2017 University of Connecticut - Storrs Research and Extension and Connecticut Agricultural Experiment Station - Research Combined Plan of Work

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I. Plan Overview

1. Brief Summary about Plan Of Work

The fiscal year 2017 Plan of Work submitted by the state of Connecticut is a joint effort between the Connecticut Agricultural Experiment Station (CAES) and the University of Connecticut Storrs Agricultural Experiment Station and Cooperative Extension System (UConn). The plan describes six program areas. Four of these program areas are joint undertakings by CAES and UConn, including food safety, food security and food systems, human and animal health, and sustainable environments. UConn will conduct the remaining two programs: 4-H/Youth development, and Community and economic development. CAES and UConn have developed separate processes for Merit Review, Stakeholder Input, Evaluation of Multi-state and Joint activities, and for meeting the needs of underserved audiences across the state. While these efforts are reported separately, they are often coordinated at the program level. FY 2017 represents the third year of a five-year planning cycle. To that end, we are staying the course on changes that we made during the first year of this joint planning cycle. We will continue to update and improve our joint plan as this process evolves.

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

Year	Extension		Research	
	1862	1890	1862	1890
2017	62.0	null	90.0	null
2018	62.0	null	90.0	null
2019	62.0	null	90.0	null
2020	62.0	0.0	90.0	0.0
2021	62.0	0.0	90.0	0.0

II. Merit Review Process

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

- Internal University Panel
- External University Panel
- External Non-University Panel

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

2. Brief Explanation

CAES

An external review process with one non-CAES reviewer will be used. Proposals and experimental results will be evaluated against the NSF criteria of merit and peer-review by appropriately qualified persons. Research priorities continue to be based on stakeholder input and state needs. Proposed research will be of relevance sufficient for CAES management to make an informed decision on the appropriateness for federal and state support. Project proposals will be prepared after consultation with the appropriate Department Head and will be independently reviewed by qualified CAES and non-CAES scientists. Final approval by the Director occurs prior to submission. All scientific staff have received training on scientific integrity and these standards shall be applied to the review process. The merit of the proposed work will be evaluated internally to ensure that the planned research addresses established priorities, meets state and USDA program criteria and goals, is consistent with stakeholders' needs, and has a reasonable likelihood of success with measurable outputs. Scientific peer review of research proposals focuses on the suitability and validity of methods, originality of the topic area, and value of the work to the scientific community and public. CAES scientists are expected to publish findings in peer-reviewed journals. Significant effort will be made to convey information to the general public through non-technical reports, bulletins, fact sheets, pest management guides, and the CAES Record of the Year; all of which will be made available on the CAES website. At the discretion of the Director, project findings may be disseminated by press release or through social media.

UConn

Extension program merit review 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 peer institutions, and a review by stakeholders. The Dean of the College has identified an Advisory Board of stakeholders who provide input and direction for programs.

The Peer Review process for Formula Fund projects is designed to ensure that quality research projects are consistent with identified priorities. Project reviews involve other scientists, and/or administrators within UConn, and/or external University scientists. The peer review process provides principal investigators with additional counsel on research direction and implementation. Department Heads approve the proposals for submission. The Director or Associate Director oversees the peer review process, suggests qualified reviewers and ultimately approves projects once they have been peer reviewed.

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?

CAES

There are currently 18 Hatch, 6 Multi-state and 6 McIntire-Stennis projects active at CAES. In addition, there is 1 new McIntire-Stennis project submitted to USDA for review and approval. There are extensive external and internal linkages to other state and federal projects, such as the National Plant Diagnostic Network (NPDN) and the US FDA Food Emergency Response Network (FERN). Stakeholders continue to identify the following issues of concern: (1) development of IPM programs; (2) effective control of insect and plant pathogens; (3) development of specialty crops; (4) more efficient detection of human pathogens transmitted by ticks and mosquitoes; (5) food safety; (6) mitigation of pollution problems; and (7) expanded outreach programs. In some instances, solutions can be found quickly, such as controlling insect and plant pathogens but most problem areas are complex and require long-term research efforts. The multi-state and integrated programs offer many advantages and enhance efforts to achieve program goals. Scientists across multiple disciplines will work together in designing experiments, collecting data and evaluating findings. Equipment and resources will be pooled across the multi-state participants, experiments will be conducted in different settings, and key reagents/consumables will be shared. This regional or national approach optimizes the unique expertise of participants and efficiently addresses the issues of strategic importance among the programs. The extension and outreach component with Cornell, UConn, and other universities will be used to transfer information to stakeholders. The analysis of food and consumer products for unwanted chemicals is an example of how the food safety program will be pursued using both state and federal resources. The Department of Analytical Chemistry receives samples of food and consumer products from other state agencies for analysis and also receives samples as a part of FDA FERN. CAES scientists will also collaborate with the Federal Bureau of Investigation (FBI) Weapons of Mass Destruction Directorate (WMDD), the 14th Civil Support Team of the CT National Guard, and colleagues in other states.

UConn

Our six planned programs will address the critical issues of strategic importance to the state, including those identified by stakeholders and faculty and field educator teams working together around these six theme areas. For 2017, Extension teams will focus on implementing activities and programs based on team business plan goals developed in 2014, using a logic model framework. These business plans will continue to be used to guide activities and programs that address critical issues and needs facing local, regional, state and national citizens and communities. Teams update business plans as goals, priorities, and external factors change.

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

CAES

Our broad-based research initiatives will benefit all stakeholders by having (1) reduced pesticide use; (2) healthy plants and forests; (3) locally grown produce; (4) a decrease in human and animal disease; (5) safer foods and (6) by having decreased environmental pollution due to engineered nanomaterials, indoor mold and invasive plants. There are specific research initiatives planned to engage under-served and under-represented groups in the state, such as our New Crops Program, where Hispanic and Asian populations continue to interact directly with staff scientists with regard to crops investigated. Direct assistance on

forest management practices will be offered to Native American tribes. CAES has a strong outreach program that transfers results and services to under-served groups. This is being accomplished by distributing written information in Spanish and Chinese and by educating teachers and students that tour CAES facilities. Minority applicants and women are actively sought for all positions, including Postdoctoral Research Scientist and durational positions. The latter are located by advertising in newspapers, contacting school officials, and meeting students at local science fairs. Efforts will continue to be made to have a Spanish-speaking scientist assist stakeholders who wish to obtain arborist certification. Two other Spanish-speaking Postdoctoral Research Scientists are available for assistance at the Insect or Plant Inquiry Office. Select results from multi-state and integrated programs, such as a fact sheet on boxwood blight, are printed in Spanish and a fact sheet on bed bugs has been written in Spanish, French, and Chinese. CAES staff will cooperate with school officials and teachers statewide and will participate in Farm/City Week so as to encourage children to learn about scientific research. Other children and teachers attend an annual Station open house in August to meet scientists and learn about research findings. Last, tens of thousands of pounds of harvested produce will be donated to charities and food banks.

UConn

Our planned programs will address the needs of under-served and under-represented populations, including lower income residents, by incorporating all of our citizens' needs, interests and concerns at the program planning and development levels. Our activities and programs will be located in the communities where vulnerable populations live, work and attend school. Some of our planned programs include nutrition education programs for lower income residents, minority youth and adult parenting and child care educational programs, and risk management education programs for limited resource agricultural producers. Programs and materials, including fact sheets, in several areas are offered in English and Spanish. 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?

CAES

CAES scientists will collaborate with domestic and international university colleagues, as well as state and federal agencies, to enhance research expertise and support, disseminate information, or take actions based on findings and stakeholder needs. Extension occurs indirectly through interactions with the UConn, Univ. of MA, and Cornell Univ. One mandated statutory function is to disseminate IPM research results to Cooperative Extension at UConn. CAES diagnostic services assist UConn and are linked to Cornell Univ. and other institutions through the National Plant Diagnostic Network. Multi-state, integrated programs will: (1) promote economic benefits for stakeholders, (2) educate stakeholders on IPM, and (3) inform residents about human diseases associated with ticks and mosquitoes and help to mitigate risk. The development and implementation of more efficient farming practices is a high priority within several projects. For example, the implementation of pest monitoring systems and effective use of biological controls within nurseries will reduce expenditures on chemicals, decrease pesticide exposure, and reduce contaminant leaching into watersheds. Similarly, new cultural, biological, and other management options for insect pests will reduce economic and environmental costs from pesticide use. Ongoing research will identify more efficient strategies of nutrient use in greenhouses and in the field and will highlight new specialty crops that will increase profits for growers. Outreach efforts will target under-served and under-represented groups and will provide quality food of interest to stakeholders. Our human and animal health planned program will monitor changes in virus infection rates in mosquitoes and other vectors, develop sensitive molecular-based diagnostic assays, and will identify pesticide-free methods for reducing tick populations. Long-term experiments will be conducted to reduce ticks by minimizing deer populations. Novel platforms for bed bug detection in dwellings will

continue to be developed. The expected outcomes from CAES programs will be improved higher yielding crop systems, reduced grower costs, and more healthy human and animal populations.

UConn

Extension teams' logic model business plans will be used to guide the development of our planned programs impact statements. Teams will submit yearly impact reports highlighting the outputs achieved, outcomes recorded through program evaluations and observations, and the progress made to achieve the desired impacts as defined in their business plans. Research faculty will document the progress of their formula-funded projects through REEport progress reports and results will be collated by planned program. These reports will also be used to review expected outcomes and impacts with actual results of our programs and research projects, and provide guidance to achieve the desired impacts by planned program over the next 5 years.

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

CAES

The multi-state and integrated programs have interdependency and will improve program effectiveness and efficiency. Declining resources and rising research costs present significant challenges for scientists to achieve goals without collaborators and additional federal grant funding. Multi-state projects can leverage other grant funds to enhance resources. Collaborating scientists, who also have extension appointments at Cornell, the University of MA, or UConn, offer additional expertise and improve program success by disseminating findings to a broader base of stakeholders. As examples of how multi-state projects improve program effectiveness, we highlight the following CAES projects: 1) NE1020, which focuses on a multi-state evaluation of grape cultivars and clones; 2) NE1335, which focused on resource management in commercial greenhouse production; 3) NE1040, which focuses on plant-parasitic nematode management as a component of sustainable soil health in horticultural and field crop production systems, 4) NE1443, which focuses on the management of emerging vector-borne zoonotic diseases in the US, 5) NC1173, which addresses honeybee health, and 6) NE1333, which focuses on chestnut trees. Separate competitive funding will be sought by CAES scientists to provide additional support and to improve effectiveness across all programs.

UConn

Our six planned program teams of campus faculty and field educators will develop a strong program evaluation component into their business-planning model. All business plans are required to develop an evaluation strategy. We are in the process of hiring an Evaluation Specialist who will start in May of 2016. This position will assist with carrying out the evaluation strategy to improve program effectiveness and efficiency. In addition, we will strengthen our connections to key stakeholders and critical audiences to assist with continually improving our programs.

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
- Targeted invitation to non-traditional stakeholder individuals

- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals
- Survey of selected individuals from the general public

Brief explanation.

CAES

Public participation is encouraged by inviting stakeholders to attend our annual open house and to tour CAES facilities in order to meet staff, see experimental plots, and gain knowledge on research findings. Scientists receive stakeholder input at public meetings, oral presentations to citizens' groups, through the use of traditional and social media to disseminate results, by responding to public inquiries, and by serving on stakeholder advisory boards. Following public presentations, question and answer periods are useful for receiving input. More than 20,000 stakeholders benefit directly from CAES programs each year; submitted stakeholder comments can be used to adjust research priorities. Agricultural, public health, and environmental problems generate significant stakeholder interest and enthusiastic public participation. Local health departments work with CAES staff to develop pest control platforms. Nursery growers donate plants for studies and are encouraged to closely follow research progress. Efforts will be made to reach under-served and under-represented groups. These actions have stimulated interest among a number of minority groups and have resulted in requests for us to grow specific crops of interest. Tens of thousands of people see CAES exhibits annually at major events, such as the Hartford Flower Show and Eastern States Exposition. Members of the Experiment Station Associates (ESA) will promote CAES activities and will publish a newsletter describing scientific results. This publication will be made available to members of the ESA, state legislators, and the public.

UConn

The college-wide stakeholder input process will continue to include both research and extension. Extension programs across the state are continually soliciting input from stakeholders to ensure relevance. Information gathered during these informal sessions is shared among program leaders to promote stakeholder-focused programming. In 2014, the University of Connecticut released a bold, new Academic Plan. Concurrently, the College of Agriculture, Health and Natural Resources (CAHNR) created an academic plan that cascades from the campus-wide plan. These plans were shared with stakeholder groups to further connect UConn research and Extension programs with the needs of the state. CAHNR has identified a College Advisory Board to provide input on research and Extension programs developed at UConn. This group, consisting of industry leaders, state and federal agency personnel, and non-profit organizations, meets twice per year to review and provide input on research and Extension priorities. Minutes from these meetings are available through the UConn CAHNR web site.

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
- Open Listening Sessions

- Needs Assessments
- Use Surveys

Brief explanation.

CAES

CAES will use several methods to identify and collect input from stakeholders. Stakeholders are individuals that may use agricultural or public health research and benefit from this and other activities, including outreach. CAES staff are available to give presentations to agricultural, environmental and forestry organizations; civic groups; and students at all levels of education. In addition, stakeholders are identified so as to include growers and other groups that visit CAES displays at agricultural fairs and other events, attend public meetings and listening sessions at CAES, and who request information and assistance by phone, written communication, social media, or by visiting Station laboratories and field plots. Google Scholar is used to identify scientists in other institutions that use CAES published findings. Surveys/evaluations at public meetings, workshops, and similar events will be also be used to identify stakeholders and to receive input. CAES is committed to facilitating equality of service and ease of access for all research, service, and outreach activities. Although CAES uses multiple means to reach and identify stakeholders, direct contact is the most effective.

UConn

Individuals who participate in our programs and those with connections in industry groups that we serve; including those from underrepresented and underserved audiences will be used to assist us in identifying stakeholders. We will collect input from our individual and group stakeholders by conducting the following activities. A State Extension Partners Council comprised of representatives of County Extension Councils and other affiliated organizations such as 4-H camp boards, International Foreign Youth Exchange (IFYE), and the CT Master Gardener Association (CMGA) will meet at least twice a year. The Dean's monthly update newsletter, which reports on his conversations with stakeholders and clientele will be sent to all faculty and staff via email, and is posted on the CAHNR website. We will use online tools to solicit input from potential and current clientele and stakeholders. The Dean and College leadership meet regularly with representatives of 30 organizations, agencies and other 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 selected individuals from the general public

Brief explanation.

CAES

Research objectives are frequently established or adjusted as a direct result of stakeholder interaction. CAES uses a range of methods to receive stakeholder input on programs and research. Stakeholders consist of scientists, elected officials, business owners, administrators, forestry and environmental regulators, landscapers, industry personnel, state and federal workers, students, and consumers of agricultural products. Some stakeholders have opportunities to be directly involved in research activities. For example, growers that implement IPM programs or other cost-effective farming practices are primary beneficiaries and provide direct input to CAES staff. Open house events and meetings on special topics will be held to allow stakeholders to provide input and feedback. Open listening sessions will be held to meet with more specialized groups. Survey or evaluation forms will be used at public meetings, open houses, and at workshops to receive input. These methods have proven to be effective tools for gathering information and input. When scientists attend growers' meetings, they will invite stakeholder input on research programs and on experimental design as appropriate. Six multi-state research projects are designed to investigate a variety of research topics and frequently involve direct stakeholder interaction. Station scientists will also collect stakeholder input by serving as members or officers of board of directors for more than 150 civic and professional organizations. This level of activity will provide additional opportunities for stakeholders to comment on CAES research programs and findings.

UConn

Stakeholders such as vegetable producers and town officials will continue to provide input through end-of-session program evaluations with suggestions for improvements, as well as current and future needs. The CAHNR blog, Naturally@uconn, and social media pages highlight research and extension efforts and is available to the public, with comments solicited. The Sea Grant program will collect input from aquaculture producers and town officials. Meetings with state boards such as the Food Policy Council and Farm Services Agency staff will 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, will provide input on a regular basis. Increased use of the internet, both email, social media, and the web, will provide input from a wide range of current and potential clientele.

3. A statement of how the input will be considered

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

Brief explanation.

CAES

Stakeholder input will help identify immediate problems and align research priorities. For example, experimental design is sometimes revised after receiving feedback from growers on field studies.

Stakeholder attendance and participation in open house events and public meetings is essential to obtain valuable feedback. Judgment on accountability of how well funds are used for research ultimately rests with the stakeholders. Therefore, opinions and perceptions held by these groups will be considered by scientists and administrators in all programs. Once input is received, summaries of the comments will be transferred to the Department Heads and the CAES Director for consideration. The Director will then discuss these comments at monthly Station Council meetings.

UConn

Stakeholder input will be considered when we redesign programs, initiate new programs, as a basis for grant proposals, and as a means for obtaining different perspectives when the College considers restructuring programs.

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Food Safety

2. Brief summary about Planned Program

The Food Safety program is designed to ensure a safe food supply for Connecticut residents and discover new knowledge that will help advance food safety nationally and globally. Research and extension programs will address pre-harvest/slaughter and post-harvest/slaughter food safety at farm, processor, food service and consumer levels. These efforts will include chemical residue analysis of foods, methods for inactivating foodborne pathogenic microbes, probiotic controls of Salmonella, use of risk analysis for improving food safety, mastitis resistance to enhance safety of dairy products, attenuation of antibiotic resistance in foodborne pathogens, Good Agricultural Practices (GAP) training for crop producers, safety management for artisanal cheesemakers, Hazard Analysis Critical Control Points (HACCP) training for meat and seafood producers and handlers, and safe practices for food processing and storage for homeowners.

The Connecticut Agricultural Experiment Station (CAES) analyzes foods and consumer products for adulteration with chemicals and heavy metals, as well as for label compliance. Samples may be submitted from other state agencies and from federal partners, including the Food and Drug Administration (FDA), 14th Civil Support Team of the CT National Guard, and the Federal Bureau of Investigation Weapons of Mass Destruction Directorate. The Station receives funding as part of a cooperative agreement with the US FDA Food Emergency Response Network (FERN). The FERN responds to chemical terrorism or other national emergencies involving the food supply. With additional FDA funding, state surveillance programs that analyze food for pesticide/heavy metal contamination and animal feed for mycotxin levels are being brought under ISO accreditation. Additional research will address the fate and effects of nanoparticles in food crops, including the development of novel techniques for detection. Additionally, honey bees, flowers, nectar, and pollen will be tested for neonicotinoids and other pesticides. Chemists will continue validating new analytical platforms and procedures, such as the use of gas chromatography with triple quadrapole mass spectrometry and liquid chromatography with high resolution tandem mass spectrometry to detect analytes of concern in food and water.

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
306	Environmental Stress in Animals	0%		2%	
307	Animal Management Systems	0%		15%	
502	New and Improved Food Products	0%		16%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	50%		50%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	50%		17%	
	Total	100%		100%	

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

1. Situation and priorities

Stakeholders have highlighted food safety as a high priority area for research. Given recurring instances of contaminated foods, citizens remain concerned about unwanted and potentially dangerous chemical, microbiological and physical adulterants in food, beverages, and consumer products. Research and Extension teams will work independently and through integrated approaches to identify problems/challenges most relevant to the state and region and will work with stakeholders to fully describe and address the current situation. There are perceptions that the consumption of food containing pesticides, toxins or heavy metals can cause illness and that poisons can be deliberately introduced into the food system to cause harm. Consequently, active food surveillance for adulteration, and research programs for developing more sensitive analytical platforms for detection will be pursued at CAES. Faculty researchers at UConn are primarily focused on studies concerned with microbiological food safety hazards and approaches for reducing microbial foodborne illness. The FDA Food Emergency Response Network (FERN) is a state-based laboratory network designed for mutual assistance in the event of national emergencies and allows individual states to participate with federal partners in training exercises focused on incident response and recovery, as well as on technological advances. Rapid response and recovery are critical to preventing illnesses. Staff is well trained; there are extensive collaborations with federal and state laboratories, law enforcement and universities. State-of-the-art equipment provided by the FDA is available for this program, with instruments measuring analytes at the level of parts per trillion. Additional FDA funding is supporting the pursuit of ISO accreditation for human and animal food surveillance programs.

2. Scope of the Program

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

- Integrated Research and Extension
- Multistate Integrated Research and Extension

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

1. Assumptions made for the Program

Statewide, we assume that regulatory, economic, environmental, and social conditions will remain consistent with those of previous years. Teams will evaluate basic assumptions annually to ensure that conditions are within acceptable limits. As a small state, we are constrained by being one-deep in many program areas. Retirements and transfers of our scientists/faculty can create program discontinuities while we attempt to refill those vacancies. At CAES, there are several assumptions that enable anticipation of how the program will proceed. Currently, there is a relatively stable workforce, with 4 years remaining on a 5-year, $1,800,000 grant from US FDA FERN, and 1-year remaining on a 5-year $1,400,000 grant from FDA for accreditation acquisition in the human food surveillance project. FDA officials have also purchased analytical equipment to support the program, have standardized testing procedures among states, and conduct proficiency tests to ensure competence. There are currently sufficient state and federal funds available to perform all of the planned work. Active collaborations with state, federal, and university scientists have strengthened the program. Experienced staff has access to a substantial knowledge base and to the use of precision instruments. It is expected that analyses of foods and beverages will result in the prompt identification of unwanted chemicals and in the recall of tainted or adulterated products from the market. Test results will provide stakeholders with confidence in the integrity of the food production and distribution system.

2. Ultimate goal(s) of this Program

The primary goal of this program is to improve and ensure a safe food supply in Connecticut and across the region. Specific initiatives within the program include active surveillance and analysis to detect adulteration, the development and validation of more sensitive and specific analytical platforms, the investigation of biological and Generally Recognized As Safe (GRAS) chemical interventions for inactivating pathogens, potential use of probiotic cultures for decreasing potential threats from pathogenic microbes and educating people involved with all steps of the food process (i.e., farm-to-fork) on novel and improved approaches for ensuring a safe food supply.

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
2017	2.0	0.0	3.4	0.0
2018	2.0	0.0	3.4	0.0
2019	2.0	0.0	3.4	0.0
2020	2.0	0.0	3.4	0.0

2021	2.0	0.0	3.4	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

We are planning to conduct the following programs/activities in the Food Safety program.

• Validation of more efficient and accurate analytical platforms for detecting chemicals and metals in foods and beverages
• Conduct research with foodborne pathogens and in particular focus on development of tools for minimizing their presence
• Use risk analysis for assessing and communicating food safety risks
• Provide results of survey and research findings to the public through press releases, open house events, displays at agricultural fairs, and social media
• Dissemination of findings to state and federal agencies with regulatory responsibilities (i.e., CT Department of Consumer Protection, CT Department of Environmental Protection, CT Department of Agriculture, CT Department of Public Health, and US FDA)
• Conduct workshops and webinars for food professionals and the public
• Develop YouTube videos, and mobile apps
• Provide training relevant stakeholder audiences
• Provide individual counseling and assessments
• Produce online resource materials such as fact sheets, impact statements and news articles

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations ● Other 1 (Presentation to civic groups) ● Other 2 (Poster presentation of research)	● Newsletters ● TV Media Programs ● Web sites other than eXtension

3. Description of targeted audience

The target audience includes all individuals concerned about the safety and integrity of the food supply. This includes not only producers, processors, distributors, retailers, and consumers but also state and federal public health officials and regulators, law enforcement, educators, and extension specialists. Women, members of minority organizations, and children are examples of under-represented and under-served groups impacted by this program.

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

- Expert services, consultations
- Formal Extension outreach programs
- Face to face general group education sessions/workshops
- Fact sheets, bulletins and newsletters written or edited
- Training of undergraduate and graduate students and post-doctoral scientists
- Individual Consultations

☐ 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 stakeholders gaining knowledge about food safety
2	Number of state and federal regulatory agencies making decisions on test results
3	Improve food safety through adoption of safe food practices by producers, processors and/or consumers
4	Approaches/techniques developed for inactivating foodborne pathogens

Outcome # 1

1. Outcome Target

Number of stakeholders gaining knowledge about food safety

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Number of state and federal regulatory agencies making decisions on test results

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

Improve food safety through adoption of safe food practices by producers, processors and/or consumers

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 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 # 4

1. Outcome Target

Approaches/techniques developed for inactivating foodborne pathogens

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Appropriations changes
- Competing Programmatic Challenges
- Other (Unanticipated loss of staff)

Description

The primary external factors that can affect outcomes are financial resources and competing programmatic challenges. If extensive budget cuts are made at either state or federal levels, there could be negative impacts on program activities. The state's economy is currently sluggish and projected budget deficits warrant concern. At the federal level, Hatch funds have been essentially flat for many years but are being used to support scientist, technician and graduate student salaries and to purchase supplies for analyses and research. Loss of this funding would have significant negative impacts on program performance, likely involving the loss of staff at CAES. The collective loss of research capacity and resources would result in decreased output measures and outcomes.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Since the research effort is considered short term based on current needs and is prone to shifts in priorities depending on immediate food safety issues, it is more appropriate to plan evaluations for during the program to assess effectiveness. Stakeholders will offer written input on how well they think the research, programs and services are yielding relevant findings and direct benefits. This approach provides assessment of short-term knowledge changes following public meetings or direct one-on-one interactions. In addition, direct feedback on program performance is available from FDA via agency response to submitted progress reports on specific projects. Also, the Science Citation Index and Google Scholar will be used to assess recognition of published articles by the scientific community for the program. National or state recalls of adulterated foods or other products will be an excellent measure of during program actions.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Food Security and Food Systems

2. Brief summary about Planned Program

This program is focused on reducing food insecurity in Connecticut and across the Northeast. Research and extension programs address food production and the broader food system including processing, access, consumption, waste, and distribution. In Connecticut, food production primarily consists of dairy and specialty crops. There is a need to improve Best Management Practices (BMPs) for producers and to incorporate integrated pest management (IPM) strategies and improved business practices. This program also addresses improved access to fresh fruits and vegetables for low-income families, schools in urban areas, and other under-represented groups.

In 2012, UConn completed a food insecurity study in all 169 cities and towns across the state. The study ranks the towns on three different food security metrics: socio-economic factors; proximity to food retailers; and participation in public food assistance programs and availability of transportation. While it is not possible to combine the rankings, the metrics provide a snapshot for comparison of towns within each metric. The study also considers the importance of town size to allow closer comparisons of similar sized towns. Ultimately, solving food security challenges requires a comprehensive approach that considers multiple dimensions of food security and one that demands close coordination among groups actively working to improve food security across the state.

IPM increases farming efficiency and can mitigate the growing demand for food due to population pressures and a changing climate. Increased productivity depends on healthy pollinator species and plant species to sustain these populations. Cultivar screening for resistance to pathogens is a major initiative. Studies evaluating cover crops to control parasitic nematodes demonstrate a multistate IPM effort. Program goals include investigations of plants and their pests, including mechanisms of infection and pathogenesis; IPM development/implementation; and introduction of new crops that minimize pesticide use. A new scientist will study bacterial pathogens, including molecular approaches to identify infection mechanisms. Forest plots will be monitored to detect emerging insect, disease, and invasive plant problems, including an evaluation of the role of stress in these processes. New crops will be evaluated in response to requests from under-represented groups. CAES is the state plant regulatory agency, responsible for monitoring forest health, detecting exotic pests, and registering/inspecting nurseries and honey bee colonies. The CAES website, publications, presentations, and open house events disseminate findings to stakeholders.

UConn research and Extension programs focused on food production continue to address challenges posed by increased variability in regional climate and the high costs of doing business in the state. Deep zone tillage (DZT) practices have proven highly successful in increasing yields while reducing input costs for agricultural producers. Trainings for new and beginning farmers and ranchers stress sustainable practices and high-level business acumen to meet the economic and environmental regulatory demands of food production in the state.

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
202	Plant Genetic Resources	10%		10%	
205	Plant Management Systems	25%		13%	
206	Basic Plant Biology	10%		20%	
211	Insects, Mites, and Other Arthropods Affecting Plants	10%		8%	
216	Integrated Pest Management Systems	10%		20%	
601	Economics of Agricultural Production and Farm Management	10%		15%	
603	Market Economics	0%		3%	
604	Marketing and Distribution Practices	5%		0%	
605	Natural Resource and Environmental Economics	5%		8%	
607	Consumer Economics	10%		3%	
704	Nutrition and Hunger in the Population	5%		0%	
	Total	100%		100%	

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

1. Situation and priorities

Stakeholder input has identified the following priority issues within the program: development and implementation of IPM strategies, rapid response to emerging pests, cultivation strategies to minimize soil erosion and pesticide use, and introduction of specialty crops. IPM programs are particularly important given public concern over the perceived association of pesticide exposure with disease and environmental contamination. Growers want efficient cost-effective methods of pest control that lessen liability due to pesticide exposure. Current work indicates that less toxic pesticides can be used to address pest problems and that alternative application strategies may lessen overall amounts needed for effective control. In addition, research has shown that IPM practices can be successful in decreasing pesticide use, human health risks, and costs to the grower. There is stakeholder interest for locally grown specialty crops, such as peppers, squash, sweet corn, sweet potato, broccoli, pak choi, daikon radish, specialty melons and Chinese cabbage. A major goal is to have locally grown, fresh produce consumed by students in urban and rural school systems. Protecting pollinators from agrichemical exposure is a high priority. Several criteria are considered when determining research priorities. First, the problem must be of state and national relevance. Research findings should yield measurable economic, environmental, or health impacts. There must be adequate financial support, laboratory capacity, and technical staff to conduct the research. There may be existing collaborations with domestic and international scientists to increase the likelihood of success and the impact of the work. A primary focus is to increase US agricultural productivity and to improve global capacity to meet the growing food demand both at home and abroad. Successful IPM programs developed elsewhere will be used as models. Once emerging insects or plant pathogens are detected, remedies will be developed for immediate control.

2. Scope of the Program

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

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

1. Assumptions made for the Program

We assume that economic, environmental, and social conditions will remain sufficiently consistent. Each year, teams will evaluate basic assumptions to ensure that conditions are within acceptable limits. As a small state, we also are constrained by being one deep in many program areas. Retirements and transfers of our extension faculty can create program discontinuities while we attempt to refill those vacancies. We assume that funding will continue.

At CAES, there are several assumptions about the research and staff involved. Science-based assumptions are linked to past evaluations of findings and stakeholder input. There is currently sufficient staff and funding to perform field and laboratory studies. Additional scientists hired last year will continue to positively impact this program. Extensive multistate and international collaborations enhance research efforts will continue. IPM practices will result in grower acceptance of new methods, higher quality crops, and reduced pesticide exposure. Effective IPM programs are in place in CT; there is frequent communication between CAES and UConn on IPM and related work. Staff has access to a substantial knowledge base and results from other states. Farmers allow experiments to be performed on their properties. Annual crop and forest surveillance for emerging pest problems enables early detection and the development of efficient control practices to reduce economic losses. Our staff is well trained to diagnose problems and will work with stakeholders to find solutions. There is continued stakeholder interest for new crops; research on these new crops will increase income in rural areas. Hatch funds will continue to leverage other financial resources.

2. Ultimate goal(s) of this Program

The primary goal of this program is to reduce food insecurity in CT and across the region. Specific goals include identifying and solving emerging pest problems, including the use of molecular-based detection platforms; developing and implementing IPM systems; encouraging growers to use insect and disease resistant cultivars; and to increase agricultural and forestry productivity. This program will develop new management options, decrease agrichemical use and farm costs, diversify the local food supply, and increase economic benefits for farmers. A database of plant pest diagnostic records will be produced and a Plant Pest Handbook is available via CAES website. At UConn, a plant diagnostic lab is available to commercial producers and homeowners. We also participate in a multi-state plant diagnostic app utilized by growers.

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
2017	5.0	0.0	20.3	0.0
2018	5.0	0.0	20.3	0.0
2019	5.0	0.0	20.3	0.0
2020	5.0	0.0	20.3	0.0
2021	5.0	0.0	20.3	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

We are planning to conduct the following programs/activities in the Food Security and Food Systems planned program:

- Improve trapping methods to monitor pests
- Assess plant cultivar resistance
- Develop biological control agents
- Evaluate the use of mulching and related strategies for weed control
- Develop new crop cultivars with maximum quality and yield to enhance farm income
- Conduct relevant research and dissemination of research findings
- Provide IPM training
- Develop new farm management strategies
- Increase invasive plant control
- Donate surplus crops to food banks
- Conduct ground and aerial forest surveys
- Participate in the National Plant Diagnostic Network
- Staff participation in stakeholder and professional organizations
- CAES open house for public to view programs and comment on findings
- Conduct workshops, trainings and webinars
- Develop YouTube videos and mobile apps
- Provide training to relevant stakeholder audiences
- Individual consultations and assessments
- Produce online resource material such as fact sheets, impact statements and newsletter articles

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

Extension

Direct Methods	Indirect Methods

● Education Class	● Newsletters
● Workshop	● TV Media Programs
● Group Discussion	● Web sites other than eXtension
● One-on-One Intervention	● Other 1 (Radio programs)
● Demonstrations	● Other 2 (Youth via teachers)
● Other 1 (Diagnostic Services)	

3. Description of targeted audience

The target audience includes consumers, farmers/producers, agency and organizations that serve or handle food, food related businesses/processors, farmers' market staff and vendors, seafood industry processors, dealers, harvesters, importers, regulatory personnel, researchers, and policy makers. Additional audiences include teachers, the media, food bank personnel, beekeepers, maple syrup producers, seed companies, and water company officials. Women, minority organizations, and children are under-represented and underserved groups targeted under this program. Efforts will also be focused on interactions with teachers and students.

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
- Individual consultations
- Fact sheets, bulletins and newsletters written or edited
- Training of undergraduate and graduate students and post-doctoral researchers
- Formal Extension outreach programs

☑ 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 homeowners, growers, students and/or media reporters gaining knowledge on insect pests and plant pathogens
2	Number of growers gaining information on IPM practices
3	Reduce food insecurity in the state of Connecticut and across the Northeast
4	Increase the percent of locally grown food that is purchased by Connecticut citizens
5	Increase sustainable, diverse and resilient food systems across scales
6	Improved national and global capacity to meet growing food demand

Outcome # 1

1. Outcome Target

Number of homeowners, growers, students and/or media reporters gaining knowledge on insect pests and plant pathogens

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 206 - Basic Plant Biology
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 202 - Plant Genetic Resources

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Number of growers gaining information on IPM practices

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 216 - Integrated Pest Management Systems
- 206 - Basic Plant Biology
- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Reduce food insecurity in the state of Connecticut and across the Northeast

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics
- 704 - Nutrition and Hunger in the Population
- 604 - Marketing and Distribution Practices
- 607 - Consumer Economics

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Increase the percent of locally grown food that is purchased by Connecticut citizens

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 704 - Nutrition and Hunger in the Population
- 607 - Consumer Economics
- 604 - Marketing and Distribution Practices

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

Increase sustainable, diverse and resilient food systems across scales

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 704 - Nutrition and Hunger in the Population
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics
- 604 - Marketing and Distribution Practices

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

Improved national and global capacity to meet growing food demand

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 704 - Nutrition and Hunger in the Population
- 607 - Consumer Economics
- 605 - Natural Resource and Environmental Economics
- 604 - Marketing and Distribution Practices

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
- Appropriations changes
- Public Policy changes
- Competing Public priorities

- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Staff changes, media influences)

Description

External factors that could affect outcomes include financial stability, staff turnover, and inclement weather. The state's economy continues to struggle and projected deficits warrant concern. Reductions in state funding would negatively impact research and extension activities, which leads to peer-reviewed papers and non-technical publications, and could compromise the level of technical assistance. Coupled with essentially flat Hatch funds over several years, there may be insufficient funds for some aspects of the program. Without continued stable resources, some program goals may be difficult to achieve. Moreover, weather conditions are unpredictable and may become more problematic with a changing climate. Such changes may increase pest damage and plant disease, which can adversely affect field work and slow research. Competing public priorities and programmatic challenges can also impact outcomes. Research programs take time to design, and years may be required to complete investigations. When new issues arise, resources must be re-allocated to address stakeholder concerns and to implement control programs. This can divert resources from other studies in ways that are difficult to predict.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Since the research effort is considered short-term based on current needs and is prone to rapid shifts in priorities depending on immediate food security and food systems issues, it is most appropriate to plan evaluations for during the program to assess effectiveness. Stakeholders will offer written input on whether research and services are yielding relevant findings and direct benefits. This approach provides assessment of short-term knowledge changes following public meetings or direct one-on-one interactions. In addition, direct feedback on program performance is available via agency response to submitted progress reports and grant proposals. Last, the Science Citation Index and Google Scholar will be used to assess recognition of published articles from programs by the scientific community.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Human and Animal Health

2. Brief summary about Planned Program

This Planned Program will address both fundamental and applied aspects of human and animal health, with a primary focus on improving health in Connecticut. Research and Extension programs will address biological (e.g., microbe-based disease) and/or behavioral bases for health-related conditions in individual humans/animals and in their communities. The main objectives are to identify the primary mosquito vectors of encephalitis and related viruses; determine the role of ticks in the transmission of disease, including subtypes of the Powassan virus; develop more effective methods of arthropod/vector and mold control; and to disseminate findings to stakeholders.

Research and Extension teams will continue to work independently and through integrated approaches to identify relevant problems and will work with stakeholders to investigate the most important areas of study. Studies concerned with human health will focus on the role of bioactive food components on inflammation and oxidative stress, the role of n3 fatty acids in health and disease, individual and community approaches for minimizing the occurrence and impacts of obesity and diabetes, and contribution of dairy product proteins for maintaining muscle mass with aging. Animal health studies at the Storrs Agricultural Experiment Station will be concerned with mediating respiratory diseases in poultry and swine, characterizing Mycoplasma gallisepticum as an agent of disease, development of recombinant live vaccines, and development of a necrotic enteritis disease model in turkeys.

At CAES a new scientist will continue to investigate the physiological interactions that control infection and transmission between the mosquito host and arboviruses. In addition, investigations will include; new research on bed bug controls and the development of more effective monitoring/trapping systems and; research on indoor mold problems requested by school officials and other groups. Station scientists receive state and federal funding to support research on: sampling arthropod populations, developing novel tests for pathogen detection; testing engorged mosquitoes to identify the blood source through molecular analysis; and on developing novel chemical and biological strategies for pest control. Staff have active collaborations with researchers at universities, state/local health departments, and the Centers for Disease Control and Prevention (CDC). Efforts to monitor and control mosquitoes that transmit diseases, done in collaboration with public health officials, will include trap sites on private properties to encourage stakeholder interaction. Field tests on tick control will also be conducted on homeowners' properties. Laboratories are well-equipped to isolate and identify pathogens. Efforts will also focus on chickungunya and Zika viruses, which have been identified in the Western Hemisphere.

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
301	Reproductive Performance of Animals	0%		2%	
303	Genetic Improvement of Animals	0%		2%	
305	Animal Physiological Processes	0%		8%	
311	Animal Diseases	32%		10%	
315	Animal Welfare/Well-Being and Protection	0%		1%	
701	Nutrient Composition of Food	0%		9%	
702	Requirements and Function of Nutrients and Other Food Components	0%		6%	
703	Nutrition Education and Behavior	15%		2%	
704	Nutrition and Hunger in the Population	4%		1%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	34%		1%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	0%		4%	
722	Zoonotic Diseases and Parasites Affecting Humans	0%		43%	
723	Hazards to Human Health and Safety	15%		11%	
	Total	100%		100%	

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

1. Situation and priorities

The individual (animal and human) and community health areas are important components of our Plan of Work. For individual human and animal health, our interests are related to nutritional and infectious disease bases for health problems. We also work to alter individual behaviors to facilitate improved health. Program efforts will focus on reducing the incidence and/or severity of chronic disease, including obesity, Type II diabetes and coronary heart disease. Specific approaches for the latter will include investigations of the roles of general and specific (e.g., berry anthocyanins) bioactive components present in foods, lipid metabolism and the dietary influences that affect the latter, chronic inflammation, and utilization of nanotechnology-based techniques as nutrient delivery systems. Also, studies are anticipated that will seek novel approaches for maintaining muscle mass with aging. Community health approaches will involve studies directed at evaluation of nutrition education efforts to prevent childhood obesity from preconception to preschool in low-income families, and development of a food liking survey for assessing dietary risk of obesity and cardiovascular disease (CVD).

Public health problems include Lyme disease, tularemia, human granulocytic anaplasmosis, monocytic ehrlichiosis, human babesiosis, West Nile encephalitis, Jamestown Canyon, LaCrosse and Eastern Equine

Encephalitis viruses. In the US each year, tens of thousands of people are infected with the agents that cause Lyme disease and West Nile encephalitis virus. Stakeholders are concerned about how arthropods cause acute and chronic illnesses. In addition, public health and wildlife biologists have requested more sensitive and specific assays for arthropod-transmitted pathogens to enhance monitoring and to facilitate vector control efforts. As the climate warms, exotic mosquito species could negatively impact public health. Two exotic mosquitoes of Asian origin have been detected in CT; the biology, feeding and breeding habits of these species will be investigated. Stakeholder concern over chickungunya and Zika viruses have also increased. The transition of farmland to forest has increased tick populations due to greater deer numbers, the primary hosts for adult Ixodes scapularis ticks. This tick transmits at least three pathogens to humans, domesticated animals, and wildlife. Japanese barberry, an invasive plant in forest ecosystems, provides predator protection for mice and other rodents that are hosts for immature ticks and serve as reservoirs agents of Lyme disease and other pathogens.

2. Scope of the Program

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

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

1. Assumptions made for the Program

Statewide, we assume that regulatory, economic, environmental, and social conditions will remain sufficiently consistent with prior years. Staff will annually evaluate basic assumptions to ensure that conditions remain within acceptable limits. Because Connecticut is a small state, we are constrained by being one-deep in many program areas. Consequently, retirements and transfers of our scientists/faculty can create program discontinuities as we attempt to refill those vacancies.

2. Ultimate goal(s) of this Program

The primary goals of this program are to improve both human and animal health through nutritional mediation and education, and improved understanding of infectious diseases relevant to the broad field of agriculture. Specifically, we wish to increase public awarenss of the risks of tick- and mosquito-related diseases, as well as disease resulting from microbial borne illnesses including mold; to improve diagnostic tests for mammalian disease vectors; and to develop effective methods of controlling medically important disease agents. It is also important to identify zoonotic agents and emerging pathogens, such as subtypes of the Powassan virus, chickungunya and zika viruses that may cause disease in humans and animals.

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

2017	1.0	0.0	9.8	0.0
2018	1.0	0.0	9.8	0.0
2019	1.0	0.0	9.8	0.0
2020	1.0	0.0	9.8	0.0
2021	1.0	0.0	9.8	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

We are planning to conduct the following programs/activities in the Human and Animal Health planned program.

- Using molecular analyses to test ticks and mosquitoes for bacterial and viral pathogens
- Studies aimed at reducing localized populations of medically important arthropods
- Development of equipment/technologies to trap relevant arthropods
- Developing biological controls for indoor mold (fungi) problems in greenhouses and other buildings
- Characterizing the connection between dietary components and the potential biochemical nutritional bases for disease
- Develop evidence-based implementation programs for improving healthy lifestyles
- Conduct workshops and webinars
- Develop YouTube videos, and mobile apps
- Provide training to relevant stakeholder audiences
- Provide individual counseling and assessments
- Produce online resource materials such as fact sheets, impact statements and news articles

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations ● Other 1 (Presentations) ● Other 2 (Posters at scientific meetings)	● Newsletters ● Web sites other than eXtension

3. Description of targeted audience

Target audiences include all individuals interested in preventing disease and improving the health of humans and animals. This includes public health officials, regulators, elected officials, the scientific

community, and the general public.

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

- Faces to face general group education sessions/workshops
- Individual consultations
- Fact sheets, bulletins and newsletters written or edited
- Training of undergraduate and graduate students and post-doctoral researchers
- Formal Extension outreach programs

☑ 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 residents gaining knowledge of ticks, mosquitoes, bed bugs, and mold
2	Number of media reporters gaining knowledge of ticks, mosquitoes, bed bugs, and mold
3	Improved human and animal health through adoption of dietary and other behavioral activities by practitioners and consumers.

Outcome # 1

1. Outcome Target

Number of residents gaining knowledge of ticks, mosquitoes, bed bugs, and mold

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 723 - Hazards to Human Health and Safety
- 722 - Zoonotic Diseases and Parasites Affecting Humans

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Number of media reporters gaining knowledge of ticks, mosquitoes, bed bugs, and mold

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 722 - Zoonotic Diseases and Parasites Affecting Humans
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

Improved human and animal health through adoption of dietary and other behavioral activities by practitioners and consumers.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 315 - Animal Welfare/Well-Being and Protection
- 311 - Animal Diseases

- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components

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
- Appropriations changes
- Public Policy changes
- Competing Public priorities
- Competing Programmatic Challenges
- Other (Staffing changes)

Description

Unexpected changes in state or federal funds along with associated potential staff reductions are the most important risk factor. In addition, extreme weather conditions, cooperation from collaborators, and competing public priorities are also external risk factors that could impact program performance. The research program includes laboratory studies that have high costs, but is also strongly oriented toward field work. These field investigations, which require vehicles and additional technical staff, also have high costs that can be impacted by reduced funding. Drought can significantly reduce mosquitoes and ticks populations and greatly affect the outcomes of field research. Although arthropod vector research activities currently have high priority, new problems can emerge and cause funding to be diverted.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Different evaluation methods will be use depending on the specific project. Post-program evaluations are planned to assess the impacts of new diagnostic tests. In tick, mosquito, and mold control research, before and after program evaluations will be used. Assessments of tick abundance at sites before control measures and after treatment will be used to determine the efficacy of biological control agents. During-program evaluations will used to determine if mosquito/encephalitis virus surveillance programs and public notification activities are effective at reducing infection risk. Effectiveness will also be determined by surveying stakeholder responses to responding to public health advisories on reducing tick and mosquito bites. Public input will be considered in the evaluation process to ensure direct stakeholder benefits and to monitor short-term learning changes.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Sustainable Environments

2. Brief summary about Planned Program

This program's primary emphasis is on critical environmental priorities that improve air, soil, and water quality; protect watersheds; promote fish and wildlife management; and protect and improve ecosystems and the services they provide.

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

The green industry accounts for approximately two billion dollars annually in the Connecticut economy, and is a critical element of the state's agricultural sector. However, it often is overlooked due to the considerable focus on food and food security. This program area is focused on developing new tools and technologies for industries such as nursery, greenhouse, and landscape, that promote safe and healthy green spaces across the state. Research and Extension programs focus on Integrated Pest Management (IPM) approaches for schools and other municipal areas that have pesticide-free regulations, and/or increased pressure to reduce pesticide use. Programs also address tools and techniques for groundskeepers to improve management of inputs on recreational areas.

At CAES, field and laboratory research will be conducted on heavy metals and organic chemicals in soil, sediments and water. The environmental implications of nanotechnology, including ecosystem fate and effects, will be assessed. Surveys of lakes and ponds for invasive weeds will be conducted to determine distribution and the conditions which favor their establishment and dominance. Changes in aquatic species abundance and distribution will be evaluated by using global positioning system (GPS)-based bathymetric vegetation mapping procedures. The current program on invasive aquatic plants is heavily field oriented, has existed for more than 10 years, and is expected to extend for several years into the future. Consistent with stakeholders' requests, pollution prevention and mitigation and watershed protection and management will continue to be emphasized in this planned program. Novel research seeking to strategically use chemical control measures will also continue. Two new staff members have initiated research projects that address the ecophysiology of urban trees in a changing climate and how microbes respond to important climate and biogeochemical cycles.

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
102	Soil, Plant, Water, Nutrient Relationships	10%		9%	
103	Management of Saline and Sodic Soils and Salinity	5%		2%	
111	Conservation and Efficient Use of Water	5%		1%	
112	Watershed Protection and Management	25%		28%	
123	Management and Sustainability of Forest Resources	0%		1%	
131	Alternative Uses of Land	5%		1%	
132	Weather and Climate	5%		3%	
133	Pollution Prevention and Mitigation	0%		28%	
135	Aquatic and Terrestrial Wildlife	0%		3%	
202	Plant Genetic Resources	0%		4%	
205	Plant Management Systems	0%		6%	
212	Diseases and Nematodes Affecting Plants	5%		3%	
216	Integrated Pest Management Systems	15%		3%	
603	Market Economics	5%		1%	
604	Marketing and Distribution Practices	0%		1%	
605	Natural Resource and Environmental Economics	5%		4%	
607	Consumer Economics	15%		1%	
609	Economic Theory and Methods	0%		1%	
	Total	100%		100%	

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

1. Situation and priorities

Nearly sixty percent of Connecticut is forested and approximately eighty percent of that land is privately owned. Private forest owners need tools and technologies to improve management of these resources to protect soil, water, and air quality and provide habitat for native species. The 169 towns in the state have limited capacity to use geospatial tools to improve resource management. There is a need to expand training opportunities for local governments that increases their capacity to address land management issues at the local, state, and regional level. Trees also cause concern with storms and power outages. Research and extension outreach are being conducted to manage forests for decreased risk.

Statewide, concerns have arisen regarding the application of pesticides on home lawns, municipal green spaces, and school lawns and athletic fields. Science and education is needed to develop and implement best management practices that promote safe and effective use of pesticides. There is also an opportunity to promote use of native species in landscaping to achieve improved water quality and availability.

Organic pollutants, heavy metals, and engineered nanomaterials have contaminated many global ecosystems. Persistent organic pollutants such as chlorinated hydrocarbons were banned decades ago but continue to persist in soil. Pesticides such as synthetic pyrethroids and neonicotinoids have entered surface and groundwater and heavy metals are present within many urban areas and at industrial sites. New pesticides and novel engineered nanomaterials have seen large increases in use and new analytical detection platforms need to be validated and implemented. Since pollutants in soil and water can accumulate in animal tissues, this issue is a concern for many stakeholders. Detection and removal of pollutants, including invasive plants, from soil and water is a high priority.

Biologically, invasive aquatic plants are spreading in lakes and ponds, likely driven by a changing climate. The potential for the introduction of new exotic, invasive plants will likely increase, creating concerns over economics, public safety and ecosystem health. Experiments to minimize pesticide use will continue and the development of integrated biological controls for invasive aquatic plants will be explored. Additional work is needed to increase pollutant remediation efficiency, to minimize agrichemical use so as to protect watersheds, to implement detection platforms for environmental pollutants, and to determine the sources of contamination.

New research assessing how climate change can impact urban tree species and soil microbial communities will continue. The results of this program will improve soil and water quality in different ecosystems, help reclaim contaminated agricultural and industrial lands, and prevent the movement of pollutants into crops and human foods. Collaborations exist with scientists in other states and countries (Italy, China, Turkey, and Kazakhstan). State and federal funds are currently in place to continue research within the program.

2. Scope of the Program

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

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

1. Assumptions made for the Program

We assume that regulatory, economic, environmental, and social conditions will remain sufficiently consistent with prior years. Staff will annually evaluate basic assumptions to ensure that conditions remain acceptable limits. Stakeholders believe that the research initiatives are important, are of national relevance, and should be supported by state and federal funds. There currently is a stable workforce of experienced staff for this program and collaborations with both domestic and international colleagues exist. Past and ongoing successes indicate that the research approaches are valid, and published findings in the peer reviewed literature support the research strategies. Moreover, the practices being followed by our researchers are being used by other scientists. It is expected that continued studies of lakes and ponds will be effective in detecting and removing invasive aquatic plants and at improving water quality.

Stakeholder volunteers in lake associations will continue to assist in monitoring invasive plants. Novel detection and analytical techniques for emerging chemicals will continue to be pursued. Research on how urban trees and microbes respond to a changing climate will continue to expand. Hatch funds will continue to leverage other federal and private funding sources.

2. Ultimate goal(s) of this Program

The primary goal of this program is to make progress toward sustainable development with a focus on improved resource management in Connecticut. Specific goals are to promote greater public awareness of pollution sources and of potential remedial options, to take steps to promote sustainability to improve watershed conditions, to increase knowledge of the presence and fate of specific pollutants and heavy metals in the environment, to develop sustainable programs for long-term protection of soil and water resources, and to increase understanding of the impact of a changing climate on biota. We will also improve the quality of community green spaces and promote best management practices to improve products and services.

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
2017	4.0	0.0	6.9	0.0
2018	4.0	0.0	6.9	0.0
2019	4.0	0.0	6.9	0.0
2020	4.0	0.0	6.9	0.0
2021	4.0	0.0	6.9	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

We are planning to conduct the following activities in this program:

- Use of new methods to remove pollutants from soil and water
- Development of new platforms to detect pollutants
- Chemical analysis to determine need for fertilizers
- Evaluation of invasive plants for strategic management practices
- Conduct workshops and webinars
- Develop YouTube videos and mobile apps
- Provide training to relevant stakeholder audiences fact sheets, impact statements and news articles

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

Extension

Direct Methods	Indirect Methods

● Education Class	● Public Service Announcement
● Workshop	● Newsletters
● Group Discussion	● TV Media Programs
● One-on-One Intervention	● Web sites other than eXtension
● Demonstrations	● Other 1 (Youth - via teachers)

3. Description of targeted audience

Target audiences include all individuals with a stake in providing sustainable environments. This includes elected municipal officials, municipal land use staff and commissioners, researchers, city/town volunteers and citizens, state environmental and agriculture regulators. Efforts will be made to contact under-represented and under-served groups, including women, members of minority organizations, and children.

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
- Individual consultations
- Fact sheets, bulletins and newsletters written or edited
- Training of undergraduate and graduate students and post-doctoral researchers
- Formal Extension outreach programs

☑ 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 homeowners gaining knowledge about watershed protection and soil and water quality
2	Number of lakes and ponds surveyed and/or cleared of invasive aquatic plants
3	Improved climate mitigation strategies and their adoption
4	Development of new knowledge in land use resource protection
5	Increase knowledge and use of geospatial technologies

Outcome # 1

1. Outcome Target

Number of homeowners gaining knowledge about watershed protection and soil and water quality

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Number of lakes and ponds surveyed and/or cleared of invasive aquatic plants

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 205 - Plant Management Systems
- 102 - Soil, Plant, Water, Nutrient Relationships
- 135 - Aquatic and Terrestrial Wildlife

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Improved climate mitigation strategies and their adoption

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 132 - Weather and Climate

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Development of new knowledge in land use resource protection

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 131 - Alternative Uses of Land
- 132 - Weather and Climate

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

Increase knowledge and use of geospatial technologies

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 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

- Economy
- Appropriations changes
- Competing Public priorities
- Other (Staff changes)

Description

External factors that directly affect outcomes are financial stability and unexpected changes in the workforce. With ongoing economic limitations, state appropriations may be variable and competition for federal grants will be greater. Although Hatch funds are helpful in supporting this research at CAES, these funds will likely be insufficient to sustain research program activities over the long-term. Also, compared to the other three research programs, there have been relatively higher turnover rates for CAES employees in this research program.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Since the research effort is considered short-term based on current needs and is prone to rapid shifts in priorities depending on immediate sustainable environment issues, it is most appropriate to plan effectiveness evaluations during the program. Before and after program evaluations will also be conducted where appropriate. Stakeholders will offer written feedback on program performance and on direct benefits. This approach provides assessment of knowledge changes following public meetings or direct one-on-one interactions. In addition, direct feedback on performance is available via agency response to submitted progress reports. Also, Google Scholar will be used to assess recognition and impact of published articles by the scientific community.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

4-H/Youth Development

2. Brief summary about Planned Program

The 4-H/Youth Development planned program is focused on creating safe, healthy, well-educated children and teens through 4-H clubs, afterschool programs and interactive learning experiences. In addition, our educational efforts focus on incorporating the following three areas of curriculum into youth development programs and activities:

1. Science, Technology, Engineering and Math (STEM)
2. Citizenship and Leadership
3. Healthy Lifestyles

3. Program existence : Mature (More then 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
205	Plant Management Systems	10%		10%	
307	Animal Management Systems	10%		10%	
703	Nutrition Education and Behavior	10%		10%	
724	Healthy Lifestyle	20%		20%	
806	Youth Development	50%		50%	
	Total	100%		100%	

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

1. Situation and priorities

Teams will work with youth and volunteers to fully describe the current situation, and establish priorities. Involvement in an informal educational program focusing on Science, Technology, Engineering, and Math (STEM), citizenship/leadership and healthy lifestyles, provides youth with challenges, experiences, support and help that fosters positive attitudes toward their future and provides them with skills to be successful in today's world. According to the U.S. Department of Commerce's Economic and Statistics Administration, over the past decade the number of jobs in STEM fields grew three times faster

than non-STEM jobs, and STEM career employees can earn 26 percent more than their non-STEM counterparts. Research also shows that caring adults play an essential role in the healthy development of youth. Childhood obesity and food nutrition are growing concerns nationwide; teaching youth healthy choices can lead to a healthier adult population.

2. Scope of the Program

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

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

1. Assumptions made for the Program

We assume that economic, environmental, and social conditions will remain sufficiently consistent. Each year, teams will evaluate basic assumptions to ensure that conditions are within acceptable limits.

Additional assumptions made for the 4-H/Youth Development planned program include:
1. 4-H youth development staff has the skills and knowledge to respond to the needs of Connecticut's youth and facilitate non-formal education opportunities.
2. 4-H is dependent on well-trained volunteers
3. 4-H is a proven youth development program for building confident, caring, contributing citizens.

2. Ultimate goal(s) of this Program

The goals for our program as defined by our 2014 business plans are:

1. Engage youth in science, technology, engineering and math (STEM) interactive activities by providing 4-H program opportunities and career experiences. This will be accomplished through increasing the number and quality of STEM programs, and providing learning environments that support both formal and informal science learning and positive youth development.
2. Implement 4-H youth programs that promote and teach positive life skills and healthy lifestyles. Quality, substantive programs will be offered to address weight and obesity, physical activity, eating habits, nutrition, emotions, social interactions, and relationships.
3. 4-H citizenship programs strive to empower young people to be active, well-informed citizens who are engaged in their communities and throughout the world. Program content will be developed by specialists and in collaboration with partners.

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

2017	7.0	0.0	0.1	0.0
2018	7.0	0.0	0.1	0.0
2019	7.0	0.0	0.1	0.0
2020	7.0	0.0	0.1	0.0
2021	7.0	0.0	0.1	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

We are planning to conduct the following programs/activities in our 4-H/Youth Development planned program:

- Conduct workshops and webinars
- Develop YouTube videos and mobile apps
- Provide volunteer training programs
- Provide individual counseling and assessments
- Produce online material such as fact sheets, impact statements and newsletters
- Develop research-based curricula
- Conduct after-school programs
- Conduct youth employment programs
- Conduct camps

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention	● Public Service Announcement ● Newsletters ● Web sites other than eXtension

3. Description of targeted audience

Youth, families, school personnel, youth-serving agencies and organizations, community organizations, and agencies. Volunteers involved with youth and adults are also a target audience. 4-H/youth development also strives to reach underserved audiences in the state.

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
- Individual consultations
- Fact sheets, bulletins and newsletters, written or edited
- Formal Extension outreach programs
- 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	Youth demonstrate increased knowledge or skills in one or more of the three 4-H program emphasis areas

Outcome # 1

1. Outcome Target

Youth demonstrate increased knowledge or skills in one or more of the three 4-H program emphasis areas

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle
- 307 - Animal Management Systems
- 703 - Nutrition Education and Behavior
- 205 - Plant Management Systems
- 806 - Youth Development

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
- Competing Programmatic Challenges

Description

{NO DATA ENTERED}

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Our team of faculty and field educators are developing an improved evaluative component, as part of our 4-H/Youth Development planned program business model. Through a variety of evaluation tools, including: pre-testing, time series and post-testing, Extension educators will survey participants utilizing both written and internet based methods. Team leaders will review the program for educational value to ensure the programs remain significant and relevant to their intended goals. In addition, the CT 4-H team is committed to using the nationally developed common measures as an evaluation tool for the three program areas of STEM, Citizenship/leadership and Healthy Lifestyles. UConn Extension is hiring an Evaluator in May of 2016, and this position will review and refine evaluation of the 4-H/Youth Development planned program area.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Community and Economic Development

2. Brief summary about Planned Program

Citizens in the state of Connecticut exhibit the greatest income disparity in the nation when comparing the highest incomes and the lowest incomes in the state. Old urban centers often lack opportunities for new wage earners, particularly those from minority backgrounds. UConn Extension provides creative, innovative, timely and objective scientific research and education to help Connecticut entrepreneurs analyze their options, enhance production, and improve their businesses through sustainable methods. Our programs provide families and communities with programs that teach Connecticut residents how to lead healthy, productive, and financially secure lives. UConn provides citizens with a link to specialists and current research in priority areas identified by our stakeholders. Our programs will focus on improving conditions for families and communities through leadership development, community planning and technology training.

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
724	Healthy Lifestyle	25%		25%	
801	Individual and Family Resource Management	25%		25%	
802	Human Development and Family Well-Being	25%		25%	
903	Communication, Education, and Information Delivery	25%		25%	
	Total	100%		100%	

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

1. Situation and priorities

Teams will work with citizens to fully describe the current situation. Priorities will be established by the teams working with planned program stakeholders. Municipalities depend on citizen volunteers to serve on community boards, planning committees, serve as youth development coaches, disaster relief workers, as well as elected officials. UConn Extension activities and programs offer non-formal educational opportunities that develop caring, quality, and contributing community members. Our Extension specialists

also serve in advisory roles for many community and partner organizations.

2. Scope of the Program

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

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

1. Assumptions made for the Program

We assume that economic, environmental, and social conditions will remain sufficiently consistent. Each year, teams will evaluate basic assumptions to ensure that conditions are within acceptable limits. Additionally, the community and economic development planned program assumes that UConn Extension staff has the knowledge, skills, and resources to respond to the needs of Connecticut's families and communities by providing non-formal education opportunities.

2. Ultimate goal(s) of this Program

The Community and Economic Development goals as defined by our business plans include:

1. To provide programs and activities that build upon an individual's strengths and life experiences to develop their leadership skills, parenting skills, and financial competencies. We will work with diverse individuals and families to improve their wellbeing.

2. To conduct sustainable living programs, with a focus on urban communities, that contribute to healthy living, as well as improved overall health and economic conditions. This results in communities with engaged residents, secure in food, finances, and with these educational resources, positioned with strong assets to support their future.

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
2017	1.0	0.0	0.1	0.0
2018	1.0	0.0	0.1	0.0
2019	1.0	0.0	0.1	0.0
2020	1.0	0.0	0.1	0.0
2021	1.0	0.0	0.1	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

We are planning to conduct the following programs/activities in our Community and Economic Development planned program:

- Conduct workshops and webinars
- Develop YouTube videos and mobile apps
- Provide volunteer training programs
- Provide individual counseling and assessments
- Produce online material such as: fact sheets, impact statements and news articles
- Develop research-based curricula

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention	● Public Service Announcement ● Newsletters ● Web sites other than eXtension

3. Description of targeted audience

Parents, youth, children, teachers, elected officials and policy makers.

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
- Individual consultations
- Fact sheets, bulletins and newsletters written or edited
- Training of undergraduate and graduate students or post-doctoral researchers
- Formal Extension outreach programs

☑ 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	Program participants demonstrate increased leadership, parenting, or financial management skills

Outcome # 1

1. Outcome Target

Program participants demonstrate increased leadership, parenting, or financial management skills

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension
- 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

{NO DATA ENTERED}

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Through a variety of evaluation tools including pre-testing, time series and post testing, Extension educators will survey participants utilizing written and internet based methods. Team leaders are asked to review processes for educational value to ensure planned programs are being followed and that programs remain significant and relevant. An improved evaluation component is also being developed by our team of faculty and field educators as part of the Community and Economic Development business planning model. Evaluation has included working with faculty from the Department of Agricultural and Resource Economics to evaluate programs and recommend changes. The addition of an Extension Evaluator to our faculty in May 2016 will provide continued evaluation components.