, 35% of which is on clothing. According to the Bureau of Census data, Connecticut cost of living ranks among the highest in the country, 20% higher than the national average. Due to these situations, many Connecticut youth and families have experienced financial stress. A major consumer education effort involved the education of youth through the LifeSmarts Program using the internet. The UConn Cooperative Extension System 4-H program and the National Consumer's League sponsored the 2001 LifeSmarts Competition for high school youth in Connecticut. Over \$1,100 was obtained to fund the Connecticut LifeSmarts Competition from Connecticut Light and Power (\$500), Litchfield County Extension Council (\$150), the Connecticut 4-H Development fund (\$200), and Consumer Credit Counseling Service of Connecticut (\$250).

b. Impacts - The LifeSmarts website, www.lifesmarts.org, received over 2.1 million hits during the online competition. Players demonstrated their knowledge of consumer law, the environment, technology, personal finance, and health and safety through the online competition. Over 733 teams from Maine to Florida registered for the competition. Approximately 350 hits were made to the Connecticut LifeSmarts site. Over 250 youth in Connecticut representing eleven teams participated in the Connecticut LifeSmarts online quiz. A major scholarly product of the LifeSmarts program was the development of the CT website for LifeSmarts.org which is located at 222.canr.uconn.edu/ces/fourh/lifesmarts. Outreach to youth included the following programs:

- 60 youth and volunteers attended the LifeSmarts Consumer Education Quiz Bowl featuring youth from four Connecticut schools at the UConn Torrington Campus on February 23, 2001. Wilby High School from Waterbury, CT won the state competition sponsored by the National Consumer's League and the UConn Cooperative Extension 4-H program.
- The Connecticut LifeSmarts website had 350 hits. 250 youth representing 11 schools participated in the online LifeSmarts internet-based quiz bowl consumer education competition.
- The LifeSmarts website (www.lifesmarts.org) received 2.1 million hits during the online competition nationally. Over 733 teams from Maine to Florida registered for the competition to test their consumer skills.
- 20 high school and college aged youth learned money management skills through participation in CHOICES Money Management programs.

c. Source of Federal Funds - Smith-Lever

d. Scope of Impact - State specific

Key Theme - Workforce Preparation - Youth and Adults

a. Activity - Involvement in workforce preparation projects provide youth with challenges, experiences, support and help which promote positive and realistic outlooks on the world of work. It also fosters the development of skills (SCANS) recognized as critical for entrance into the workforce in the year 2000. CES/4-H offered youth entrepreneurship programs and work to integrate workforce preparation skills into existing programs and activities. Workforce Skills Integrated into Existing Activities workshops on topics related to employability and SCANS skills have been incorporated into the Teen Leadership weekend and Teen Connection. Youth applying for State awards participated in interviews and receive feedback on their performance.

b. Impacts - 133 youth improved their workforce readiness skills in business organization, money management, record keeping, entrepreneurship, interviewing, application writing, getting along with others, public speaking, decision making, problem solving, personal responsibility, time management, customer service, and other basics skill such as reading, math, and listening. Impacts reported by staff: increased school attendance; improved skills in teamwork, problem solving, money management, decision making, personal responsibility and public speaking. Youth report that they learned:

- " . . . how to work together to make a product better"
- " . . . a company can really make money if you do it right"
- " . . . not every business is easy"
- " . . . that I have talent and can make money"
- " . . . to take time and do a good job"
- " . . . to work as a team, and take responsibility for my job"

Through a program survey, youth thought being in the Youth Entrepreneur Club, taught them the importance of cooperation and teamwork (89%), taught them how to develop and run a business(92%), encouraged them to attend school(98%) and gave them self confidence (94%).

By participating in this program, individual youth earned from \$2-\$147.

Related Multi-state programming efforts

The New England Taskforce on Workforce Readiness has been formed. The Taskforce is composed of CES faculty from every New England state. The Taskforce has been successful in securing training and grants from the Kauffman Foundation for youth entrepreneurship and developing fact sheets for youth interested in starting their own business.

c. Source of Federal Funds - None

d. Scope of Impact - State specific

Stakeholder Input Process

Stakeholder input activities for the College were significant, and were designed to follow upon efforts that had been initiated prior to submission of the Plan of Work for 2000-2004 (described on pages 226-227). Two major stakeholder input activities were a statewide stakeholder forum for organizational leaders, and ongoing input activities through the framework of the Extension Partners organization.

Stakeholder Forum

On November 28, 2001 a major stakeholder listening session was sponsored for representatives of virtually all agencies and organization with which the College interacts. With over 1,000 attendees present, a wide variety of comments were heard around the topical areas of marketing and public relations, collaboration, legislative/budgets, and many program-related needs. In addition, comments were sought around five programmatic initiatives within the College. In general, strong support was demonstrated for the College and its programs, with specific comments offered to better define actions and activities. Presentation summaries can be found at: <http://www.canr.uconn.edu/reports/index.html>.

Extension Partner Sessions

Three meetings of the Extension Partners group were held during the reporting period which resulted in considerable input from representatives of the many partner organizations to Extension on a wide variety of topics. Particular relevant input was focused around issues of funding support, programmatic offerings, and staff/volunteer interactions across the state.

Informal Listening Sessions

Informal listening sessions across the state during the reporting period provided considerable input to College offerings and operations. In particular, input around programmatic opportunities at the teaching, research and extension level were useful as guideposts for future decision making.

Program Review Process

a. Merit Review

The merit review process for Connecticut continues to consist of the four components identified in the Plan of work for 2000-2004 (page 228).

b. Scientific Peer Review

The scientific peer review process for Connecticut continues to consist of the process outlined in the Plan of Work for 2000-2004 (pages 228-229).

Evaluation of the Success of Multi and Joint Activities

Evaluation of the success of multi-state, multi-institutional, and multi-disciplinary activities, and joint research and extension activities, in addressing critical agricultural issues identified in the Connecticut 5-Year Plan of Work was conducted in the context of the four evaluation criteria identified in the Guidelines for State Plans of Work. Comments are offered as follows:

Did the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

Activities conducted by Connecticut faculty and staff addressed the critical issues identified in the FY 2000-2004 Plan of Work and those subsequently identified by stakeholders.

In the area of a competitive agricultural system (Goal 1) considerable success was realized in the biotechnology arena through the development of disease-resistant rhododendrons, drought and saline resistant plants, and in emerging infectious diseases. Issues related to land use development and agricultural preservation were addressed through a variety of studies and outreach efforts.

In the area of a safe and secure food system (Goal 2) research and extension programs addressed a number of important issues including HACCP education programs for food business and processors - especially cheese processors, and in the area of biosecurity, especially as related to Salmonella in the poultry industry.

Work in the area of a healthy and well-nourished population (Goal 3) saw a number of projects. Research and extension projects addressed children with special health care needs, diets of endurance athletes, dietary issues for obese children, and maternal diets during pregnancy. Community-based education efforts were directed at low income audiences through the EFNEP and FNP-IT programs.

Projects that were implemented in the area of greater harmony between agriculture and the environment (Goal 4) addressed many issues facing the state. In particular, forest management and protection Extension programs extended knowledge and enhanced local landowners and officials' abilities to better manage the forest ecosystem across the state. Land use decision-makers at the local level benefited greatly from programs offered through the NEMO and Last Green Valley offerings. Considerable gains were made in agricultural production practices through IPM programs for most commodity groups resulting in quality being maintained, savings realized and production levels retained.

The area of enhanced economic opportunity and quality of life for Americans (Goal 5) saw a wide variety of efforts directed at financial management programs for a variety of audiences, leadership programs for lower income adults and youth, youth entrepreneurship programs and child/dependent care.

Did the planned programs address the needs of under-served and under-represented populations of the State?

Many of the programs that were implemented addressed the needs of under-served and under-represented populations. Included were the People Empowering People (PEP) program targeted to low income adults and older youth to develop leadership skills, lower income Hispanic residents in nutrition education, lower income residents through the FFNEP nutrition program, and lower income and minority youths and adults through parenting and child care programs. In addition, lower income and minority populations benefited through a lead poisoning prevention program in Hartford, through Master Gardener educational efforts in youth detention facilities and community garden projects across the state.

Did the planned programs describe the expected outcomes and impacts?

Planned programs reach varying stages in meeting expected outcomes as described in the 2000-2004 Plan of Work. The nature of research and educational programs are such that implementation strategies and program impacts occur at varying rates depending upon number of faculty and staff involved, resources available, audiences involved, partnerships required, and outcome expects (short term, mid term long term). In general, Connecticut programs are on track in meeting the anticipated outcomes and impacts. Continued progress is expected toward outcomes in subsequent reporting period. It must, however, be strongly emphasized that in many instances continued progress toward meeting many of the above cited issues of critical state, regional, and national importance will be dependent upon increased levels of funding from federal and state sources.

Did the planned programs result in improved program effectiveness and/or efficiency?

Improved effectiveness and/or efficiency results were seen in many instances. For example, many nutrition education programs, such as EFNEP, saw improved diets and reduced financial allocations for purchased food items. Land use education programs saw improved decision making to protect natural resources and development of viable communities through better decision making. Agriculture producers reduced pesticide usage, combined with increased product quality through IPM program adoption. State and local decision maker were better able to deal with public health issues related to West Nile virus in crows, and lead pollution concerns with youth.

**U.S. Department of Agriculture
 Cooperative State Research, Education, and Extension Service
 Supplement to the Annual Report of Accomplishments and Results
 Multistate Extension Activities and Integrated Activities
 (Attach Brief Summaries)**

Institution University of Connecticut
State Connecticut

Check one: **Multistate Extension Activities**
 Integrated Activities (Hatch Act Funds)
 Integrated Activities (Smith-Lever Act Funds)

Actual Expenditures

Title of Planned Program/Activity	FY 2000	FY 2001	FY 2002	FY 2003	FY2004
<u>Assessments</u>	<u>11,230</u>	<u>14,715</u>			
<u>Food & Food Safety</u>	<u>2,675</u>	<u>2,992</u>			
<u>Natural Resources</u>	<u>14,176</u>	<u>15,464</u>			
<u>Family, Youth & Community</u>	<u>24,131</u>	<u>47,826</u>			
<u>Dairy & Livestock</u>	<u>395</u>	<u>0</u>			
<u>Sustainable Agriculture</u> 2,732	<u>1,461</u>				
<u>Horticulture</u>	<u>301</u>	<u>336</u>			

Total	<u>55,640</u>	<u>82,794</u>	<u>222,560</u>	<u>445,120</u>	<u>463,667</u>

William A. Yan

Director

3/1/02

Date

Form CSREES-REPT (2/00)

Multi-State Extension Activities - Brief Descriptions

Program Activity Area

Food and Food Safety

In the critical area of food safety, Extension education activities in Hazard Analysis Critical Control Point (HACCP) systems were significant, with a variety of HACCP training programs offered during the reporting period, especially as related to cheese processors. Extension personnel from Maine, Vermont, Massachusetts and New Hampshire were involved.

Salmonella surveillance in table egg flocks, including biosecurity and possible rodent population contamination with SE involved poultry producers from all New England states.

Natural Resources

Extension activities addressed the emerging issues of land use and water quality protection. Programs were focused on both the national and local level through the nationally acclaimed NEMO program (Nonpoint Education for Municipal Officials). National leadership resulted in MEMO adaptation now underway in 24 states across the United States.

Family, Youth and Community

Extension efforts in leadership development through the People Empowering People program (PEP) were designed to work with adults and older youth with limited financial resources to enhance their ability to help themselves and their communities. Involvement with other states, including New Mexico, occurred.

Dairy and Livestock

Extension education programs for non-commercial poultry flock owners saw a major increase in adults involved with poultry projects, as well as additional number of youth from other New England states.

Sustainable Agriculture

Integrated pest management (IPM) research and education programs were targeted at most major crops in Connecticut and involved interactions and coordination with other New England states.

Horticulture

Extension efforts with the greenhouse industry in Connecticut interacted with other New England states as efforts were made to assist producers deal with various environmental and production issues.

Integrated Research and Extension Activities - Brief Statement

Program Activity Area for Hatch Funds

In the area of emerging infectious diseases a research project addressed egg-borne *Salmonella enteritidis* infection, which has emerged as a major public health problem in the U.S. Efforts resulted in the identification and characterization of SE specific attachment proteins that will help to design effective control measures.

Rhododendron disease control, which is a critical concern for this very valuable ornamental crop, was addressed through the development of transgenic rhododendrons that show resistance to *Phytophthora* (root rot), and a diagnostic assay employing PCR.

Research work on Docosahexaenoic acid (DHA) was designed to assess the role of foods with DHA on sleep patterns of newborns. DHA is commonly found in cold water fish such as salmon, herring, and tuna. Results indicated the need for pregnant mothers to consume cold water marine fish as a means to meet the increase need for DHA during pregnancy and will be useful in making dietary recommendations to pregnant women.

Turfgrass research to ascertain preservation of over wintering turf quality and timing of fertilizer application indicated that early fall application was a preferred time of end-of-season application as it enabled grass plants to maintain acceptable quality and appearance over winter, but also reduced groundwater pollution threats from nitrate.

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 Multistate Extension Activities and Integrated Activities
 (Attach Brief Summaries)**

Institution University of Connecticut
State Connecticut

Check one: ___ **Multistate Extension Activities**
 ___ **Integrated Activities (Hatch Act Funds)**
 X **Integrated Activities (Smith-Lever Act Funds)**

Actual Expenditures

Title of Planned Program/Activity	FY 2000	FY 2001	FY 2002	FY 2003	FY2004
<u>Assessments</u>	<u>11,230</u>	<u>14,715</u>			
<u>Food & Food Safety</u>	<u>16,085</u>	<u>18,825</u>			
<u>Natural Resources</u>	<u>72,542</u>	<u>79,592</u>			
<u>Dairy & Livestock</u>	<u>41,214</u>	<u>3,951</u>			
<u>Sustainable Agriculture</u>	19,228	20,869			
<u>Horticulture</u>	30,158	33,601			
<u>Publications</u>	55,941	72,818			
<u>Economic Viability</u>	19,640	20,938			
<u> </u>					
<u> </u>					
Total	266,038	265,309	377,629	415,392	472,036

William A. Yan

Director

3/1/02

Date

Form CSREES-REPT (2/00)

Integrated Research and Extension Activities - Brief statement

Program Activity area for Smith-Lever Funds

A joint research/extension paired watershed study studied the impact of education on the implementation of water quality best management practices (BMPs) in improving water quality.

The Connecticut Family Nutrition Program for Infants, Toddlers and Children (FNP-IT) reached over 21,000 parents, teachers, caregivers and children in Hartford and Western Massachusetts by disseminating information through a combination of puppet shows, flyers and at health fairs.

Integrated pest management (IPM) research and education programs were targeted at most major corps in Connecticut. IPM programs resulted in significant reductions in usage of various pesticides and/or use of less toxic materials or approaches in pest management.