

2012 University of Connecticut - Storrs Combined Research and Extension Plan of Work

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I. Plan Overview

1. Brief Summary about Plan Of Work

The vision of the College of Agriculture and Natural Resources is that it aspire to be one of the highest quality institutions that disseminates knowledge in formal and informal settings; engages societal needs; provides leadership for problem solving, and ultimately improves the quality of life in the state of Connecticut, while contributing to global citizenship.

Currently the state of Connecticut is challenged by severe economic constraints, with a several billion dollar state deficit, and a decrease in jobs, with resulting high unemployment. This creates both challenges and opportunities for Research and Extension programming at the College of Agriculture and Natural Resources. Changes in the leadership of the University as a new President takes the helm in July may shift the direction of institutional priorities although the basic mission of the College will not change. While some vacancies resulting from previous years' early retirement programs have been filled, campus budget challenges continue, thus slowing the capacity to deliver programs as currently planned.

The University of Connecticut had begun implementation of a new Academic Plan directed toward 2014: Our World, Our People, Our Future. The plan notes that as a land and sea grant institution, the University is committed to active engagement with the larger community, not just through the College of Agriculture and Natural Resources, but also through the cultural, economic and health services it can provide to both the state and the nation. This plan may be modified after the new University President takes office.

The Plan's theme, Our Future, stresses the importance of collaborating with the state of Connecticut and with partners in the private sector to develop new products, processes and entrepreneurial opportunities and thus to foster economic and community growth and opportunity. Public Engagement is the 5th of 6 goals in the University Academic Plan, and is focused to "enhance the contribution of UConn faculty, staff and students to the state, nation, and world through appropriate collaborations with partners in both the public and private sectors".

Stressing true partnership, the Plan calls for expansions of interactions with groups beyond the campuses (there are 6) in areas of mutual concern, and enhance citizen access to resources within the University. Among the tactics proposed to implement the University Academic Plan are:

- encourage faculty members to serve as members of private and public sector task forces and commissions, and share their knowledge through testimony at legislative hearings and other advisory capacities;
- engage faculty in assessing local needs and identifying problems in a holistic manner that strengthens the University's translational research efforts;
- encourage new partnerships with state agencies, for-profit enterprises, and the not-for-profit sector;
- establish partnerships between students, faculty, staff and community leaders to identify and

address local environmental challenges; and

- continue to enhance extension-related outreach activities.

The College is implementing its own Strategic Plan which defines and realigns the College's role under the University's Academic Plan. Through various self-assessment and visioning processes, the College has reset its direction to be consistent with the new University Academic Plan. The College is also reviewing its departments and programs in relation to the five NIFA goals, to better integrate those with state goals. Currently, initiatives include economic viability and sustainability of agriculture, natural resources and environmental sustainability, including biomass research, nutrition, food and health, food safety across the food chain, agricultural biotechnology, aquaculture, agricultural and food bio-security, and stem cell and regenerative biology.

It is expected that research efforts will continue to be driven by state, regional, national and international needs, in conjunction with external funding opportunities and the talents and interests of current faculty. The budget situation is also slowing development of a new energy-related research effort and to identify potential research collaborations and areas of research strength in this area.

The Department of Extension has reassessed its strategic plan, to incorporate both campus and college directions, with an emphasis on specific Connecticut needs, as well as NIFA goals. The Strategic Planning Committee is drafting implementation strategies and tactics; however, it is anticipated that a new Associate Director of Extension (search underway), will contribute to refining the Strategic Plan. A previous Research day drew both researchers and Extension faculty and staff to discuss how to develop stronger research proposals, improve collaborations, and focus on outcomes.

Presently, research supported by the Storrs Agricultural Experiment Station has three main goals: 1) improve the economic returns to agricultural producers through basic and applied research programs that improve productivity, quality and marketing of agricultural products; 2) protect the country's natural resources by promoting and enhancing research into environmental sustainability; and 3) promote the health and safety of citizens through the acquisition of research-based information.

The goal of improved economic returns will put particular emphasis on efforts through biotechnology-driven programs to prevent the spread of invasive plant species, improve the quality and quantity of a number of agricultural/horticultural crops, study the mechanisms of specific plant diseases, develop transgenic plants that express edible vaccines, study the hormonal mechanisms controlling fertility, growth and lactation in agricultural animals, and understand the most important factors influencing embryonic development and the number and quality of clones in farm animals.

Additionally, meat science research efforts will address factors influencing meat quality and safety, while animal diseases will see emphasis on factors influencing the incidence and control of mastitis in dairy cattle, development of a mucosal vaccine against *Mycoplasma gallisepticum*, monitoring and research into transmissible forms of spongiform encephalopathies, as well as monitoring and investigating the incidence of disease in a variety of economically important aquatic species.

Research also will address various aspects of both domestic and international marketing of food and fiber. Protection of Connecticut's natural resources by promoting and enhancing research into environmental sustainability will see particular emphasis on water quality and quantity to reduce groundwater contamination, sources of non-point pollution and use of rain gardens as part of urban best management practices; through wildlife and forest ecology and atmospheric science; methods of studying the impact of the progressively encroaching urbanization on the environment; limiting the spread of invasive species; and the impact of environmental toxins on marine mammals.

Promotion of health and safety of citizens will see emphasis on development of research-based information through effects of exercise on protein utilization in obese and non-obese children; quality and safety of milk and meat products; studies related to mercury contamination of freshwater fish; and studies into factors influencing the dispersal and distribution of air pollutants.

The Cooperative Extension System continues to direct effort toward four main goals: 1) increase the economic opportunities for small businesses and specifically for agriculture and natural resource related businesses in the state; 2) enhance the sustainability of the environment through balancing economic growth with the sustainability of natural resources; 3) advance the public health of the state through a safe and secure food system and water supply; and 4) strengthen and support families and communities in a rapidly changing society.

Increased economic opportunities include a major effort to develop a federally inspected abattoir in the state; develop new business ventures in retail, manufacturing and agriculture; focus on risk management for agricultural and natural resources based businesses; and develop economically viable marine based industries through a continued partnership with Sea Grant.

The youth development program will strengthen an environmental curriculum for K-12 audiences, building on the IPM curriculum and on the state education standards model used at the 4-H Center at Auer Farm. Work will continue in sustainable agricultural production including organics and reduced inputs such as chemical sprays. The home horticulture program will continue to focus on mitigating invasive plants and insects, and to protect the state's water quality.

Efforts to protect the public health of the state through a safe and secure food system and water supply will educate industry and consumers on preventable microbial food-borne illnesses and develop animal emergency response plans as part of a state-wide team effort to protect both animals and humans. The focus of nutrition efforts will target obesity, including education for children with special dietary needs and emphasizing healthy lifestyles. Strengthening and supporting families and communities in a rapidly changing environment will focus on leadership development and civic engagement for a strong quality of life. Programs will engage pre-college youth in educational and leadership experiences, build leadership capacity in communities through training such as GIS (geographic information systems) for towns and PEP (People Empowering People) to build community capacity for parents, child care providers, youths and in the area of financial management

Estimated Number of Professional FTEs/SYs total in the State.

Year	Extension		Research	
	1862	1890	1862	1890
2012	82.0	0.0	78.0	0.0
2013	82.0	0.0	78.0	0.0
2014	82.0	0.0	78.0	0.0
2015	82.0	0.0	78.0	0.0
2016	0.0	0.0	0.0	0.0

II. Merit Review Process

1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

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

2. Brief Explanation

The merit review process for Connecticut is grounded in the seven part test of guiding characteristics for an engaged institution as reported in the 1999 Kellogg Commission Report on The Engaged Institution. Key recommendations from external review processes continue as a foundation for program decisions. The 2006 ECOP Criteria of Excellence in Cooperative Extension also serves as a major standard for merit review. The process includes: planning by all faculty and staff by departments and focused issue groups; review of plan at the campus level; periodic reviews by the peer institutions, and a review by stakeholders. The Dean has established a new College Advisory Group of stakeholders who will also provide direction. Peer Review for Hatch, McIntire-Stennis, and Animal Health Projects is designed to ensure that quality research projects consistent with identified priorities are approved. Review involves the objective opinion of other scientists, and/or administrators within the University of Connecticut, and users of research results when appropriate, to research proposals or completed projects. Peer review subjects every project to a rigorous and systematic evaluation for appropriateness and quality. The process is conducted within the framework of predetermined criteria whose objective is to assess whether each Storrs AES research project (1) is guided by state, regional, and national priorities, (2) is of high scientific merit and quality, (3) incorporates a state-of-the-art scientific approach (4) is likely to successfully meet the goals of the project, and (5) whether it is completed and prepared according to the Storrs AES guidelines. The peer review process provides principal investigator with additional counsel on research direction and implementation. Department Heads oversee the peer review process and suggest qualified reviewers. The Director of the Storrs AES (or the Associate Director) is the ultimate authority to finally approve projects once they have been critically reviewed and endorsed by the Department Head.

III. Evaluation of Multis & Joint Activities

1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

The planned programs were based on input from stakeholder groups and scientists who identified the most critical issues. Needs assessments conducted by collaborators, state agencies and foundations also provided insight into critical concerns facing Connecticut. In many cases, stakeholders are involved in the implementation of applied research efforts and educational/demonstration programs.

2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

Many of the currently planned programs will address the needs of under-served and under-represented populations. Included are lower income residents in nutrition education, , and lower income and minority youth and adults through parenting and child care programs. In addition lower income and minority populations will benefit through an anemia education

program for health care providers, limited resource agricultural producers will benefit from risk management education programs, and decision-makers in less affluent municipalities will increase public policy decision-making as a result of natural resource/land use protection programs. The needs of under-served and under-represented populations will be reviewed on a regular basis to insure appropriate inclusion.

3. How will the planned programs describe the expected outcomes and impacts?

Planned programs will reach varying stages of expected outcomes during the planning period. 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 outcomes expected (short-term, mid-term, long-term).

4. How will the planned programs result in improved program effectiveness and/or

Improved effectiveness and/or efficiency results are anticipated in many instances. For example, based on recent programs efforts, it is expected that many nutrition education programs will see improved diets and reduced financial expenditures for purchased food items. Land use education programs can be expected to see improved decision making by local officials to protect natural resources and develop viable communities. Agricultural producers will continue to reduce pesticide usage, along with increased product quality through IPM program adoptions. Food Safety improvements will reduce costs of health care and economic losses to businesses. Agricultural research programs will continue work in partnership Extension outreach efforts to both relay outcomes to producers as well as relay concerns and successes to researchers.

IV. Stakeholder Input

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

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

Brief explanation.

The college-wide stakeholder input process will continue to include both research and extension. The annual key event has been the Leaders' Forum, with leaders of non-private organizations with whom Extension and research works engaging in discussions with faculty and administration. State-wide reports, prepared by other agencies and organizations (several of whom have Extension faculty on boards/commissions), such as State of Connecticut Voices of Children report, the Connecticut Food Policy Council's annual report on food insecurity in the state, are used regularly. Increased use of focus groups, web-based needs assessments, and the participation of faculty and staff on state boards, commissions and councils, as well as more input from County Extension Councils, continue to provide by diverse stakeholder groups. The Dean will continue discussions with key stakeholders, members of the legislature and clientele.

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

1. Method to identify individuals and groups

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

Brief explanation.

Progress continues in increasing stakeholder input. The State Extension Partners Council meets at least twice a year and is comprised of representatives of County Extension Councils and other affiliated organizations such as 4-H camp boards, IFYE, and the master gardener association. The Dean's monthly update sent to all faculty and staff via e-mail/web, reports on his conversations with stakeholders and clientele. Use of on-line tools to solicit input from potential and current clientele and stakeholders continues to increase. The Dean and College leadership meet regularly with representatives of 30 organizations, agencies and interests, who comprise a College Advisory Board.

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

1. Methods for collecting Stakeholder Input

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

Brief explanation.

Stakeholders such as vegetable producers and town officials will continue to provide input through end of session evaluations of programs with suggestions for improvements, as well as current and future needs. The CANR Journal, a periodic newspaper/web page, highlights research and extension efforts and is available to the public, with comments solicited. The Sea Grant program collects input from aquaculture producers and town officials that leads to changes in programming focus and direction. Meetings with state boards such as the Food Policy Council and Farm Services Agency staff provide additional stakeholder input. The Agricultural Risk Management Advisory Group, comprised of more than 40 agricultural related stakeholders from both traditional and non-traditional perspectives, provides input on a regular basis. Increased use of the Internet, both e-mail and the Web, is providing input from a wide range of current and potential clientele.

3. A statement of how the input will be considered

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

Brief explanation.

Input from stakeholders is essential. Input will continue to be used to redesign programs, to initiate new programs, as the basis for grant proposals, and as a means for different perspectives when the College considers restructuring programs. Implementing the College and Extension Strategic Plans requires input from, and collaboration with, stakeholders. College administration continues to meet regularly with stakeholders, the legislature and agency heads to both listen to and discuss stakeholder input.

V. Planned Program Table of Content

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

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Food Safety

2. Brief summary about Planned Program

Food safety is a major public health concern. Extension programs will address consumer concerns such as biotechnology, and regulation of food safety, with an emphasis on foodborne illness, through workshops, web pages, and press releases. Training will be provided for volunteers, temporary food service workers, and those who staff food pantries, soup kitchens, camps, schools, and retail sellers. A specific project will teach food safety to low-literacy food service employees using interactive distance education.

Extension programs will be designed to enable growers to adopt research-based cutting-edge solutions designed to protect and maintain a safe, secure and highly competitive agricultural system, while protecting natural resources and the environment for a healthy and well-nourished population. Farmers and gardeners will manage pests with much less synthetic materials. Integrated Pest Management (IPM) stresses the use of a variety of pest control methods designed to protect public health and the environment and to produce high quality crops and other commodities with the most judicious use of pesticides. Training in Good Agricultural Practices (GAP) will be directed to farmers. Training and information will be available for food related businesses, such as meat and poultry processors, cider processors and artisanal cheese makers.

The Sea Grant Program will address similar topics with the seafood industry. Collaborations will continue with various campus academic departments, Connecticut Departments of Agriculture, Consumer Protection and Public Health, as well as with the other five New England states who comprise the New England Food Safety Group.

Pathologists will assist the veterinary community (private, state and federal) and the animal-owning public by providing investigation and diagnostic services for animal diseases, as well as a surveillance function. Current surveillance programs include: bovine spongiform encephalitis, scrapie, chronic wasting disease of deer, avian influenza and Newcastle disease, avian salmonellosis, Johne's disease of cattle and mastitis of dairy herds. Infectious diseases hold high research priority. These include: Lyme disease, West Nile encephalitis, avian influenza, porcine reproductive and respiratory syndrome, mycoplasma infections of chickens and turkeys, salmonella infections of chickens and dairy cattle, and diseases of fish and other aquatic species at fish farms and aquariums. Concerns about toxins in the environment hold priority as well. Efforts are underway to define levels of toxins, hosts in which they accumulate, and the health consequences for marine species, domestic animals and man. Basic understanding of disease processes and the pathogenesis of viral and bacterial infections hold high priority.

Additional research efforts include: Reducing egg-borne outbreaks of Salmonella Enteritidis; Brucellosis testing; clostridial infections of poultry, mastitis resistance to improve food safety; bacteria source tracking of pigeon and cattle strains of Escherichia coli; and the potential health risk of Clostridium difficile as a foodborne pathogen.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
216	Integrated Pest Management Systems	25%		25%	
311	Animal Diseases	15%		20%	
501	New and Improved Food Processing Technologies	15%		35%	
503	Quality Maintenance in Storing and Marketing Food Products	5%		0%	
504	Home and Commercial Food Service	20%		0%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	20%		20%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

General overview: Many people fall ill every year and may die as a result of eating unsafe food, many of which resulted from contaminated food or water. Proper food preparation can prevent most foodborne diseases. Disease-causing organisms in food are transmitted far and wide by today's interconnected global food-chains - escalating how often and where food borne illnesses occur. Changing family and work patterns, and other factors, result in many eating more food prepared outside the home that may not be handled or prepared safely - including fresh foods and fish, meat and poultry. Globalization of food production and trade increases the likelihood of international incidents involving contaminated food, as more imported food products and ingredients continue to be more common..

About 75% of the new infectious diseases affecting humans over the past 10 years were caused by bacteria, viruses and other pathogens that started in animals and animal products. Many of these diseases in people are related to the handling of infected domestic and wild animals during food production - in food markets and at slaughter houses.

The vast majority of H5N1 avian influenza cases in people follow direct contact with infected live or dead birds. Preventing animal infections at the farm level can reduce food borne illnesses. For example, reducing the amount of Salmonella in farm chickens by 50% (through better farm management) results in 50% less people getting sick from the bacteria. Educating children on safe food handling behaviors is key to preventing food borne diseases today and in the future. Integrating food safety lessons into school

curricula gives children essential life skills that can help to keep them and their families healthy

Connecticut: In addition to on-going consumer basic needs for food safety, Connecticut has a resurgence of local farms and processors who must address the need to keep food safe from farm to table. Outbreaks of food borne illness, while not frequent, are of concern for health and economic reasons. A recent situation involving raw milk from a town owned farm leased to a farmer, who sold the milk to the major supermarket chain, demonstrated the complex relationships of the food supply chain. Local food is a growing segment of the Connecticut Agricultural economy. To maintain the consumer's confidence in locally grown and processed food, everyone involved in the supply chain must be skilled in food safety.

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

Connecticut consumers are concerned about the use of chemicals used to produce food. Balancing food safety concerns with production needs is a continuing challenge. IPM systems rely on tactics such as host-plant resistance, biological control, and cultural controls. The Federal Insecticide Fungicide and Rodenticide Act (FIFRA) directs the EPA to cooperate with the USDA and use the services of the Cooperative Extension System to inform and educate pesticide users about the accepted uses and other regulations made under the Act. The State of Connecticut requires that individuals using restricted-use pesticides on their own property or property which they rent for agricultural purposes become certified as private pesticide applicators. There are 750 private applicators certificates issued in CT and 2,625 commercial certificates. More greenhouse crops are being grown for food and customers have a very low tolerance for any evidence of insect pests or diseases. 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 with less chemical inputs.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Opportunities for food safety training are limited by the economy, ability/inability of workers to have time to take classes.

Farmers are challenged to produce sufficient quantities of crops, etc. using less chemical fertilizers and pesticides, by the demands of consumers seeking 'natural' or 'organic' products, without higher prices.

Consumers aren't highly motivated to attend food safety classes, etc. Information must be directed

to them in other ways.

New research methods, technologies and discoveries will influence food safety capacity.

The diagnosis of disease allows prompt decision making for treatment and control. Such diagnostic service may also provide early detection of introduced or emerging diseases

2. Ultimate goal(s) of this Program

The ultimate goal of the program is to reduce outbreaks of food borne illness in Connecticut residents, particularly from food grown and processed in Connecticut.

Intermediate goals are to increase good food handling practices in homes, farms, the seafood industry, and community based facilities such as camps, schools, day care centers, shelters, soup kitchens, etc. Also to reduce the amount of chemical fertilizer and pesticide residue in Connecticut grown food, including fish and shellfish. Provide high quality and reliable pathology services for the diseases of domestic, non-domestic and aquatic animals, and the diagnosis, therapy and surveillance of poultry and other avian species.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2012	11.6	0.0	11.8	0.0
2013	11.6	0.0	11.8	0.0
2014	11.6	0.0	11.8	0.0
2015	11.6	0.0	11.8	0.0
2016	11.6	0.0	11.8	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

For Consumers: workshops on food safety topics such as foodborne illness prevention, basic food safety regulations, etc. A consumer focused web site with basic food safety information - fact sheets, contact information and how to e-mail a question.

For Agencies and Organizations: Food Safety training workshops for soups kitchens, shelters, camps, day care centers and other community food service providers, with a project designed for low-literacy employees (English and Spanish) in basic food safety, using interactive distance education.

For Farmers/food processors: workshops and training on Good Agricultural Practices and post harvest handling; IPM.

The seafood industry's has continual employee/business turnover, so a regional training partnership between Connecticut and Rhode Island Sea Grant Extension / Cooperative Extension was established to:

ensure that industry members in southern New England have regular access to the required training. Training of seafood processors, dealers, harvesters, importers, and regulatory personnel in the principles of processing fish and fishery products safely according to HACCP principles of risk identification, evaluation, monitoring, and control will continue. Pertinent, timely HACCP and food safety-related information will be provided post-training through print, electronic newsletters, and webpages.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Workshop ● One-on-One Intervention 	<ul style="list-style-type: none"> ● Newsletters ● Web sites other than eXtension

3. Description of targeted audience

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

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
 - Number of patents submitted
 - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Face to face general group education sessions (workshops, etc.)
 - New or updated web page(s)
 - Diagnostic tests conducted
 - Individual consultations (in person, via e-mail, etc.)
 - Training conferences or sessions hosted or conducted
 - Fact sheets, bulletins and newsletters written or edited
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of consumer gaining basic food safety knowledge
2	Consumers (%) adopting appropriate food safety practices.
3	Number of organizations/businesses serving food adopting appropriate food safety practices.
4	Increased adoption (%) of recommended BMP by consumers.
5	Increased adoption (%) of recommended BMP by growers.
6	Adoption of GAP by growers (%)

Outcome # 1

1. Outcome Target

Number of consumer gaining basic food safety knowledge

2. Outcome Type : Change in Knowledge Outcome Measure

2012:300 2013:300 2014:300 2015:300 2016:300

3. Associated Knowledge Area(s)

- 504 - Home and Commercial Food Service

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Consumers (%) adopting appropriate food safety practices.

2. Outcome Type : Change in Action Outcome Measure

2012:35 2013:35 2014:25 2015:25 2016:25

3. Associated Knowledge Area(s)

- 504 - Home and Commercial Food Service

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2012:50 2013:50 2014:50 2015:50 2016:50

3. Associated Knowledge Area(s)

- 503 - Quality Maintenance in Storing and Marketing Food Products
- 504 - Home and Commercial Food Service

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Increased adoption (%) of recommended BMP by consumers.

2. Outcome Type : Change in Action Outcome Measure

2012:20 2013:20 2014:20 2015:20 2016:20

3. Associated Knowledge Area(s)

- 216 - Integrated Pest Management Systems
- 504 - Home and Commercial Food Service
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Increased adoption (%) of recommended BMP by growers.

2. Outcome Type : Change in Action Outcome Measure

2012:20 2013:20 2014:20 2015:20 2016:20

3. Associated Knowledge Area(s)

- 216 - Integrated Pest Management Systems

- 311 - Animal Diseases
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

Adoption of GAP by growers (%)

2. Outcome Type : Change in Action Outcome Measure

2012:20	2013:20	2014:20	2015:20	2016:20
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3. Associated Knowledge Area(s)

- 216 - Integrated Pest Management Systems
- 501 - New and Improved Food Processing Technologies
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

The state of the economy is major factor. Many government programs are operating at less than normal staffing and resources. That means that inspections, support and education are less than

optimal. Labor issues, particularly with foreign workers finding it more difficult to enter the country, may impact agricultural production.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Basic pre-post tests will address increased knowledge; follow-ups will address changes as a result of the educational intervention. Also, the number of people passing standard tests (certification) for food safety curricula will used as an indicator of success.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Climate Change

2. Brief summary about Planned Program

How land is used is one of the major factors in climate change. In Connecticut, forest land is fragmented and disappearing to development. Decisions made by towns and consumers inland affect the health of Long Island Sound, which in turn contributes to climate ecology.

Planned programs include the Land Use Academy, which will continue to train municipal officials to make informed decisions on land use policy and implementation for their communities (There is no county government in Connecticut). The Green Valley Institute will provide education for officials and residents in 13 towns in a National Heritage Corridor spanning Connecticut and Massachusetts. This includes research and development of innovative models for land trusts, and other policies for sustainable growth.

Research and development will also continue on GIS and geospatial systems and models that provide data and information for decision making. Other research projects include Assessment of Urban Tree and Forest Canopy Biomechanics (understanding how tree sway acts to resist wind damage, which can cause loss of life and property); Ion Exchange Processes in Soils (remediating soils to reduce both production issues and water run-off); Climate Extremes, Climate Change and Agriculture in the Northeast (use high resolution climate data for past decades and near future projections to develop a framework of analyzing climate impacts on agricultural production); and Soil Carbon Cycling in Cool Season Turf (to determine changes in soil carbon using various Nitrogen level, and care practices in the urban/suburban landscape to maximize carbon sequestration.)

Extension programs will promote "smart" landscaping techniques that reduce polluted runoff and groundwater contamination by infiltration and filtration as well as reducing occurrences of water shortages. Extension methods include the use of demonstration sites (rain gardens, native plant landscapes, low fertilizer and low pesticide input lawns), publications, a website, workshops and involvement of trained volunteers such as Master Gardener. Educational materials and website articles will be updated. Shoreline buffers systems will stressed as sustainable practices.

Proper siting, construction and maintenance of private wells and the need for water quality testing and maintenance also be a focus. Education and consultations regarding nutrient management plans will continue, to assist farmers in reducing pollution. Extension will also co-sponsor Connecticut Environmental Action Day, a conference to encourage high school students to take an active role in addressing environmental and natural resource issues by increasing their understanding of the environment and natural resources, and to foster their capacity to become environmentally responsible citizens. .

3. Program existence : Intermediate (One to five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
111	Conservation and Efficient Use of Water	15%		20%	
123	Management and Sustainability of Forest Resources	30%		30%	
124	Urban Forestry	15%		10%	
131	Alternative Uses of Land	20%		20%	
132	Weather and Climate	10%		10%	
136	Conservation of Biological Diversity	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Between 1985 and 2006, agricultural and forested lands converted to residential development at a high rate in Connecticut. Forested land contributes positively to the climate. Data from UConn CLEAR indicates that there was a 4.7% loss of agricultural and forest lands with a 2.9% increase in developed lands.

A well managed forest is a valuable carbon sequestration tool. A well-adapted, diverse, healthy forest will promote a growth rate per tree directly linked to maximizing mitigation of carbon dioxide, a greenhouse gas, through carbon sequestration. The state's forests are responsible for filtering and protecting the quality of Connecticut's drinking water and for cleaning ambient air.

Development results in increases in turf and grass, one source of nutrients that threaten CT waters. The impacts of these changes can be significant. Forested land can sequester nutrients more efficiently than developed land. With the continued development of Connecticut, management issues related to residential water systems and landscapes becomes a concern. Excess nutrients pose a threat to many water bodies in New England, both coastal and inland. While nitrogen is considered the limiting nutrient in estuaries and phosphorus in fresh waters, residential runoff is considered a source of both. Major coastal watersheds show increasing concentrations of nitrogen attributed to various causes including wastewater treatment facilities effluent, lawn fertilizer residue, septic systems, atmospheric deposition and runoff, which are all related to population growth and its associated land development patterns. Lawns, in addition to contributing nutrients to waters are estimated to use between 50-90% of outdoor water during the summer months. The major concern is the health of Long Island Sound.

The Asian long horned beetle is poised to invade Connecticut, having been found at the borders with Massachusetts and New York. This invasive species can only be controlled at present by removing infected trees. Over the next few years, prevention and eradication will be a priority in order to maintain both forests and urban trees.

Other invasive plant and insect species will be targeted, as they threaten to overtake native plants and trees. Without the native plants, etc. , wildlife habitat condition change, leading to decline in certain populations. Without the natural co-existence of native plants and wildlife, shifts in forests may occur, reducing the natural ability of Connecticut's forests to deal with carbon dioxide.

The State of Connecticut Department of Environmental Protection prepared a report FACING OUR FUTURE: Infrastructure Adapting to Connecticut's Changing Climate in 2009. It strongly encourages actions to adapt to climate change. It considers infrastructure as both the built environment and the underlying environment of coast infrastructure, ecosystems, agriculture and the economy. Among the risks are river and coastal flooding (Connecticut has almost \$405 billion in insured coastal assets), transportation (many are located along river valleys and coast), water supply and treatment; wastewater treatment, dams (1200 of the 5500 dams are considered moderate to high hazard, with the potential to cause loss of life if they fail), and landscape infrastructure - best management practices that control stormwater, protecting the water supply, etc.

Thus land use policies, increased application of best management practices, particularly along waterways, and landscapes, both public and private, can minimize potential damage.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Programs contributing to this goal have a solid record of training municipal officials, community volunteers and agency personnel. NEMO (Nonpoint Education for Municipal Officials) was created in the early 1990's to provide information, education and assistance to local land use boards and commissions on how they can accommodate growth while protecting their natural resources and building a healthier community. CLEAR (Connecticut Center for Land Use Education and Research) has successfully trained local officials through its Land Use Academy, and continues to address environmental issues such as forest fragmentation, coastal riparian buffers, and environmental quality. The Green Valley Institute in its work in a National Heritage Corridor, has shown what a focused geographic effort can achieve. These efforts are limited only by funding. The Invasive Plants Working Group brings together researchers, extension personnel, local and state officials and volunteers to address this issue, which is essential to effectiveness.

2. Ultimate goal(s) of this Program

The goals of the program include: local officials and citizens making responsible environmental decisions relating to land use, water quality and quantity, forest resources, and development. Sound decisions ultimately have a positive impact on ecological systems, including climate.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2012	11.6	0.0	13.4	0.0
2013	11.6	0.0	13.4	0.0
2014	11.6	0.0	13.4	0.0
2015	11.6	0.0	13.4	0.0
2016	11.6	0.0	13.4	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Training conferences for municipal officials and volunteers (Land Use Academy, GIS, town tree wardens, etc.) ; public workshops and train the trainer sessions; master gardener support and training; Connecticut Environmental Action Day for high school students; fact sheets, web pages, and general media. Continued research and development of computer based technologies. Video programs and other webinars.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Workshop ● Demonstrations 	<ul style="list-style-type: none"> ● Newsletters ● Web sites other than eXtension

3. Description of targeted audience

Elected municipal officials; municipal staff and volunteers; citizens; agency staff.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Face to face general group education sessions (workshops, etc.)
- New or updated web page(s)
- Training conferences or sessions hosted or conducted.
- Fact sheets, bulletins and newsletters written or edited.

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Acres of land permanently protected and managed.
2	Adoption and/or revision of land use public policies by governmental agencies.
3	Consumers become knowledgeable about recommended environmental practices relating to forests, water quality and conservation, lawn care, well and septic systems, and/or shoreline buffers.
4	Understanding of basic forest ecology.
5	Increased use (%) of GIS and other technologies by local officials in making land use and other environmental decisions.

Outcome # 1

1. Outcome Target

Acres of land permanently protected and managed.

2. Outcome Type : Change in Action Outcome Measure

2012:2400 2013:2400 2014:2400 2015:2400 2016:2400

3. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources
- 131 - Alternative Uses of Land
- 132 - Weather and Climate
- 136 - Conservation of Biological Diversity

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2012:20 2013:20 2014:20 2015:20 2016:20

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry
- 131 - Alternative Uses of Land
- 132 - Weather and Climate
- 136 - Conservation of Biological Diversity

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2012:1500 2013:1500 2014:1500 2015:1500 2016:1500

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry
- 132 - Weather and Climate

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Understanding of basic forest ecology.

2. Outcome Type : Change in Knowledge Outcome Measure

2012:2 2013:2 2014:2 2015:2 2016:2

3. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate
- 136 - Conservation of Biological Diversity

4. Associated Institute Type(s)

- 1862 Research

Outcome # 5

1. Outcome Target

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

environmental decisions.

2. Outcome Type : Change in Action Outcome Measure

2012:25

2013:25

2014:10

2015:10

2016:10

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 123 - Management and Sustainability of Forest Resources
- 131 - Alternative Uses of Land
- 132 - Weather and Climate

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

The economy is the driving factor in the ability of the state to protect its natural resources. At local, regional and state levels, budget deficits, resulting from the housing market decline, high costs of fuel, and loss of jobs moving out of state, are even more severe in 2011 than in 2009.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Case studies of actions by municipal officials following training sessions.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Childhood Obesity

2. Brief summary about Planned Program

A recent study showed that 12.3% of Connecticut children are overweight; with higher rates among limited resource families. Poor nutrition and lack of exercise are the primary factors in childhood obesity, along with limited economic resources.

The Expanded Food and Nutrition Program (EFNEP) provides food and nutrition education to low-income families, youth and individuals to improve eating patterns, shopping and food preparation skills. Specially trained EFNEP Nutrition Assistants, who know their communities well, work with program families in their homes or in small community groups to offer knowledge and skills to help people control and manage their food and nutrition practices for better health and quality of life. EFNEP helps families connect with local agencies that provide assistance which they may need, and often help families enroll in other federal food programs. EFNEP staff also work with youth in after school, community and special summer programs.

As part of a summer 4-H program, youth ages 14 to 19 from at risk, low income/limited resource communities are trained as facilitators in basic nutrition and physical activity promotion. Topics include wellness through healthy eating and physical activity, food safety, and food stamp education. This program has a cyclical pattern for the Summer Camp delivery and the Year Round delivery within each year of a three-year plan. Each summer new and former youth facilitators are trained to deliver basic nutrition lessons, food demonstrations and hands on activities to urban summer camps (campers aged 4 to 13 years) in New Haven. During the Year Round delivery, these trained youth facilitators lead presentations at health fairs, after school/extended day programs or faith based programs. In addition, they actively prepare for the summer delivery. Delivery methods include food demonstrations, hands on activities and interactive games.

Latinos experience a disproportionately high rate of many chronic health conditions, including type II diabetes and experience premature age-adjusted mortality due to diabetes at a rate that is almost twice as high as that in Whites. Latinos are among the fastest growing segment of Connecticut's population. A research program is resulting in evidence that diabetes peer counseling intervention is effective in controlling blood sugar levels among the low-income Hispanic participants in this trial. The preliminary results indicate that there was a significant reduction in the HbA1c levels of participants in the intervention group. This significant finding reflects better control of blood glucose levels over the past 10-12 weeks among those assigned to the peer counseling intervention. The Connecticut Center to Eliminate Health Disparities Among Latinos will continue this research with the overall goals to: a) advance the science directed toward reducing, eliminating, or preventing health disparities; and b) accelerate the discovery of new interventions and expand/adapt existing interventions for reducing, eliminating or preventing health disparities among different populations. The incidence of nonalcoholic fatty liver disease (NAFLD), a relatively asymptomatic disease, is strongly associated with obesity and has risen dramatically over the past several decades, coincident with the obesity epidemic that has resulted in ~66% of Americans currently being overweight or obese. The mechanisms leading to NAFLD are not well understood, but hepatic oxidative stress and excessive accumulation of hepatic lipids have been strongly implicated. Therefore, dietary approaches targeted at preventing hepatic lipid accumulation and protecting against reactive oxygen/nitrogen species would have a significant impact on health since no effective treatments have yet to be developed.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
702	Requirements and Function of Nutrients and Other Food Components	0%		60%	
703	Nutrition Education and Behavior	70%		20%	
704	Nutrition and Hunger in the Population	30%		20%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Connecticut ranks 18th among states based on the size of the gap in children's general health status by family income. Poverty and near poverty status, often related to the large urban areas of the state, are major factors. About 20% of all Connecticut children under the age of five live in five communities of the state's 169 communities, each of which has 8,000 young children (or more): Bridgeport, Hartford, New Haven, Waterbury, and Stamford.

Although Connecticut is a wealthy state, one in four Connecticut children live in families with annual income under 200% of the federal poverty level (\$33,200 or less for a family of three), which is roughly equivalent to Connecticut's self-sufficiency standard. This standard, (CT Office of Policy and Management) measures the income needed to support a family's basic needs, based on the local cost of living for housing, childcare, food, transportation, health care, and taxes. A 2007 study by the Annie E. Casey Foundation and Child Trends compared the well-being of children in low-income families (under 200% of the Federal Poverty Level, or FPL) to children in higher-income families (over 200% of FPL) across 50 states. The study found that between 2002-2004, the proportion of Connecticut children living in low-income families, 24%, ranked Connecticut second lowest among states in child poverty. Further, in terms of child well-being for *all* its children, Connecticut's children ranked 10th best. However, Connecticut children in low-income families fared worse than children in low-income families in the majority of other states (ranking 39th overall).

Connecticut's low-income children ranked 33rd in health status, 30th in social and emotional well-being, 48th in cognitive development and educational attainment, 24th in family activities, 35th in family and neighborhood context, and 41st in social and emotional context. Connecticut ranked 4th worst in terms of the gap between low-income and higher-income child well-being. The Connecticut Voices for Children, requested additional analyses of Connecticut-specific data. In 27 of 30 indicators, Connecticut children in low-income families fared worse than higher income peers.e families. Connecticut children in low-income families were at least twice as likely as children in higher-income families to:

- have health problems;
- have a physical limitation that prevents them engaging in activities that children of the same age do;
- be overweight;
- have emotional or behavioral difficulties;
- exhibit problem behaviors (e.g., excessively arguing with or disobeying parents, bullying others);
- be at risk for developmental delay in speech and comprehension, motor skills, or behaviors;
- have a learning disability;
- not participate in after-school activities;
- have a parent in poor health; and
- not live in communities with trustworthy, reliable or supportive neighbors.

Low-income families were almost three times more likely to report that their children were in less than good health than higher income families. Lower-income children also were at least twice as likely as higher-income children to have an activity limitation, be overweight, or have asthma, which, when not properly managed may require costly health interventions, such as asthma related hospitalizations and treatment for Type 2 diabetes. The health status of Connecticut's low-income children also is of concern since about 29,000 Connecticut low-income children under age 19 were uninsured in 2006. These uninsured children are less able to obtain preventive and appropriate health care, further endangering their health.

The incidence of nonalcoholic fatty liver disease (NAFLD), a relatively asymptomatic disease, is strongly associated with obesity and has risen dramatically over the past several decades, coincident with the obesity epidemic that has resulted in ~66% of Americans currently being overweight or obese. Not only is this a health problem, but an economic one, as obesity is has more than a \$100 billion economic impact. The mechanisms leading to NAFLD are not well understood, but hepatic oxidative stress and excessive accumulation of hepatic lipids have been strongly implicated. Therefore, dietary approaches targeted at preventing hepatic lipid accumulation and protecting against reactive oxygen/nitrogen species would have a significant impact on health since no effective treatments have yet to be developed.

Consequently, a critical need exists to evaluate the efficacy of dietary strategies that can target multiple aspects of the cascade of events implicated in NAFLD. In the absence of effective therapeutic management, this relatively asymptomatic disease that increases liver-related morbidity and mortality will continue to be problematic, since current treatments are essentially limited to weight loss and co-morbidity management.

Research into the extent to which novel dietary strategies will be effective in regulating the oxidative stress-mediated processes implicated in the pathogenesis of NAFLD is needed. In particular, the study of dietary supplementation of green tea extract (GTE), a dried tea preparation containing ~30% polyphenolic catechins, on the regulation of several metabolic and oxidative stress responses that contribute to NAFLD, is being conducted

Latinos are now the largest minority group in Connecticut. Between 1990 and 2000, the Latino/Hispanic population in Connecticut grew by 50.3% (from 213,116 to 320,323 individuals). Latinos experience a disproportionately high rate of many chronic health conditions, including type II diabetes and experience premature age-adjusted mortality due to diabetes at a rate that is almost twice as high as that in Whites. The priorities include a) advance the science directed toward reducing, eliminating, or preventing health disparities; and b) accelerate the discovery of new interventions and expand/adapt existing interventions for reducing, eliminating or preventing health disparities in the Latino population.

2. Scope of the Program

- In-State Extension
- In-State Research
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Poverty, lack of education and access to health related services, language barriers, lack of transportation, are factors that contribute to obesity in many families and children. Further, for many city residents, the lack of supermarkets with reasonable prices in their neighborhoods, severely limits access to good quality fresh fruits, vegetables and other healthful foods. While people may gain the knowledge of good nutrition, without access to affordable food resources, the knowledge is can't be used. Funding limits the geographic scope of the effort. There are disparities among ethnic groups in terms of diet and health that need scientific investigation.

2. Ultimate goal(s) of this Program

The ultimate goal of the program is to enable families with children to have access to safe, nutritious food on a regular basis, and the increased knowledge and skills to store, prepare and serve nutritious meals for optimal health. Achievement of this goal will reduce the rate of childhood obesity. This means increased access to supermarkets in the cities, access to farmer's markets, improved nutrition in school meal programs, etc.

Research goals include exploring new dietary strategies to reduce or prevent nonalcoholic fatty liver disease and advance the science directed toward reducing, eliminating, or preventing health disparities; and b) accelerate the discovery of new interventions and expand/adapt exiting interventions for reducing, eliminating or preventing health disparities among different populations.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2012	14.2	0.0	13.0	0.0
2013	14.2	0.0	13.0	0.0
2014	14.2	0.0	13.0	0.0
2015	14.2	0.0	13.0	0.0
2016	14.2	0.0	13.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Home visits, individual and family consultations, demonstrations, summer youth activities, workshops, newsletters and training sessions for other organizations and agencies.

Basic and applied research studies.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Education Class ● Workshop ● Group Discussion ● Demonstrations ● Other 1 (home visits) 	<ul style="list-style-type: none"> ● Newsletters

3. Description of targeted audience

Limited resource families and youth; agency personnel, teachers, food service staff, camp personnel
Health personnel, researchers, policy makers, advocacy groups

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Face to face general group education sessions (workshops, etc)
 - New or updated web page(s)
 - Individual consultations (in person, e-mail, etc.)
 - Training Conferences or sessions hosted or conducted
 - Fact sheets, bulletins and newsletters written or edited.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Increased understanding (%) of the principles of good nutrition for families and children.
2	Increased use (%)of fruits and vegetables.
3	Decreased consumption (%) of high sugar foods.
4	Decreased consumption (%) of high fat foods.
5	Increased understanding of basic metabolic processes related to obesity, weight and health. (new research findings)

Outcome # 1

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2012:35 2013:35 2014:35 2015:35 2016:35

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Increased use (%)of fruits and vegetables.

2. Outcome Type : Change in Action Outcome Measure

2012:35 2013:35 2014:35 2015:35 2016:35

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Decreased consumption (%) of high sugar foods.

2. Outcome Type : Change in Action Outcome Measure

2012:35 2013:35 2014:35 2015:35 2016:35

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Decreased consumption (%) of high fat foods.

2. Outcome Type : Change in Action Outcome Measure

2012:25 2013:25 2014:25 2015:25 2016:25

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2012:4

2013:4

2014:4

2015:4

2016:4

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

As with other programs, the economy is a significant factor in childhood obesity. Reduced food assistance programs, cultural food differences, and access to affordable, nutritious foods are also factors in achieving the ultimate goal of appropriate weight, healthy children. Many cities do not have what many think of as a typical part of their community - a chain supermarket. Also, city residents often lack access to transportation to make shopping convenient.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Global Food Security and Hunger

2. Brief summary about Planned Program

Food Security takes several forms: 1) human food security - the access to appropriate quality and quantity food for optimal human health, particularly children. 2) local and regional agricultural production, both plant and animal; and 3) new developments in the science of agricultural production, both plant and animal.

Animal production issues and priorities center on efficiency, management, and technology.

Research efforts will be designed to improve understanding in a variety of areas, including reproductive physiology and animal biotechnology, production of transgenic rabbits, pigs and cattle to serve as bioreactors or for xenotransplantation, improve cloning techniques, develop feeding systems that optimize the use of dietary energy and proteins for growth and milk production, evaluate the performance of antibiotic residue screening tests for the detection of antibiotic residues in milk, and develop environmental and technical assessments of alternative methods to cultivate bivalve shellfish.

Diagnostic programs will screen and track various causes of mortality and illness across various food sources, particularly poultry. Results will be used to expand existing prevention efforts or to develop new prevention strategies.

Extension programs will be designed to achieve a variety of objectives, including the adoption of new technology associated with livestock production, shellfish industry implementation of ecologically-sound and economically-viable based production practices, and increased awareness by small poultry flock owners about proper management and health care of their poultry.

Extension will also undertake an Assessment of Community Food Security in Connecticut to update a 2005 report that has provided data for public policy decisions. New data to be added includes income inequality, obesity and food access. This effort will be done in collaboration with the Connecticut Food Policy Council and the Zwick Center for Food and Resource Policy.

Extension programs will focus on improving health of targeted populations through a variety of efforts, focusing on healthy school nutrition environment, developing healthy meal planning skills which will improve the overall food security of families. Consumers will learn and adopt better food management practices. Research will be directed at improving human health through a variety of activities, including identifying bioactive components of natural and processed foods, determining the impacts of dietary and lifestyle factors on cardiovascular diseases, effect of marine oils and omega-fatty acids on infant development, and understanding how cells handle microelements such as zinc and the nature of the effects of their deficiencies and excesses.

Continued work on obtaining USDA approved slaughter facilities throughout the state will enable local producers of meat and poultry to expand their markets, as provide locally grown protein sources throughout the state at more reasonable cost.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		20%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		20%	
204	Plant Product Quality and Utility (Preharvest)	0%		10%	
205	Plant Management Systems	15%		10%	
304	Animal Genome	0%		15%	
307	Animal Management Systems	15%		5%	
308	Improved Animal Products (Before Harvest)	5%		0%	
315	Animal Welfare/Well-Being and Protection	5%		0%	
601	Economics of Agricultural Production and Farm Management	20%		10%	
602	Business Management, Finance, and Taxation	10%		0%	
704	Nutrition and Hunger in the Population	30%		10%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Food Security is when all people at all times have physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life. Food Insecurity is the lack of assured access at all times to enough food for healthy, active lives. Hunger is the mental and physical condition that comes from not eating enough food due to insufficient economic, family or community resources.

- Hunger exists throughout Connecticut, in our cities, suburbs and rural communities.

- In Connecticut, 8.8% (122,000) of households, many of them with children, are food insecure (based on latest USDA figures).

- 45,000 (3.2%) people in Connecticut suffer from very low food insecurity at some point during the year (based on latest USDA figures)

- One out of five children, 102,000 youngsters, under the age of twelve, are hungry, or at risk of hunger.
- Connecticut Food Bank and Foodshare, the state's two food banks, provide food for over 350,000 different people annually.
- Working people make up 25% of those using emergency feeding programs (meal site or food pantry).
- Over 212,000 people in Connecticut participate in the Food Stamp Program (based on latest USDA figures).

On the food production side, farms continue to disappear to development. The average age of farmers in Connecticut is over 55 years. While Connecticut agriculture is diverse, it is challenged by the high cost of land, local regulations (there is no county government in Connecticut)

Improvement of the economic viability and profitability of Connecticut agricultural and associated enterprises is an important issue facing the State's agricultural producers who struggle in an urban state. On the natural resources and environmental front, conflicts between environment and development are becoming more challenging. Research will be designed to improve the viability of the food and fiber sectors and protect and enhance the environment in the state, nation and world through work in three sectors: food marketing, environmental and resource economics, and international agricultural development and trade. Extension work will help maintain the rural character of Connecticut's countryside, facilitate the growth and expansion of the food industry within the state, and help conserve the natural resources of Connecticut. At the same time, increased efforts will be made to increase the viability and capacity of beginning and small specialty food producers.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

There is no "official" definition of community food security. In the broadest terms, community food security supports the development and enhancement of sustainable, community-based strategies to improve access of low-income households to healthful nutritious food, to increase the self-reliance of communities in providing for their own food needs and to promote comprehensive responses to local food, farm and nutrition issues.

Policies and programs that fall under the umbrella of community food security address a diverse range of issues, including:

- Food availability and affordability
- Ecologically sustainable agriculture
- Direct food marketing production
- Diet-related health problems

- Farmland preservation
- Participation in and access to federal nutrition assistance programs
- Economic viability of rural communities
- Community development
- Economic opportunity and job security cohesion

Studies have shown that towns that have greater transportation access tend to rank higher overall in terms of food security. Furthermore, towns that have greater transportation challenges are characterized by lower incomes, weaker household structures, higher public food assistance participation, nearer proximity to a food stamp office and WIC office, and more food retail options. This suggests that demand for public transportation, unsurprisingly, is greater in communities with a high number of households without a car. The economy is the primary factor in food security/insecurity.

Thus, while Extension and research program can contribute to consumers and others gaining improved knowledge of nutrition, food purchasing, storage and preparation, the underlying issues of poverty, the economy, etc. may make implementation a challenge. Extension participation in state and local coalitions may help bring about more systemic change by identifying barriers and potential solutions.

The increased emphasis on local food is encouraging agricultural production of direct market crops, as well as increasing direct marketing through farmers markets and community supported agriculture, with the former expanding into low income areas of cities. This may be a win-win opportunity for inner city families as well as farmers.

The availability of new scientific techniques combined with improved efforts to conduct diet interventions provides the opportunity to better define the affect of routine aerobic exercise on nutrient needs. In particular, the ability to correctly balance calorie intake with energy expenditure for optimal use of dietary protein is important to long term health and weight maintenance. Improved diets can contribute to food security by providing more nutrition for dollars expended.

2. Ultimate goal(s) of this Program

The ultimate goal is the reduction or elimination of food insecurity in Connecticut. Short term and intermediate goals are improved understanding of nutrition for health; proper purchasing, storage and preparation of food; increased production of nutritious crops, marketed locally; a viable agriculture system in an urban state - that is one in which farmers make a good living/have a good quality of life while supplying an increasing percentage of the state's food needs. Increased access to locally grown food is also a goal.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2012	13.0	0.0	29.3	0.0
2013	13.0	0.0	29.3	0.0
2014	13.0	0.0	29.3	0.0
2015	13.0	0.0	29.3	0.0

Year	Extension		Research	
	1862	1890	1862	1890
2016	13.0	0.0	29.3	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Biotechnology research currently is focused to understand micropropagation, somaclonal variation, somatic embryogenesis, anther culture, botanical substance production, meristem culture for pathogen elimination, plant nutritional analysis, germplasm preservation, morphogenesis, cytogenetics, and gene transfer. Other research projects include risk assessment techniques to predict the impact of GM crops on the environment and understand biochemical and physiological roles in controlling plant growth and development; better understand molecular approaches for purpose of developing new and improved crops with focus on plant growth and development under normal and stress conditions. Development of agriculturally-relevant crops with enhanced drought resistance and nutrient uptake capacities are being studied.

Extension will partner with other agencies and organizations to reach farmers and producers with farm management strategies, particularly business practices, marketing and production strategies, through workshops and individual consultations. Outcomes of research efforts will be made available to producers through conferences, educational displays, web pages and webinars.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Workshop ● One-on-One Intervention ● Demonstrations 	<ul style="list-style-type: none"> ● Newsletters ● Web sites other than eXtension

3. Description of targeted audience

Producers, researchers, consumers, agencies and organizations dealing with the food supply.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Face to face general group education sessions (workshops, etc.)
- New or updated web page(s)
- Individual consultations (in person, via e-mail, etc.)
- Training conferences or sessions hosted or conducted.
- Fact sheets, bulletins and newsletters written or edited.

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Increased adoption (%) of recommended BMP by growers or producers.
2	New understanding of animal growth processes developed.
3	Increased understanding (%) of food management practices by consumers.
4	Adoption of recommended food management practices by consumers.

Outcome # 1

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2012:35 2013:35 2014:35 2015:35 2016:25

3. Associated Knowledge Area(s)

- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 315 - Animal Welfare/Well-Being and Protection
- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

New understanding of animal growth processes developed.

2. Outcome Type : Change in Knowledge Outcome Measure

2012:2 2013:2 2014:2 2015:2 2016:2

3. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 304 - Animal Genome

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2012:35	2013:35	2014:35	2015:35	2016:25
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3. Associated Knowledge Area(s)

- 704 - Nutrition and Hunger in the Population

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Adoption of recommended food management practices by consumers.

2. Outcome Type : Change in Action Outcome Measure

2012:35	2013:35	2014:35	2015:35	2016:30
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3. Associated Knowledge Area(s)

- 704 - Nutrition and Hunger in the Population

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

The economy continues to be the driving force in agriculture. High fuel prices will be a significant factor going forward. Market forces, an aging population of producers, high land and other costs, and

pressure from development are likely to continue to cause loss of farms. Weather challenges (wet spring, higher heat and drier summers), along with wind and hail, have plagued farmers in the past several years. Heavier than normal snowfalls that uncharacteristically accumulated caused the collapse of many farm buildings, creating further expenses.

Access to labor is becoming a problem, as few Connecticut residents appear interested in farm work, while foreign labor is more difficult to get into the U.S. [Foreign labor is not the typical migrant labor pool, moving from crop to crop; rather it is the same workers returning to one farm for a particular growing season each year and then returning home. The tree fruit, and market vegetable farms rely on this labor source.)

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Post workshop and training conference evaluations will be used to track knowledge change, and future action plans. Increased use of web based surveys as follow-up will be used to document actual adoption of recommended practices. However, response rates may be affected by computer literacy of producers; while it is increasing, there are still people who are very resistant to computer use.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Family Youth and Communities

2. Brief summary about Planned Program

Caring adults play an essential role in the healthy development of youth. Adult involvement in an informal educational program, with a variety of subjects, provides youths with challenges, experiences, support and help which foster positive attitudes toward their futures and provide them with coping skills to be successful in today's world.

Extension will focus its efforts on helping create a Connecticut where children, young people and their families will be safe, healthy, educated, socially and culturally aware and leading productive lives in their communities. 4-H members will achieve these goals through participation in a wide range of program areas grouped in nine major emphasis areas (citizenship and civic education, communications and expressive arts, consumer and family sciences, environmental education and earth sciences, healthy lifestyle education/personal development, leadership, plant science and animal science, science and technology and workforce preparation).

Making financial decisions grows increasingly complex in an unstable economy. People with low incomes and others facing financial challenges will become productive members of society by developing or improving their life skills. As part of a train the trainer program, People Empowering People, community residents will develop leadership skills and the capacity to improve their communities through community projects.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

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

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Research has shown that caring adults play an essential role in the healthy development of youth. Older youth need to take an active part in the planning, implementation and evaluation of the program in which they participate. Involvement in an informal educational program, with a variety of subjects, provides youths with challenges, experiences, support and help that fosters positive attitudes toward their futures and provide them with coping skills to be successful in today's world. Data suggests that healthy and productive citizens need to be skillful in interpersonal communication skills and confident in their ability to express themselves with people from diverse and divergent backgrounds. Making financial decisions grows increasingly complex. Each year an increasing number of products, services, features and options are marketed to consumers. Surveys suggest that 56% of parents believe high school graduates are totally unprepared to manage their personal finances responsibly. Only 15 % of high school graduates nationally have taken a course covering personal finance basics. There is a trend toward consumers bearing greater financial responsibility for their health care insurance and planning for their retirement and debate concerning the future funding for Social Security and Medicare are increasing apparent in the national news. Community residents need to take more responsibility for quality of life issues in their neighborhoods and communities in the absence of tax funded efforts.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

All youth need support and positive experiences to grow to their fullest capacity and to become productive adult citizens. Connecticut 4-H plays a significant role in making this vision a reality. The critical elements in a 4-H experience are a positive relationship with a caring adult, a safe environment, an inclusive environment, engagement in learning, opportunity for mastery, opportunity to see oneself as an

active participant in the future, opportunity for self-determination, and opportunity to value and practice service for others.

Helping young adults learn to effectively manage their resources is important as they try to balance responsibilities as parents and workers and also as students. Involvement in a program of leadership education fosters important skills, knowledge and confidence necessary for success in school, work and communities. Learning how to be an educated and experienced leader will help youth make the best decisions for themselves and others and will prepare them for the adult roles they will assume in the home, community, workplace, state, and nation.

People with low incomes and others facing financial challenges often feel depressed and powerless about their situation. To become productive members of society, it is likely that they will need to make changes and develop or improve their life skills. While the current state of the economy creates extreme challenges for many, learning financial management skills and strategies may enable some individuals to become more active in managing their resources.

Involvement in an informal program of citizenship education provides youth with challenges, experiences, support and help which foster a positive attitude toward current and future citizen and community responsibilities. Involvement in workforce preparation projects provide youth with challenges, experiences, support and help that promotes positive and realistic outlooks on the world of work. It also fosters the development of skills recognized as critical for entrance into the workforce. Teens can and want to make a difference in their communities. 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.

2. Ultimate goal(s) of this Program

The major goal: a Connecticut where all children, young people and their families will be safe, healthy, educated, socially and culturally aware and leading productive lives in their communities. 4-H members will achieve these goals through participation in a wide range of projects grouped in nine major emphasis areas (citizenship and civic education, communications and expressive arts, consumer and family sciences, environmental education and earth sciences, healthy lifestyle education/personal development, leadership, plant science and animal science, science and technology and workforce preparation).

A targeted goal: at-risk youth to benefit from safe and structured places designed to strengthen participation in enrichment activities and attention to homework.

A related goal: improved capacity of volunteers as members of community and neighborhood groups to address local needs, particularly those of youth.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2012	33.8	0.0	1.0	0.0
2013	33.8	0.0	1.0	0.0

Year	Extension		Research	
	1862	1890	1862	1890
2014	33.8	0.0	1.0	0.0
2015	30.0	0.0	1.0	0.0
2016	30.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

In addition to Extension volunteer training programs, youth will be involved in 4-H youth development in a variety of ways, using current, research-based curricula.

- The club program - usually a long term commitment between adult volunteers and youth. The model of a youth working with an adult mentor over time is a proven methodology for making a significant impact on that young person's life.

- Independent membership - youth working with adult guidance
- Youth/adult partnerships, youth mentoring
- Workshops, project days, or short term programs that emphasize specific skill development.
- School-enrichment programs
- After-school programs
- Youth employment programs
- Camps
- 4-H science-based programs offered at the 4-H Center at Auer Farm
- Web-based educational resources/training programs

Family financial management programs, peer-learning programs for community development, and related health programs will be offered in selected areas based on availability of faculty/staff.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> • Education Class • Workshop • Group Discussion • One-on-One Intervention 	<ul style="list-style-type: none"> • Public Service Announcement • Newsletters • Web sites other than eXtension

3. Description of targeted audience

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

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
 - Number of patents submitted
 - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- New or updated webpage(s).
 - Volunteer training conferences or sessions hosted or conducted.
 - Fact sheets, bulletins and newsletters written or edited
 - After-school programs [sites] conducted or organized.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

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

Outcome # 1

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2012:15 2013:15 2014:10 2015:12 2016:10

3. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2012:1150 2013:1500 2014:1800 2015:1900 2016:1500

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2012:575 2013:625 2014:725 2015:725 2016:725

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2012:20 2013:20 2014:20 2015:20 2016:20

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2012:8 2013:8 2014:8 2015:8 2016:8

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2012:300

2013:350

2014:400

2015:400

2016:400

3. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Appropriations changes
- Competing Programmatic Challenges

Description

Reduced funding may affect ability to offer programs consistently throughout the state. Inability to replace staff who retire continues impact program availability. Need for family members to work or hold more than one job impacts number of volunteers. Cost of fuel for consumers to participate in face to face meetings may result in more web-based learning strategies.

Youth have many opportunities for non-school activities that may compete with traditional 4-H activities. After school programs may be challenged by reduced local school budgets which reduce school staff and availability of school facilities after school hours.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Multiple approaches will be used to increase the evaluation of youth participation and leadership in the 4-H program. Analysis of submitted project records, pre and post assessments, self evaluation and observation techniques will be used to document outcomes.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Sustainable Energy

2. Brief summary about Planned Program

Energy programs in Connecticut take two forms: first, educational programs stressing conservation and efficient use of energy in agriculture as part of farm and risk management and in homes as a component of family financial management; second, an emerging energy research program focusing on bio-resources and their potential to produce energy locally.

Connecticut is one of the states with the highest cost of fuel, due in part to the lack of naturally occurring fuel sources. With the continual increase in fuel costs, both agricultural producers and families are struggling with to pay fuel bills for home and farm heating, vehicles and other equipment.

As part of many agricultural education programs, attention is directed to state and federal programs which offer support for both energy conservation and increasing energy efficiency, etc.

A modest bio-energy development program is underway. One project is exploring How to "reduce root suckering of transgenic poplar". Poplar is one of the most important forest, bio-energy and pulping crops in the U.S. and in the world. Transgenic technology offers a powerful tool to improve productivity and quality of poplar trees. However, root suckering is very common in poplar and extremely difficult to manage. Poplar suckers help spread transgenes and transgenic plants, contributing to the invasiveness of some poplar species. This creates environmental concerns. The research effort is directed to find a molecular

tool to suppress root sucker development and evaluate its effectiveness in poplars.

A second project is studying the "benefits and costs of natural resource policies affecting public and private lands". Through the development of a conceptual framework and computer models, it is proposed to analyze data relating to agricultural land preservation and open space, with a specific focus on multi-purpose dams, which protect against uncertain floods. Such floods are an increasing concern, due to shifts in weather patterns. Dams help prevent excessive damage to various forms of life, infrastructure and other property. Further concerns include competing uses such as irrigation and power generation.

Another project is looking at the genetic improvement of woody plants which may provide a tool to reduce production costs of bio-fuels and bioproducts from wood biomass. The emphasis is on the development of new technologies that may be useful in the genetic improvement of wood biomass material, with the specific objective of the development and application of innovative structural biomaterials from wood, lignocellulose and hybrid materials.

Related efforts include creating a comprehensive inventory of potential biomass feedstocks in CT, develop industry-scale processing technologie and co-generation for CT biofuels and carry out an economic impact analysis of adopting these technologie in CT and the Northeast.

3. Program existence : New (One year or less)

4. Program duration : Medium Term (One to five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
123	Management and Sustainability of Forest Resources	35%		25%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		25%	
511	New and Improved Non-Food Products and Processes	10%		25%	
601	Economics of Agricultural Production and Farm Management	27%		0%	
605	Natural Resource and Environmental Economics	25%		25%	
801	Individual and Family Resource Management	3%		0%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Connecticut is at the end the of the energy 'pipeline', as virtually all of its energy must be imported. Energy costs are among the highest in the U.S. Connecticut has no indigenous fuel sources and no legacies of large federal energy projects such as TVA in the south and large dams in the West. Strict air quality standards, high costs for construction, land, labor and taxes impact the development and implementation of new energy projects. A major explosion at an energy facility under construction (gas) has made residents very wary of locating such facilities in many communities.

The primary focus of the Connecticut Energy Efficiency Fund continues to be reducing air pollution and improving air quality in the Northeast. The generation of electricity from non-renewable fossil fuels (e.g., coal and oil) is the single largest source of carbon dioxide emissions in the United States. Reducing the amount of energy used by businesses, homes and schools results in less plant operation time and significantly lowers the emissions of carbon dioxide, nitrous and sulfur oxides--which are associated with environmental issues such as ozone, climate change, public health problems, acid rain, and smog. However, legislation has already been put in place to reduce these effects.

On June 2, 2008, Governor M. Jodi Rell signed "An Act Concerning Global Warming Solutions," 2 into law. The law established a statewide greenhouse gas emissions reduction target of 10 percent below 1990 levels by 2020. Investing in energy efficiency programs also helps to reduce the need for power generation, especially during times of peak demand. This helps Connecticut energy generation owners avoid having to purchase tens of millions of dollars in pollution control equipment. While this abatement equipment does reduce emissions, it does not eliminate them completely, and in fact, decreases the

overall efficiency of power plants, resulting in the emission of more air pollutants.

The Energy Efficiency Fund's programs play an integral part in helping reduce greenhouse gas and air pollutant emissions in Connecticut and the surrounding region. In 2010, program activities resulted in significant environmental benefits, which are all part of the push for greater sustainability across the state.

A comprehensive residential energy conservation program, also a part of the Energy Efficiency Fund, is addressing the needs of homeowners to reduce electric usage through energy conservation measures, as well as reduce the cost of energy in tight economic times.

However, alternatives to fossil fuels have not received as much attention. Undertaking exploration of alternative fuel sources, such as biomass, is an important priority for both for economic and environmental reasons. The College of Agriculture and Natural Resources is uniquely positioned to address this.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

The current increasing high cost of fuel is impacting all aspects of life in Connecticut. Energy topics will be a part of most agricultural extension programs, as farmers, other agricultural producers and seafood producers seek ways to reduce energy costs.

At the same time, increasing the small number of faculty and staff in sustainable energy is not immediately likely, due to severe constraints on the state budget. Collaborations with other agencies, organizations and utility companies will be increased.

External funding will be sought to expand both extension and research efforts.

The aim of the program will be two fold: to enable both consumers and producers to manage energy resources wisely, and to develop more sustainable sources of energy such as bio-mass and solar.

2. Ultimate goal(s) of this Program

The ultimate goal of the program is for both consumers and producers to manage their energy resources wisely and sustainably, and to be able to evaluate options and make decisions for alternative energy based on sound evidence. (wind, solar, bio-mass, alternative electric suppliers, etc.

Also, to assess options for local sources of fuel, such as bio-mass and explore the economic viability and impact of biomass.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2012	2.0	0.0	3.0	0.0
2013	2.0	0.0	3.0	0.0
2014	3.0	0.0	3.0	0.0
2015	3.0	0.0	4.0	0.0
2016	4.0	0.0	4.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct field trials
- Conduct economic analysis
- Conduct basic research
- Incorporate energy management, conservation, etc. into Extension programs
- Update webpages

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> • Workshop 	<ul style="list-style-type: none"> • Web sites other than eXtension

3. Description of targeted audience

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

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
 - Number of patents submitted
 - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- New and updated websites
 - Fact sheets, bulletins and newsletters written or edited.
 - Training conferences or sessions hosted or conducted.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

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

Outcome # 1

1. Outcome Target

Increased adoption of BMP (%) by consumers

2. Outcome Type : Change in Action Outcome Measure

2012:10 2013:15 2014:20 2015:20 2016:15

3. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2012:15 2013:20 2014:25 2015:20 2016:15

3. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

New biomass models developed.

2. Outcome Type : Change in Knowledge Outcome Measure

2012:2

2013:3

2014:2

2015:1

2016:1

3. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 511 - New and Improved Non-Food Products and Processes

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

The economy is the driving force in terms of sustainable energy. Funding for research into alternative energy sources is scarce, as is funding for faculty positions.

The economics of being able to change for farmers is also a factor - it costs money to shift energy sources. Available credit for loans for changes is also problematic. The increasing age of farmers is also a factor.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Post session surveys and web-based feedback.