2012 University of Hawaii Combined Research and Extension Plan of Work

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I. Plan Overview

1. Brief Summary about Plan Of Work

The College of Tropical Agriculture and Human Resources (CTAHR) has had major impact on the socio-economic well-being of the people of Hawai'i for over 103 years. CTAHR has educated thousands of students, helped hundreds of businesses, facilitated informed decision-making by government and community leaders, and enhanced the lives of Hawai'i's people and communities. CTAHR faculty and staff have effectively served a broad range of stakeholders through its academic, research and extension programs.

In keeping with its tradition of providing excellent educational opportunities, relevant and timely research results, and superior service to stakeholders, CTAHR based its current strategic plan on this POW to ensure that the priorities and the way CTAHR functions is aligned with the needs and aspirations of those that CTAHR is committed to serve. Extensive input was solicited from faculty, students, staff, and stakeholders, which identified and prioritized CTAHR's programmatic strategies, along with management and administrative strategies to increase resources and improve efficiency. CTAHR's strategic plan is well aligned with the strategic plans of UH and other related institutions to ensure that CTAHR's close working relationships with USDA/ARS Pacific Basin Agriculture Research Center, Hawaii Agricultural Research Center, and UH Hilo.

Tourism continues to be the State's number one economic sector, making the quality of the environment crucial to the Hawai'i's continued prosperity. The military is the State's second largest sector in terms of value, with the agricultural sector occupying third place in the Hawai'i's economy. The most recent estimates of the impact of agriculture on the economy of Hawai'i indicate that 62,000 people are employed in agriculture and related industries, and $4.5 billion is contributed to the economy. Diversified agriculture is replacing a portion of the revenues generated by sugar in the State's economy. Since 1989, the value of diversified agriculture, which generally involves operations with an average size of less than five acres, has increased by 50%. However, many former sugar workers lack the critical skills required for success in diversified agriculture.

Urbanization and tourism compete with agriculture for land and water, causing land prices to rise and water availability to become an issue. To assist in the development of diversified agriculture, research and extension programs focus on enhancing profitability by reducing costs and expanding markets. The programs aimed at reducing costs determine the most efficient means of cost reduction (research) and assist operators in understanding how to incorporate this information into their existing management strategies (extension). In order to increase market prices, the research programs look for ways to increase the value of existing products, reduce costs and/or increase consumer demand for new or existing products, while extension programs disseminate this information to the relevant target audiences. Hawai'i's agricultural strategy includes the need to replace imports, since over 90 percent of the State's food is imported, and to develop high value, niche crops for local use and export.

At the same time, increasing urbanization has increased the interest in urban horticultural programs. CTAHR's efforts to support subsistence and backyard agriculture have increased, as communities across the State have become more interested in increasing household food production. The State is particularly

vulnerable should in-shipments to the State be stopped for any reason because more than 80% of the State's food supply is imported. Estimates indicate that only a two week supply of food exist within the State at any one time and policy makers are increasing interested in efforts to increase Hawai'i's food self-sufficiency. CTAHR is developing a variety of statewide programs aimed at supporting these efforts.

More than 90 percent of the energy consumed in Hawai'i's from imported fossil fuels, mostly petroleum. The percentage of energy derived from petroleum in the State is the highest in the nation, and the price of gasoline and electricity routinely top U.S. charts. Hawai'i's heavy reliance on oil makes the State vulnerable to sudden disruptions in supply, while each tanker that arrives has the potential to spill its cargo and damage the fragile coasts that so important to tourism. Developing Hawai'i's renewable energy resources will improve energy security and protect the environment. Among the most promising alternative energy sources are biofuels, including ethanol from biomass and biodiesel from plant oils. A biofuel industry can expand the state's agricultural and technology sectors, keeping cash in the local economy while conserving green space. Moreover, biofuels do not promote global warming as fossil fuels do, since biofuels are carbon neutral.

CTAHR has been conducting exploratory research in biofuels for many years and increasing resources will be directed towards research, extension and instruction to address this issue because of its upgraded priority. Hawaii's desire to be less dependent on costly imported oil, coupled with the year-round growing season; experience with sugar cane; and desire to keep Hawaii green are driving this effort. CTAHR will be working with Hawai'i landowners to assess what fuel crops are best suited for their lands and aiding Hawaiian Electric Company's efforts to meet nationwide targets for increasing the use of non-fossil fuels by electric utilities. Through bioenergy research, CTAHR is helping chart Hawai'i's sustainable future.

Because of severe budget reductions imposed on the University during the 2009-2010 fiscal year and continued budget restrictions in 2010-2011, CTAHR will be attempting to meet the current research, extension and instructional obligations with fewer resources. Some hiring to replace retiring faculty will take place in 2011-2012, although faculty numbers will be reduced from previous levels. CTAHR will continue to provide the service that public has come to rely on.

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

Year	Extension		Research	
	1862	1890	1862	1890
2012	60.0	0.0	56.0	0.0
2013	60.5	0.0	58.0	0.0
2014	62.5	0.0	59.0	0.0
2015	62.5	0.0	60.0	0.0
2016	62.5	0.0	60.0	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
- ☐ Other

2. Brief Explanation

CTAHR encourages all faculty and staff to participate in the development and implementation of CTAHR's Strategic Plan and Plan of Work. CTAHR also uses an expert peer review panels to review individual Plans of Work and projects. All reviewers are asked to assess whether the planned programs address critical, strategic issues, including those identified by the stakeholders; utilize multi-disciplinary approaches; integrate research, extension and instruction; address the needs of under-served populations of the State; describe expected outcomes and impacts; and improve effectiveness and/or efficiency. Each degree program undergoes a compresive review by the University of Hawai'i at Manoa every five years. Individual CTAHR departments also under go CSREES reviews periodically.

CTAHR's long standing peer review process begins when a project proposal is submitted to a unit administrator. The unit administrator checks the proposal for completeness and format. A draft proposal that is ready for review is transmitted to the department's ad hoc Peer Review Committee. This committee is comprised of three departmental members who are familiar with the issue addressed by the plan or project. The Peer Review Committee reviews the proposal for (1) significance, (2) need, (3) approach, (4) new knowledge of programs to be generated, (5) potential for impact, (6) collaborative arrangements, (7) track record of the project leader(s), and (8) potential for success of the proposed project. After the committee completes its evaluation, the proposal and the peer evaluation forms are returned to the unit administrator. CTAHR administrators and faculty may serve as resources to clarify plans of work for reviewers. Final review for plans of work occurs in the offices of the Associate Dean/Associate Director for Research and Associate Dean/Associate Director for Extension.

III. Evaluation of Multis & Joint Activities

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

The critical issues are being addressed by CTAHR's planned programs which fall within the strategic goals of providing an excellent and relevant student-centered learning environment; diversifying and strengthening the State's economy; protecting and enhancing the environment and Hawaii's resources; and strengthening families and communities.

Several projects are aimed at increasing the value of the State's diversified agriculture.The biomass energy program intends to use under-utilized farmland to address some local energy needs. A new initiative formed at the request of stakeholders who feel that they are under served in past years is aimed at increasing the value of sustainable and organic agriculture involves a large team of researchers, specialists and county agents. CTAHR continues to respond to various production issues brought about by disease and pest concerns. CTAHR remains active in developing and providing knowledge and technologies to

generate and improve products, and processes for existing and new markets for local producers and commodity groups.

Hawaii has an ensemble of unique plants and fauna and physical features that have evolved into fragile ecosystems which are vulnerable to invading exotic species and the activities of man. As a result, Hawaii has the largest numbers of endangered species anywhere in the world. Hawaii depends on the environment to support tourism, the State's largest economic sector. CTAHR will continue to focus on issues that ensure the understanding, protection, and sustained management of precious natural resources.Research and outreach activities target waste management, water quality, invasive species, enhancing and protecting forest and range resources, species diversity, detection, analysis and remediation of toxic compounds, and many others to insure the health and well being of our natural resources.

Hawaii is socially and ethnically diversity. The high cost of living, particularly the cost of housing, results in most families having two or more income, multi-generational households, a significant homeless population, and a high percentage of working mothers. At the same time, obesity, diabetes, and heart disease present significant health challenges for many populations, particuarly Pacific islanders. CTAHR has active research and outreach programs, including the Nutritional Education for Wellness programs; the Youth Development program; the Center of the Family programs that address many of these issues.

CTAHR works very closely with colleagues from USDA/ARS/PBARC, Hawaii Agriculture Reseach Center, UH Hilo, Hawaii and Kapiolani Community Colleges, and other community colleges in collaborative projects in many program areas. Many of our researchers especially have joint and/or collaborative projects in crop production, marketing, livestock and pasture management, and pest control.

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

CTAHR conducts integrated projects that serve ethnic groups and cultures that may be under served by traditional federal programs .A farm risk management program specifically targeting under served farmers who are immigrants from countries such as the Philippines, Laos, Cambodia, Korea, and Tonga is being conducted statewide. Many immigrant farmers speak varying amounts of English as their second language and are at risk, especially in the area of pesticide safety. Outreach is conducted using a variety of methods such as small group meetings, individual on-farm consultations and assistance, bilingual training materials in their native language, and workshops on IPM, pesticide use, handling and storage, and how to recognize common pests of the crops they grow.

CTAHR's youth development programs target at-risk youth and get them involved in activities and programs in leadership, personal values, and other life skills to make them better citizens.Through a "New Communities Program" grant, an inner city (Honolulu) low income housing project was one of three communities included and has made significant progress in reaching these at-risk youth.

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

Annual reports are required for all projects. Among the data required to be reported are outputs and outcomes.The latter can be described as short, medium and long term outcomes following the Logic Model format and concept.

Overall, CTAHR programs are producing valuable outcomes and impacts for our stakeholders and represent a sound investment of CTAHR's federal appropriation. Additional funding was also obtained from non-federal sources for program support, which reflects their credibility and productivity. Specific progress toward the outcomes and impacts will be documented under each planned program.

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

University of Hawai'i at Mānoa has a unique organizational approach that integrates research, extension and instructional programs. All faculty in the statewide branch stations and extension offices have an academic, departmental home. Extension faculty who are stationed in a county fully participate in promotion and tenure activities of the department. Faculty are encouraged to establish integrated project incorporating extension education activities with research efforts. In the past year, many Hatch research projects have been converted into Hatch Integrated projects. Specific examples of the effectiveness of integrated programs are described in the planned programs sections.

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 of the general public
- ☐ Survey specifically with non-traditional groups
- ☐ Survey specifically with non-traditional individuals
- ☐ Survey of selected individuals from the general public
- ☐ Other

Brief explanation.

CTAHR employs a variety of stakeholder input methods including face-to-face discussions with industry representatives, the Hawai'i Farm Bureau Federation, Hawai'i Organic Farmer's Association, and an "Industry Analysis Process" that provides valuable input into research and extension programing. The Associate Director for Research and the Associate Director for Extension designate a convener who will be responsible for the development of a draft analysis of the commodity group. The convener assembles a committee of appropriate faculty to develop a draft analysis.

In general, the draft analysis will assess the important issues, problems, concerns and pathways to overcome bottlenecks that face an agricultural industry. The draft analysis will consider the present status of the commodity including current production, value and recent trends. Of particular importance is an understanding of the industry's potential and the challenges that must be overcome to reach this potential. The analysis identifies the major issues related to the factors such

as: land; water; capital; labor; cultivars; pest and disease control; culture and management practices; harvest management and post-harvest handling; processing including food safety and quality; waste management; transportation; marketing; cost of production; and government policies; rules and regulations. Input on the draft will be sought via several mechanisms including but not limited to: web-based presentation for electronic review and comment by stakeholders, faculty, and government agencies; and distribution through industry associations. Hard copies of the draft analysis will be distributed to stakeholders for written comment. Alternatively, if a strong commodity association exists, the analysis will be presented at a meeting of the association. Using a focus group approach, input will be obtained from the association. If sufficient input is not received by the above methods, input will be obtained from one on one meetings with key stakeholders. Based on these methods, the draft analysis can be modified to develop a final industry analysis that will serve to guide for POW refinement over the years. The Industry Analysis Process helps stakeholders assist CTAHR to ensure that programs are relevant.

CTAHR has also strengthened our stakeholder input process for individual projects and plans of work. New projects and plans of work must identify the stakeholders, methods used to determine the needs of these stakeholders and how the project will address the needs of these stakeholders.

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

1. Method to identify individuals and groups

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

Brief explanation.

Hawai'i has over 100 commodity commissions and grower organizations, most of which have research committees. Hawai'i also has a wide assortment of active environmental, consumer, and community organizations. These organizations provide a broad perspective for input to the management of the college's research programs. Research, extension and instruction faculty within CTAHR reach stakeholders at the local, state and national levels. Many departments and counties have advisory board to address local issues. To establish Hatch and/or extension projects, faculty members must identify the stakeholders their projects served, and describe how input is solicited from these stakeholders.

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
- ☐ Meeting with the general public (open meeting advertised to all)
- ☐ Survey of the general public
- ☑ Meeting specifically with non-traditional groups
- ☐ Survey specifically with non-traditional groups
- ☑ Meeting specifically with non-traditional individuals
- ☐ Survey specifically with non-traditional individuals
- ☑ Meeting with invited selected individuals from the general public
- ☐ Survey of selected individuals from the general public
- ☐ Other

Brief explanation.

Most CTAHR faculty, especially the extension faculty, work closely with stakeholders.These include individual farmers, commodity associations, homeowners, 4-H and other youth organizations, government agencies, Hawaiian cultural organizations, senior groups, state legislators, county councils, school teachers, non-profit organizations and many more. Informal and formal input that includes letters, minutes of meetings, resolutions, Industry Analyses, and strategic plans is provided to CTAHR on a regular basis. CTAHR faculty also requests these types of documents and other input as needed.

Input and feedback is also obtained during workshops, open houses, and telephone calls from both traditional and non-traditional individuals on a less regular basis. Inputs are also solicited from specific under represented stakeholders. Some CTAHR faculty and administrators serve on boards of Economic Development Councils and receive input and feedback from them. CTAHR also has close working relationships with scientists from USDA/ARS Pacific Basin Agriculture Research Center, Hawaii Agricultural Research Center, UH Hilo, Oceanic Institute, UH Community colleges. Input from these sister institutions is routinely collected, evaluated, and incorporated into CTAHR programs.

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
- ☐ Other

Brief explanation.

Stakeholder input has been used extensively in developing the current CTAHR Strategic Plan. Pertinent stakeholder input and feedback is received from various stakeholders on a wide range of research and extension program initiatives. As a result of the input received, CTAHR faculty modify work plans to improve the design of research projects and provide specific opportunities for continued feedback. Information is disseminated to communities through newsletters, local newspaper coverage, commodity association meetings, radio and television programs. Administrators and faculty use input to prioritize resource allocations, inform other researchers and policymakers of trends and concerns. Recommendations from various advisory boards represent key constituent views, and are useful in the developing research and extension programs. Staffing plans also reflect stakeholder input and the selection committees for extension and administrative positions generally include stakeholders.

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Sustain, Protect, and Manage Hawaii's Natural Resources and Environment
2	Hawaii's Diversified Tropical Crop Systems for Sustainability and Competitiveness
3	Invasive Species Education and Management
4	Youth, Family and Community Development
5	Health and Wellness of Hawaii's Families and Communities
6	Global Food Security and Hunger
7	Climate Change
8	Sustainable Energy
9	Childhood Obesity
10	Food Safety

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Sustain, Protect, and Manage Hawaii's Natural Resources and Environment

2. Brief summary about Planned Program

Research and extension efforts to promote harmony between agriculture and environment continue to be a priority for CTAHR. Areas addressed by research and extension projects include agricultural waste management, forest resource management, agroforestry, range management, nutrient management, soil erosion, soil quality, biological diversity, rehabilitation of degraded and idle lands, handling of hazardous materials, and water quality. Research and extension efforts at preserving, protecting, and renewing Hawai'i's natural resources continue to be an area of focus.

This planned program will utilize integrated research, extension and instructional projects to provide knowledge and technologies to improve the management of Hawaii's resources to support agricultural production and enhance the environment.This program will strengthen CTAHR's capabilities in management of agricultural and natural resources, and to manage the impacts of human activities in ecosystems and mitigate environmental and waste management problems.

3. Program existence :

- ○ New (One year or less)
- ○ Intermediate (One to five years)
- ◉ Mature (More than five years)

4. Program duration :

- ○ Short-Term(One year or less)
- ○ Medium-Term (One to five years)
- ◉ Long-Term (More than five years)

5. Expending formula funds or state-matching funds :

- ◉ Yes
- ○ No

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

- ◉ Yes
- ○ No

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	25%		14%	
111	Conservation and Efficient Use of Water	10%		6%	
112	Watershed Protection and Management	10%		5%	
121	Management of Range Resources	5%		0%	
123	Management and Sustainability of Forest Resources	10%		7%	
124	Urban Forestry	0%		2%	
125	Agroforestry	10%		4%	
132	Weather and Climate	0%		6%	
133	Pollution Prevention and Mitigation	20%		4%	
135	Aquatic and Terrestrial Wildlife	0%		5%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		4%	
205	Plant Management Systems	0%		7%	
211	Insects, Mites, and Other Arthropods Affecting Plants	0%		5%	
212	Pathogens and Nematodes Affecting Plants	0%		4%	
402	Engineering Systems and Equipment	0%		5%	
403	Waste Disposal, Recycling, and Reuse	10%		2%	
404	Instrumentation and Control Systems	0%		6%	
512	Quality Maintenance in Storing and Marketing Non-Food Products	0%		4%	
605	Natural Resource and Environmental Economics	0%		5%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	0%		5%	
	Total	100%		100%	

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

1. Situation and priorities

Hawai'i's unique tropical island environment and its broad biological, physical, and social diversity enrich the lives of local residents and provide a setting that attracts visitors from all corners of the world.

The sustainability of natural resources, stability of agroecosystems, and quality of life for Hawai'i's people are intrinsically dependent on the judicious use and management of our resources.

Effective management of the environment and natural resources requires balancing competing interests. While these interests often appear to be in direct conflict with each other, the development of sound management strategies, combined with a thorough understanding of the complex interdependencies of natural systems, can yield sustainable benefits and satisfy most diverse and competing interests over the long term. In partnership with communities and government agencies, CTAHR will develop the knowledge base and education and extension strategies that achieve maximum sustainable benefits from Hawai'i's resources.

Sustainable production of food, fiber, and other bio-based products will be realized only if undertaken in harmony with Hawai'i's environment and natural resources. Through advances in scientific knowledge and effective application of that knowledge, CTAHR can help ensure an adequate food supply while protecting the state's precious natural resources. The strategies developed by the college strives to deliver food and fiber sustainably and to develop ecosystem management approaches that mitigate environmental problems.

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

- A core of qualified extension and research staff is available.
- Additional external funds and other resources are available.
- Partnerships will continue and expand to coordinate efforts and share resources.
- Information on best management practices exists for the management of natural resources.
- Stakeholders are willing to implement best management practices.
- People are motivated to learn/change.

2. Ultimate goal(s) of this Program

Hawaii achieves a sustainable balance of agricultural activities, suburban and urban development, and a healthy environment and biodiversity.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2012	3.0	0.0	6.0	0.0
2013	3.0	0.0	6.0	0.0
2014	3.0	0.0	6.0	0.0
2015	3.0	0.0	6.0	0.0
2016	3.0	0.0	6.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Develop best management practices and plans for forests, watersheds from the mountains to the coastal zones, and agroforestry ecosystems.
- Provide knowledge and technologies to improve the management of agricultural production to enhance the environment.
- Conduct research that will assist the state to formulate visionary land- and water-use policies.
- Provide professional development opportunities for CTAHR faculty to improve capacity in natural resource management.
- Conduct needs assessment to establish current and future potential of bioremediation for Hawai'i in both urban and rural environments.
- Conduct an "industry analysis" for environmental resource management to identify needs of Hawai'i ahupua'a (watershed) systems.
- Develop and deliver programs to provide pollution control information and environmental education to the public, with emphasis on schools, youth groups, home gardeners and urban/residential communities.
- Enhance CTAHR's international partnerships and collaboration on management of agricultural and natural resources.
- Coordinate a statewide emergency response team with internal and external partners, including HDOA Plant Industry, Quarantine, and statewide invasive species committees to quickly identify, mitigate, and transfer information about new pest invaders.

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	☐ Billboards
☑ Group Discussion	☑ Newsletters
☑ One-on-One Intervention	☐ TV Media Programs
☑ Demonstrations	☑ Web sites
☐ Other 1	☐ Other 1
☐ Other 2	☐ Other 2

3. Description of targeted audience

In keeping with CTAHR's Land Grant mission, CTAHR's "targeted" clients for this program in ***instruction*** are undergraduate and graduate students in CTAHR's related programs. Targeted clients for ***research*** are peers and extension specialists. Clients for ***extension specialists*** are CTAHR's county extension agents; the counterpart professional personnel of sister state and federal agencies, such as the Hawai'i State Departments of Agriculture, Health, and Land and Natural Resources, and the USDA Natural Resources Conservation Service, NRCS; and various members of the public, including non-profit organizations, landowners, producers and community residents. Clients for ***extension agents*** are land users and commodity producers and their organizations, such as the Hawai'i Association of Soil and Water Conservation Districts, Hawai'i Forestry Industry Association, and the Hawai'i Farm Bureau, extension staff in other CTAHR units and at sister institutions, and other members of the professional community who deal with managing land, soil and water resources especially in tropical agro-ecosystems. Interfacing with other professional and community groups who can provide new and useful knowledge and can join with CTAHR to help meet stakeholder needs is an important expectation for CTAHR faculty.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2012	5000	50000	300	100
2013	5000	50000	300	100
2014	5000	50000	300	100
2015	5000	50000	300	100
2016	5000	50000	300	100

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

2012:0 **2013:**1 **2014:**0 **2015:**1 **2016:**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2012	40	5	40
2013	40	5	45
2014	50	5	55
2015	50	8	58
2016	50	8	58

V(H). State Defined Outputs

1. Output Target

- Grant proposals submitted.

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

- Presentations at international and national meetings.

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

- Number of workshops and other educational activities held

2012:10 **2013:**10 **2014:**10 **2015:**10 **2016:**10

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of people who actually adopt one or more recommended practices
2	Total dollar value of grants and contracts obtained.

Outcome # 1

1. Outcome Target

Number of people who actually adopt one or more recommended practices

2. Outcome Type :

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

2012:100 **2013:**100 **2014:**100 **2015:**100 **2016:**100

3. Associated Knowledge Area(s)

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☑ 121 - Management of Range Resources
- ☑ 123 - Management and Sustainability of Forest Resources
- ☐ 124 - Urban Forestry
- ☑ 125 - Agroforestry
- ☐ 132 - Weather and Climate
- ☑ 133 - Pollution Prevention and Mitigation
- ☑ 135 - Aquatic and Terrestrial Wildlife
- ☑ 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- ☑ 205 - Plant Management Systems
- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☑ 212 - Pathogens and Nematodes Affecting Plants
- ☑ 402 - Engineering Systems and Equipment
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 404 - Instrumentation and Control Systems
- ☑ 512 - Quality Maintenance in Storing and Marketing Non-Food Products
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

4. Associated Institute Type(s)

- ☑ 1862 Extension
- ☑ 1862 Research

Outcome # 2

1. Outcome Target

Total dollar value of grants and contracts obtained.

2. Outcome Type :

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

2012:400000 **2013:**400000 **2014:**500000 **2015:**500000 **2016:**500000

3. Associated Knowledge Area(s)

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☑ 121 - Management of Range Resources
- ☑ 123 - Management and Sustainability of Forest Resources
- ☑ 124 - Urban Forestry
- ☑ 125 - Agroforestry
- ☑ 132 - Weather and Climate
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- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☑ 404 - Instrumentation and Control Systems
- ☑ 512 - Quality Maintenance in Storing and Marketing Non-Food Products
- ☑ 605 - Natural Resource and Environmental Economics
- ☑ 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

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
- ☑ Government Regulations
- ☑ Competing Public priorities
- ☑ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☑ Other (Quarantine procedures)

Description

• Natural disasters such as hurricanes, typhoons, floods, fires, often are destructive to natural resources such as reefs, water quality, forests, indigenous species, research plots and equipment.
• When the economy is poor, public and private funding decreases and is more difficult to obtain.
• Current and new quarantine and inspection procedures for imported materials affect the rate of new introductions of invasive species into the State.
• When monies are in short supply, other more pressing public priorities may compete for available funds.

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

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☐ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☑ During (during program)
- ☐ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Description

All projects will submit annual progress report to ducument their accomplishments. Associate deans for research and extension are responsible for monitoring satisfactory progress has been made before funding release.

2. Data Collection Methods

- ☐ Sampling
- ☐ Whole population

Survey (Mail, Telephone, On-Site).

- ☐ Mail
- ☐ Telephone
- ☐ On-Site

Interview

- ☐ Structured
- ☐ Unstructured

- ☐ Case Study
- ☑ Observation
- ☑ Portfolio Reviews
- ☐ Tests
- ☐ Journals
- ☐ Other

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Hawaii's Diversified Tropical Crop Systems for Sustainability and Competitiveness

2. Brief summary about Planned Program

Hawai'i's agricultural expansion is focused on two strategies. The first is to encourage import replacement because Hawai'i currently imports about 90 percent of its food annually. Many of the fruits and vegetables that are now imported could be grown locally. At the same time, backyard and urban agricultural programs also can contribute significantly to food production.

The second strategy is to produce high-value specialty products for niche markets. For example, Kona coffee sells for over five times the commodity price of coffee and cannot be grown anywhere other than Hawai'i Island. Various cut flowers, potted ornamental plants, and exotic tropical fruits from Hawai'i also command high prices. Identifying other high-value products, both fresh and processed, for local consumption or export is a high priority for CTAHR. Banana, coffee, papaya, specialty seed crops, tropical tree fruits, organics, and aquaculture are among those being investigated. At the same time, CTAHR provides specialized assistance to entrepreneurs who want to start or expand their agricultural business.

Hawai'i relies heavily on its environment as a major attractant for the visitor industry. The design, installation and maintenance of landscapes plays an essential role in the tourism sector. Landscape services add value to locally produced nursery plants that have become part of a landscape. These landscapes must be produced domestically, which ensure that landscape services represent domestic employment.

The planned program will utilize integrated research, extension and education projects to support diversified agricultural industries in Hawai'i, to increase profitability for our farmers and producers, and to increase food security by reducing our reliance on imported agriculture products.

3. Program existence :

- ○ New (One year or less)
- ○ Intermediate (One to five years)
- ◉ Mature (More than five years)

4. Program duration :

- ○ Short-Term(One year or less)
- ○ Medium-Term (One to five years)
- ◉ Long-Term (More than five years)

5. Expending formula funds or state-matching funds :

- ◉ Yes
- ○ No

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

- ◉ Yes
- ○ No

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%		5%	
124	Urban Forestry	0%		2%	
125	Agroforestry	0%		2%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		6%	
202	Plant Genetic Resources	5%		7%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	2%		7%	
204	Plant Product Quality and Utility (Preharvest)	6%		7%	
205	Plant Management Systems	20%		18%	
206	Basic Plant Biology	0%		10%	
211	Insects, Mites, and Other Arthropods Affecting Plants	15%		5%	
212	Pathogens and Nematodes Affecting Plants	15%		7%	
213	Weeds Affecting Plants	8%		3%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	2%		0%	
215	Biological Control of Pests Affecting Plants	2%		1%	
216	Integrated Pest Management Systems	10%		6%	
502	New and Improved Food Products	0%		4%	
511	New and Improved Non-Food Products and Processes	0%		4%	
601	Economics of Agricultural Production and Farm Management	3%		1%	
604	Marketing and Distribution Practices	2%		5%	
	Total	100%		100%	

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

1. Situation and priorities

The agricultural sector is continuing to diversify. The sugar industry has drastically downsized with one operation on Maui and one on Kauai that between them produced nearly 40,000 acres of sugarcane valued at more than $44 million in 2008. Pineapple production has also been decreasing, with a number of small farms replacing large plantations. The decrease in plantation agriculture made agricultural land

available and as a result the total number of farms in the State has increased with 7,500 farms in existence in 2008. Seed crops is the State's number one commodity, which was valued at $177 million in 2008, followed by sugarcane, macadamia nuts, coffee and cattle, at $44, $34, $30, and $24 million, respectively in 2008.

Area-wide fruit fly management is now an option for growers of fruit fly susceptible fruits and vegetables. Vegetables, melons and fruits, excluding pineapple, were valued at $37 million in 2008, making the detection and/or eradication of pests a high priority so that products suitable for export can be shipped.

Production and manufacturing are costly in Hawai'i because equipment, and raw materials must be shipped in. Local businesses can provide products that add value or serve niche markets. Import substitution expands the local market for products, increases employment, and retains dollars within the state. Examples of high-value or value-added agri-products for Hawai'i producers include flowers, landscape and nursery crops, seeds, tropical fruits, vegetables, beverages, and medicinal and cosmetic plant derivatives. Access to superior varieties, best production or cultivation management practices, processing and handling technologies, and market information is key to long-term success. Through research, instruction, and extension, CTAHR can provide new knowledge and a better-prepared workforce to generate new products and expand markets. Although headquartered on Oahu, CTAHR has 16 branch stations and 12 extension office on all major islands in Hawaii.

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

- Buyers require a consistent quantity and quality of supply.
- Agricultural pests will continue to be a significant production problem for most crops.
- Export quarantine requirements can be met for selected fruit fly susceptible crops.
- External funds and resources are available and can serve as a catalyst for change.
- Staff with appropriate expertise is available or can be recruited.
- A knowledge base exists to execute extension plans.
- People will be motivated to learn/change.

2. Ultimate goal(s) of this Program

Hawai'i will be able to increase the exports and decrease the imports of agricultural commodities and value added products.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2012	16.0	0.0	10.0	0.0
2013	16.0	0.0	10.0	0.0
2014	16.0	0.0	10.0	0.0
2015	16.0	0.0	10.0	0.0
2016	16.0	0.0	10.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct basic and applied research to increase production, efficiency, and profitability of diversified agricultural industries while protecting the environment.
- Provide diagnostic and analytical services for soil testing, water analyses, plant tissue analyses, plant disease identification, insect pest identification, and feed and forage analyses.
- Conduct outreach programs to provide best management practices to grow and market existing and new crops.
- Increase the competitiveness of local agricultural production systems by reducing costs and increasing efficiency.
- Provide training in identification and management of production costs and niche markets;
- Incorporate research-based technology that reduces losses due to pests, disease, and inefficient use of resources in production systems.
- Identify the challenges for various agricultural industries or industry clusters and use this information to set priorities.
- Continue to develop sustainable agriculture programs.

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	☐ Billboards
☑ Group Discussion	☑ Newsletters
☑ One-on-One Intervention	☑ TV Media Programs
☑ Demonstrations	☑ Web sites
☐ Other 1	☐ Other 1
☐ Other 2	☐ Other 2

3. Description of targeted audience

As intended by the Land Grant perspective, CTAHR's "targeted" clients for this program in ***instruction*** are the undergraduate and graduate students in CTAHR's related programs. Targeted clients for ***research*** are peers and extension specialists. Clients for ***extension specialists*** are CTAHR's county extension agents; the counterpart professional personnel of sister state and federal agencies, such as the Hawai`i State Departments of Agriculture, Health, and Land and Natural Resources, and the USDA Natural Resources Conservation Service; new and existing agricultural producers and the organizations that represent them, such as such as the Hawai'i Association of Soil and Water Conservation Districts, Hawai'i Macadamia Nut Association, Hawai'i Papaya Industry Association, and the Hawai'i Farm Bureau Federation; other businesses with forward or backward linkages to the agricultural sector; and community residents interested or involved in agriculture. Clients for ***extension agents*** are potential and existing farmers/producers and their organizations, such as the Hawai'i Association of Soil and Water Conservation Districts, Hawai'i Macadamia Nut Association, Hawai'i Papaya Industry Association, and the Hawai'i Farm Bureau Federation, packing houses and shippers, extension colleagues, and other members of the community who are involved in the agriculture sector.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2012	14750	50000	1000	150
2013	14750	50000	1000	200
2014	15000	50000	1500	200
2015	15000	50000	1500	250
2016	15000	50000	1500	250

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

2012:1 **2013:**0 **2014:**1 **2015:**0 **2016:**1

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2012	20	10	30
2013	20	10	30
2014	25	10	35
2015	25	10	35
2016	25	10	35

V(H). State Defined Outputs

1. Output Target

- Number of workshops, research/field day demonstrations conducted

  2012:100 **2013:**100 **2014:**150 **2015:**200 **2016:**200

- Published information such as extension newsletters, fact sheets, videos, and other publications

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

- Presentations at international and national meetings

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

- Number of grant proposals submitted.

  2012:50 **2013:**50 **2014:**50 **2015:**60 **2016:**60

V(I). State Defined Outcome

O. No	Outcome Name
1	Increased awareness of best management practices to promote environmentally responsible agricultural and landscape management
2	Number of people who adopt one or more recommended practices
3	Total dollar value of grants and contracts obtained.

Outcome # 1

1. Outcome Target

Increased awareness of best management practices to promote environmentally responsible agricultural and landscape management

2. Outcome Type :

- (●) Change in Knowledge Outcome Measure
- ( ) Change in Action Outcome Measure
- ( ) Change in Condition Outcome Measure

2012:10000 **2013:**10000 **2014:**10000 **2015:**10000 **2016:**10000

3. Associated Knowledge Area(s)

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 124 - Urban Forestry
- ☑ 125 - Agroforestry
- ☑ 201 - Plant Genome, Genetics, and Genetic Mechanisms
- ☑ 202 - Plant Genetic Resources
- ☑ 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- ☑ 204 - Plant Product Quality and Utility (Preharvest)
- ☑ 205 - Plant Management Systems
- ☑ 206 - Basic Plant Biology
- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☑ 212 - Pathogens and Nematodes Affecting Plants
- ☑ 213 - Weeds Affecting Plants
- ☑ 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- ☑ 215 - Biological Control of Pests Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☑ 502 - New and Improved Food Products
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☑ 604 - Marketing and Distribution Practices

4. Associated Institute Type(s)

- ☑ 1862 Extension
- ☐ 1862 Research

Outcome # 2

1. Outcome Target

Number of people who adopt one or more recommended practices

2. Outcome Type :

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

2012:1000 **2013:**1000 **2014:**1500 **2015:**2000 **2016:**2000

3. Associated Knowledge Area(s)

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 124 - Urban Forestry
- ☐ 125 - Agroforestry
- ☐ 201 - Plant Genome, Genetics, and Genetic Mechanisms
- ☐ 202 - Plant Genetic Resources
- ☑ 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- ☑ 204 - Plant Product Quality and Utility (Preharvest)
- ☑ 205 - Plant Management Systems
- ☐ 206 - Basic Plant Biology
- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☑ 212 - Pathogens and Nematodes Affecting Plants
- ☑ 213 - Weeds Affecting Plants
- ☑ 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- ☑ 215 - Biological Control of Pests Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☑ 502 - New and Improved Food Products
- ☑ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☑ 604 - Marketing and Distribution Practices

4. Associated Institute Type(s)

- ☑ 1862 Extension
- ☐ 1862 Research

Outcome # 3

1. Outcome Target

Total dollar value of grants and contracts obtained.

2. Outcome Type :

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

2012:5000000 **2013:**5000000 **2014:**5000000 **2015:**5000000 **2016:**5000000

3. Associated Knowledge Area(s)

- ☐ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 124 - Urban Forestry
- ☐ 125 - Agroforestry
- ☑ 201 - Plant Genome, Genetics, and Genetic Mechanisms
- ☑ 202 - Plant Genetic Resources
- ☑ 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- ☑ 204 - Plant Product Quality and Utility (Preharvest)
- ☑ 205 - Plant Management Systems
- ☑ 206 - Basic Plant Biology
- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☑ 212 - Pathogens and Nematodes Affecting Plants
- ☑ 213 - Weeds Affecting Plants
- ☑ 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- ☑ 215 - Biological Control of Pests Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☑ 502 - New and Improved Food Products
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 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
- ☑ Government Regulations
- ☑ Competing Public priorities
- ☑ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Description

Natural disasters such as hurricanes, typhoons, floods, fires, often are destructive to crops. Annual crops suffer immediate, although not permanent damage, while orchard crops may sustain long term damage. Damage to research plots, and equipment can also occur. When the economy is poor, public and private funding decreases and is more difficult to obtain. When monies are short, public priorities that relate to health and safety are more visible and will compete for available funds. The increase in petroleum prices have increased production costs.

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

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☐ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☑ During (during program)
- ☐ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Description

All projects will submit annual progress report to ducument their accomplishments. Associate deans for research and extension are responsible for monitoring satisfactory progress has been made before funding release.

2. Data Collection Methods

- ☐ Sampling
- ☐ Whole population

Survey (Mail, Telephone, On-Site).

- ☐ Mail
- ☐ Telephone
- ☐ On-Site

Interview

- ☐ Structured
- ☐ Unstructured

- ☐ Case Study
- ☑ Observation
- ☑ Portfolio Reviews
- ☐ Tests
- ☐ Journals
- ☐ Other

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Invasive Species Education and Management

2. Brief summary about Planned Program

Pests threaten the quality of agricultural products, the health of farming businesses and the surrounding natural and urban ecosystems. Sound management of agroecosystems in Hawai'i depends on mitigating the effects of alien invasive species. Invasive species threaten our native plant heritage and economically important plants, pastures, rangelands, forests, and critical watersheds. CTAHR plays a significant role in developing and delivering information and technologies that minimize the negative impacts of invasive species.

The invasion of new pests and pathogens, including rapidly reproducing plants, insects, and disease-causing organisms, can devastate Hawai'i's expensive niche crops. Plant pathologists and entomologists identify new pests that continually invade the state. New technologies are being developed at CTAHR to control insects by biocontrol methods, and pathologists are testing new environmentally friendly chemicals extracted from mushrooms to control plant diseases. Similarly, plant selection and breeding for pest and disease control are important CTAHR contributions, which also provide environmental protection. For example, a basil cultivar highly resistant to fusarium wilt, a fungal disease which destroys this valuable plant, has recently been cultivated in Hawai'i and has helped to maintain the basil industry's value at $6.8 million in 2008. Two papaya cultivars developed by CTAHR, 'Rainbow' and 'SunUp,' are resistant to the devastating papaya ring spot virus and helped preserve the value of the papaya industry at $14.4 million in 2008, which put papaya in seventh place across all agricultural commodities in the state.

This planned program will utilize integrated research, extension and education projects to develop and deliver information and technologies to mitigate pests and invasive species that threaten agricultural, natural, and urban ecosystems and the economy.

3. Program existence :

- ◯ New (One year or less)
- ◯ Intermediate (One to five years)
- ◉ Mature (More than five years)

4. Program duration :

- ◯ Short-Term(One year or less)
- ◯ Medium-Term (One to five years)
- ◉ Long-Term (More than five years)

5. Expending formula funds or state-matching funds :

- ◉ Yes
- ◯ No

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

- ◉ Yes
- ◯ No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
136	Conservation of Biological Diversity	0%		7%	
204	Plant Product Quality and Utility (Preharvest)	0%		7%	
205	Plant Management Systems	15%		6%	
211	Insects, Mites, and Other Arthropods Affecting Plants	20%		18%	
212	Pathogens and Nematodes Affecting Plants	15%		36%	
213	Weeds Affecting Plants	15%		0%	
215	Biological Control of Pests Affecting Plants	5%		17%	
216	Integrated Pest Management Systems	30%		7%	
601	Economics of Agricultural Production and Farm Management	0%		2%	
	Total	100%		100%	

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

1. Situation and priorities

Hawai'i's physical isolation and year round growing conditions has created unique ecosystems across the islands that comprise the State. At the same time, invasive species have been described as

"the single greatest threat to Hawai'i's economy and natural environment and to the health and lifestyle of Hawai'i's people". Invasive species already cause millions of dollars in crop losses, the extinction of native species, and the destruction of native forests. Many pests such as the red imported fire ant, sand and biting flies, the brown tree snake, and many more could seriously damage Hawaii's natural resources, agriculture, tourism, and quality of life forever.

Despite federal and state quarantine regulations, about 20 new species become established in Hawaii every year and many more intercepted in various imported products. Although most of them cause few problems, others cause sufficient problems to have a significant impact on the State. Some of the recent invaders that have made an obvious impact on Hawaii's environment and/or economy are the coqui frog, erythrina gall wasp, Asperisporium black spot of papaya, nettle caterpillar, coffee berry borer, and basil downy mildew. Priorities will be aimed at eradication of invasive species newly introduced and with the possibility of eliminating populations in localized outbreaks. In areas where eradication may not be immediately possible, control measures to minimize its spread and reducing the population will be targeted.

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

- Other agencies are willing to do their part and are willing to cooperate.
- External funds and resources are available and can serve as a catalyst for change.
- Staff with appropriate expertise is available or can be recruited.
- A knowledge base exists to execute extension plans.

2. Ultimate goal(s) of this Program

- Eradicate specific invasive species.
- Improved management of targeted invasive species in Hawai'i to protect crops and natural resources with a subsequent reduction in production and management costs.
- New introductions of invasive species are reduced.
- New introductions of invasive species are eradicated as soon as possible before they spread and become established and difficult or costly to eradicate.
- Damage caused to agricultural and natural ecosystems by invasive weeds is mitigated.
- Working relationships with the state and county Invasive Species Committees, Department of Land and Natural Resources, USDA National Resource Conservation Service and other county, state and federal agencies become more effective.
- Stakeholders will receive timely information regarding new pest invaders.
- Pesticide applicators and ultimately farmers will have greater access to products and other tools

needed for crop production and applicators will be less likely to endanger themselves or the environment.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2012	5.0	0.0	5.0	0.0
2013	5.0	0.0	5.0	0.0
2014	5.0	0.0	5.0	0.0
2015	5.0	0.0	5.0	0.0
2016	5.0	0.0	5.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Provide outreach activities to educate stakeholders on biology, management techniques, and other information on targeted invasive species.
- Coordinate activities with partner agencies, community groups, and other interested stakeholders.
- Conduct pertinent research on the biology and control of the invasive species.

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	☐ Billboards
☑ Group Discussion	☑ Newsletters
☑ One-on-One Intervention	☑ TV Media Programs
☑ Demonstrations	☑ Web sites
☐ Other 1	☐ Other 1
☐ Other 2	☐ Other 2

3. Description of targeted audience

As intended by the Land Grant perspective, CTAHR's "targeted" clients for this program in instruction are the undergraduate and graduate students in related CTAHR programs. Targeted clients for research

are peers and extension specialists. Clients for extension specialists are CTAHR's county extension agents and the counterpart professional personnel of sister state and federal agencies, such as the Hawai'i State Departments of Agriculture, Health, and Land and Natural Resources, and the USDA Natural Resources Conservation Service; potential and existing farmers/producers and their organizations, such as the Hawai'i Association of Soil and Water Conservation Districts, individual commodity associations, and the Hawai'i Farm Bureau, packing houses and shippers, extension staff, and other members of the community who are involved in the agriculture industry, and environmental groups. Clients for extension agents are potential and existing farmers/producers and their organizations; such as the Hawai'i Association of Soil and Water Conservation Districts, individual commodity associations, and the Hawai'i Farm Bureau; packing houses and shippers; extension staff; and other members of the community who are involved in the agriculture industry, and environmental groups.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2012	1000	3000	500	400
2013	1000	3000	500	400
2014	1000	3000	500	500
2015	1000	3000	500	500
2016	1000	3000	500	500

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

2012:0 **2013:**0 **2014:**0 **2015:**0 **2016:**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2012	22	5	27
2013	25	5	30
2014	25	5	30
2015	25	5	30
2016	25	5	30

V(H). State Defined Outputs

1. Output Target

- Number of workshops, field days, demonstrations held

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

- Number of grant proposals submitted

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

V(I). State Defined Outcome

O. No	Outcome Name
1	Awareness created
2	Number of agency professionals, including extension agents who implement or install demonstration or similar programs for clientele education
3	Total dollar value of grants and contracts obtained.

Outcome # 1

1. Outcome Target

Awareness created

2. Outcome Type :

- (●) Change in Knowledge Outcome Measure
- ( ) Change in Action Outcome Measure
- ( ) Change in Condition Outcome Measure

2012:2000 **2013:**2000 **2014:**2000 **2015:**2000 **2016:**2000

3. Associated Knowledge Area(s)

- ☐ 136 - Conservation of Biological Diversity
- ☑ 204 - Plant Product Quality and Utility (Preharvest)
- ☑ 205 - Plant Management Systems
- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☑ 212 - Pathogens and Nematodes Affecting Plants
- ☑ 213 - Weeds Affecting Plants
- ☑ 215 - Biological Control of Pests Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☐ 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- ☑ 1862 Extension
- ☐ 1862 Research

Outcome # 2

1. Outcome Target

Number of agency professionals, including extension agents who implement or install demonstration or similar programs for
clientele education

2. Outcome Type :

- ( ) Change in Knowledge Outcome Measure
- (●) Change in Action Outcome Measure
- ( ) Change in Condition Outcome Measure

2012:15 **2013:**15 **2014:**15 **2015:**15 **2016:**15

3. Associated Knowledge Area(s)

- ☐ 136 - Conservation of Biological Diversity
- ☐ 204 - Plant Product Quality and Utility (Preharvest)
- ☐ 205 - Plant Management Systems
- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☑ 212 - Pathogens and Nematodes Affecting Plants
- ☑ 213 - Weeds Affecting Plants
- ☑ 215 - Biological Control of Pests Affecting Plants
- ☐ 216 - Integrated Pest Management Systems
- ☐ 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- ☑ 1862 Extension
- ☐ 1862 Research

Outcome # 3

1. Outcome Target

Total dollar value of grants and contracts obtained.

2. Outcome Type :

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

2012:400000 **2013:**400000 **2014:**400000 **2015:**400000 **2016:**400000

3. Associated Knowledge Area(s)

- ☑ 136 - Conservation of Biological Diversity
- ☐ 204 - Plant Product Quality and Utility (Preharvest)
- ☑ 205 - Plant Management Systems
- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☑ 212 - Pathogens and Nematodes Affecting Plants
- ☑ 213 - Weeds Affecting Plants
- ☑ 215 - Biological Control of Pests Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☐ 601 - Economics of Agricultural Production and Farm Management

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
- ☑ Government Regulations
- ☑ Competing Public priorities
- ☑ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Description

- Intentional introductions of invasive species
- Lack of funding/grant proposals don't come through.
- Other agencies and partners are not willing to partner and coordinate efforts.
- Communities and stakeholders are not willing to cooperate or don't do their share of the effort.

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

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☐ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☑ During (during program)
- ☐ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Description

All projects will submit annual progress report to ducument their accomplishments. Associate deans for research and extension are responsible for monitoring satisfactory progress has been made before funding release.

2. Data Collection Methods

- ☐ Sampling
- ☐ Whole population

Survey (Mail, Telephone, On-Site).

- ☐ Mail
- ☐ Telephone
- ☐ On-Site

Interview

- ☐ Structured
- ☐ Unstructured

- ☐ Case Study
- ☑ Observation
- ☑ Portfolio Reviews
- ☐ Tests
- ☐ Journals
- ☐ Other

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Youth, Family and Community Development

2. Brief summary about Planned Program

More than any other social institution, the family has profound influence on the health and well-being of its members, particularly its youth and elderly. CTAHR strengthens families in Hawai'i's rural and urban environments by providing assistance in areas such as family health and lifespan development, personal and family financial and time management, youth development, parenting, and caring for the elderly. Colleagues from UH community colleges, nonprofit organizations, and government agencies are partners on several CTAHR projects.

This planned program will utilize integrated research, extension, and instructional projects to promote resiliency and well-being in Hawai'i's individuals, families, and communities, and to strengthen their resource management, leadership, and community action. This planned program will provide integrated research, extension, and education focused on children and youth; enhance the ability of Hawai'i's families and communities to meet the needs of a growing elderly population; provide data, information, and technical assistance to enhance policies and programs for individuals and families; develop leadership and volunteer capacities of individuals and communities to take action for public well-being; facilitate partnerships and networks for effective action within and across communities; and enhance financial literacy and resource management.

3. Program existence :

- ○ New (One year or less)
- ○ Intermediate (One to five years)
- ◉ Mature (More than five years)

4. Program duration :

- ○ Short-Term(One year or less)
- ○ Medium-Term (One to five years)
- ◉ Long-Term (More than five years)

5. Expending formula funds or state-matching funds :

- ◉ Yes
- ○ No

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

- ◉ Yes
- ○ No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	0%		3%	
102	Soil, Plant, Water, Nutrient Relationships	0%		3%	
124	Urban Forestry	2%		5%	
133	Pollution Prevention and Mitigation	0%		3%	
703	Nutrition Education and Behavior	2%		3%	
724	Healthy Lifestyle	5%		3%	
801	Individual and Family Resource Management	8%		0%	
802	Human Development and Family Well-Being	30%		32%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	10%		14%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	3%		10%	
805	Community Institutions, Health, and Social Services	5%		0%	
806	Youth Development	35%		9%	
903	Communication, Education, and Information Delivery	0%		15%	
	Total	100%		100%	

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

1. Situation and priorities

Families and communities throughout Hawai'i and the Pacific region face daunting challenges. CTAHR's existing and new instructional, research, and outreach programs, that often involve partnering with other successful community programs in our communities will have positive and lasting impacts on Hawai'i families and communities.

National statistics on the status of Hawaii's youth indicate that many of the young people are at risk. A high percentage of Hawai'i's students are performing below average in national aptitude testing. Hawai'i ranks below the national average for households headed by single parents and in thehigh percentage of low-income households. Several excellent extramural programs provide healthy, experiential learning opportunities for youth in Hawai'i, including 4-H and Future Farmers of America. These programs complement and reinforce formal classroom education and provide opportunities for young people to learn and excel in non-threatening, extracurricular activities. CTAHR needs to continue to take an active role in coordinating and supporting these types of programs.

Strengthening individuals and families and fostering community collaborations are complementary approaches in coping with change and transition. Extension programs start within a community and are administered by organization members sensitive to the needs, issues, concerns, and interests of individuals, families, and communities. Extension programs in leadership and volunteer development, such as Family and Community Education, Family Community Leadership, and other extension projects, focus on providing community members with opportunities to learn life skills, develop leadership skills, conduct educational programs, and build partnerships within their communities. CTAHR supports such programs that produce positive impacts on and build upon the strengths of individuals, families, and communities.

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

- Partners and other agencies are willing to do their part and are willing to cooperate.
- External funds and resources are available and can serve as a catalyst for change.
- Staff with appropriate expertise is available or can be recruited.
- A knowledge base exists to execute extension plans.

2. Ultimate goal(s) of this Program

Hawai'i's youth, families and communities will make choices that result in community residents living longer, healthier and more productive lives.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2012	20.0	0.0	4.0	0.0
2013	20.0	0.0	4.0	0.0
2014	20.0	0.0	4.0	0.0

Year	Extension		Research	
	1862	1890	1862	1890
2015	20.0	0.0	4.0	0.0
2016	20.0	0.0	4.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Provide adult development programs to volunteers for youth programs.
- Provide opportunities for youth to become responsible, productive adults across the state.
- Share 4-H Juried Curriculum to educators, youth program staff, and volunteers through workshops.
- Develop and/or adapt curriculum and conduct training in building effective collaborations and create opportunities to build new collaborations within the college and/or amongst the community at large.
- Develop and maintain outreach programs in family and community development and leadership development.

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	☐ Billboards
☑ Group Discussion	☑ Newsletters
☑ One-on-One Intervention	☑ TV Media Programs
☑ Demonstrations	☑ Web sites
☐ Other 1	☐ Other 1
☐ Other 2	☐ Other 2

3. Description of targeted audience

As intended by the Land Grant perspective, CTAHR's "targeted" clients for this program in ***instruction*** are the undergraduate and graduate students in family and consumer sciences and allied fields. Targeted clients for ***research*** are peers and extension specialists. Clients for ***extension specialists*** are CTAHR's county extension agents and the counterpart professional personnel of sister state and federal agencies,such as the Hawai'i State Departments of Health and Social Services; adults (4-H leaders) and youth (ages 5-19) through the 4-H Youth Development program; young children and parents through the literacy programs; adults through the Family Education and Family Community Leadership Programs; home gardeners; and the elderly, extension staff in other CTAHR units and at sister institutions; and other members of the professional community who deal with family, youth and health issues. Clients for ***extension agents*** are children, youth and families "at risk" in targeted communities through the "New

Community Projects" program, kindergartners and parents through the "KAMP" programs, adults (4-H leaders) and youth (ages 5-19) through the 4-H Youth Development program, young children and parents through the literacy programs, adults through the Family Education and Family Community Leadership Programs, home gardeners, and the elderly, extension staff in other CTAHR units and at sister institutions, and other members of the professional community who deal with family, youth and health issues.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2012	10000	100000	6000	5250
2013	10000	100000	6000	5500
2014	10000	100000	6000	5750
2015	10000	100000	6000	5750
2016	10000	100000	6000	5750

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

2012:0 **2013:**0 **2014:**0 **2015:**0 **2016:**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2012	12	10	22
2013	12	10	22
2014	12	10	22
2015	12	10	22
2016	12	10	22

V(H). State Defined Outputs

1. Output Target

- Number of people completing non-formal education programs on parenting, youth development, and leadership development

  2012:5000 **2013:**5000 **2014:**5000 **2015:**5000 **2016:**5000

- Number of volunteer hours

  2012:65000 **2013:**65000 **2014:**65000 **2015:**65000 **2016:**65000

- Presentations at international and national meetings.

  2012:10 **2013:**10 **2014:**10 **2015:**10 **2016:**10

- Grant proposals submitted.

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

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of stakeholders who increased knowledge in at least one issue
2	Number of stakeholders completing non-formal education programs on parenting, youth development, and leadership development, who adopt one or more parenting principles, behaviors, or practices
3	Total dollar value of grants and contracts obtained.

Outcome # 1

1. Outcome Target

Number of stakeholders who increased knowledge in at least one issue

2. Outcome Type :

- (●) Change in Knowledge Outcome Measure
- ( ) Change in Action Outcome Measure
- ( ) Change in Condition Outcome Measure

2012:8000 **2013:**8000 **2014:**10000 **2015:**10000 **2016:**10000

3. Associated Knowledge Area(s)

- ☐ 101 - Appraisal of Soil Resources
- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 124 - Urban Forestry
- ☑ 133 - Pollution Prevention and Mitigation
- ☑ 703 - Nutrition Education and Behavior
- ☑ 724 - Healthy Lifestyle
- ☑ 801 - Individual and Family Resource Management
- ☑ 802 - Human Development and Family Well-Being
- ☑ 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- ☑ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial
- ☐ 805 - Community Institutions, Health, and Social Services
- ☑ 806 - Youth Development
- ☐ 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- ☑ 1862 Extension
- ☐ 1862 Research

Outcome # 2

1. Outcome Target

Number of stakeholders completing non-formal education programs on parenting, youth development, and leadership development, who adopt one or more parenting principles, behaviors, or practices

2. Outcome Type :

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

2012:1000 **2013:**1000 **2014:**2000 **2015:**2000 **2016:**2000

3. Associated Knowledge Area(s)

- ☐ 101 - Appraisal of Soil Resources
- ☐ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 124 - Urban Forestry
- ☐ 133 - Pollution Prevention and Mitigation
- ☑ 703 - Nutrition Education and Behavior
- ☑ 724 - Healthy Lifestyle
- ☑ 801 - Individual and Family Resource Management
- ☑ 802 - Human Development and Family Well-Being
- ☐ 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- ☐ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial
- ☐ 805 - Community Institutions, Health, and Social Services
- ☑ 806 - Youth Development
- ☐ 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- ☑ 1862 Extension
- ☐ 1862 Research

Outcome # 3

1. Outcome Target

Total dollar value of grants and contracts obtained.

2. Outcome Type :

- ◉ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

2012:1300000 **2013:**1300000 **2014:**1300000 **2015:**1300000 **2016:**1300000

3. Associated Knowledge Area(s)

- ☐ 101 - Appraisal of Soil Resources
- ☐ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 124 - Urban Forestry
- ☑ 133 - Pollution Prevention and Mitigation
- ☑ 703 - Nutrition Education and Behavior
- ☐ 724 - Healthy Lifestyle
- ☑ 801 - Individual and Family Resource Management
- ☑ 802 - Human Development and Family Well-Being
- ☑ 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- ☑ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial
- ☑ 805 - Community Institutions, Health, and Social Services
- ☑ 806 - Youth Development
- ☐ 903 - Communication, Education, and Information Delivery

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
- ☐ Government Regulations
- ☑ Competing Public priorities
- ☑ Competing Programmatic Challenges
- ☑ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Description

- Availability of funding and support from non-profit agencies.
- Availability and willingness of youth and adult volunteers to assist with programs.
- Collaboration and partnership can be developed with other agencies and non-governmental groups.
- Community leaders are willing to collaborate.

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

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☐ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☑ During (during program)
- ☐ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Description

All projects will submit annual progress report to ducument their accomplishments. Associate deans for research and extension are responsible for monitoring satisfactory progress has been made before funding release.

2. Data Collection Methods

- ☐ Sampling
- ☐ Whole population

Survey (Mail, Telephone, On-Site).

- ☐ Mail
- ☐ Telephone
- ☐ On-Site

Interview

- ☐ Structured
- ☐ Unstructured

- ☐ Case Study
- ☑ Observation
- ☑ Portfolio Reviews
- ☐ Tests
- ☐ Journals
- ☐ Other

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Health and Wellness of Hawaii's Families and Communities

2. Brief summary about Planned Program

The 2003 Hawai'i health survey reveals that more than half of Hawai'i's adults are overweight or obese. The rate of obesity in children ages 6 to 11 is twice the national average. About three-quarters of Hawai'i residents don't eat enough fruits and vegetables, and many suffer from diabetes, heart disease, high blood pressure, or diet-related cancers. To combine their strengths and enhance their effectiveness, CTAHR extension faculty in all four counties and two college departments (Human Nutrition, Food, and Animal Sciences and Family and Consumer Sciences) have joined together to coordinate their outreach in the areas of food, nutrition, and health. Under an umbrella program called Nutrition Education for Wellness, or NEW, this team of extension agents brings its varied expertise to a wide range of projects that promote healthy eating and exercise habits, encourage safe food handling practices, and improve the access of limited-income households to good nutrition. Research and instructional components exist as well, such as materials developed for young athletes by food science and human nutrition students. CTAHR faculty will continue to develop an interactive behavioral intervention program to improve the effectiveness in increasing calcium intake and bone density among Asian, Hispanic, and Caucasian girls.

This planned program will utilize integrated research, extension, and instructional projects to improve the health and wellness of Hawai'i's families and communities. This program will improve the understanding of and better communicate the role of nutrition and lifestyles in health and disease; understand and communicate food safety concerns and recommendations for health; understand and communicate effective prevention of contaminant release and management of contaminants and chemicals found in communities and households.

3. Program existence :

- ○ New (One year or less)
- ○ Intermediate (One to five years)
- ◉ Mature (More than five years)

4. Program duration :

- ○ Short-Term(One year or less)
- ○ Medium-Term (One to five years)
- ◉ Long-Term (More than five years)

5. Expending formula funds or state-matching funds :

- ◉ Yes
- ○ No

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

- ◉ Yes
- ○ No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
131	Alternative Uses of Land	0%		7%	
607	Consumer Economics	5%		6%	
608	Community Resource Planning and Development	10%		3%	
701	Nutrient Composition of Food	8%		8%	
702	Requirements and Function of Nutrients and Other Food Components	5%		18%	
703	Nutrition Education and Behavior	13%		11%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	5%		5%	
723	Hazards to Human Health and Safety	10%		5%	
724	Healthy Lifestyle	17%		3%	
802	Human Development and Family Well-Being	10%		15%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	12%		13%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	5%		6%	
	Total	100%		100%	

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

1. Situation and priorities

The rise in obesity is contributing to an alarming increase in chronic diseases. Science has linked human health to the nutritional value of foods and the consumer's dietary intake. CTAHR plays an important role in promoting healthy lifestyle habits and behaviors, such as making better food choices, to improve the quality of life of Hawai'i's citizens.

One out of five farms in Hawai'i are owned by immigrant farmers, who have limited knowledge of the English language and have been receiving assistance in many subjects including proper pesticide usage to minimize impact on themselves as well as those that consume their produce. CTAHR has been involved with immigrant farmers for many years helping them with basic knowledge about marketing, pesticide safety, and other opportunities.

Threats against Hawai'i's food supply and populace, whether deliberate acts of terrorism or unintentional introductions of plant or animal pathogens, insects, or invasive species, pose serious challenges to Hawaii's health, economy, and ecosystem. The college will help protect Hawai'i's general

population and its agricultural industry by providing comprehensive research and training in the detection, analysis, diagnosis, management, and assessments of the risk and economic impact of threats to Hawai'i's food supply and biological and chemical threats against the state.

CTAHR also needs to provide leadership in family and community safety, disease-exposure prevention, and food security and safety. Through outreach, the college can help protect our communities and families from contaminants and harmful household chemicals.We are partnering with colleagues from UH community colleges in several projects.

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

- Partners and other agencies are willing to do their part and are willing to cooperate.
- External funds and resources are available and can serve as a catalyst for change.
- Staff with appropriate expertise is available or can be recruited.
- A knowledge base exists to execute extension plans.

2. Ultimate goal(s) of this Program

The citizens of Hawai'i will live a longer and healthier life. CTAHR will continue as an important resource for detection, analysis, identification and mitigation of chemical and biological agents accidentally or purposefully introduced as contaminants, invasives, or bioterrorist agents.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2012	5.0	0.0	4.0	0.0
2013	5.0	0.0	4.0	0.0
2014	5.0	0.0	4.0	0.0
2015	5.0	0.0	4.0	0.0
2016	5.0	0.0	4.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Develop research, extension, and instructional initiatives to protect the state from bioterrorism.
- Maintain and upgrade research and extension laboratory resources needed to rapidly detect, analyze, and identify chemical and biological samples.
- Establish effective working relations with State and federal laboratories and programs focused on agroterrorism.
- Establish education and training programs for students, first responders/detectors, and
- agriculture producers.
- Develop and maintain an effective pesticide management program.
- Develop a CTAHR response plan in conjunction with Hawai'i Department of Health in preparation for an emergency or unexpected outbreak.
- Provide training to extension faculty to educate Hawai'i farmers and ranchers to help mitigate effects of a zoonotic or foreign animal disease outbreak.
- Promote locally grown commodities to minimize unnecessary imports from mainland and international destinations.
- Establish a Pacific Agrosecurity system to provide training for partners in the American Pacific to ensure that first responders are prepared.
- Conduct outreach programs for stakeholders to strengthen their capacity to make educated decisions to improve their health, wellness, and overall quality of life.

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	☐ Billboards
☑ Group Discussion	☑ Newsletters
☑ One-on-One Intervention	☑ TV Media Programs
☐ Demonstrations	☑ Web sites
☐ Other 1	☐ Other 1
☐ Other 2	☐ Other 2

3. Description of targeted audience

As intended by the Land Grant perspective, CTAHR's "targeted" clients for this program in ***instruction*** are the undergraduate and graduate students in family and consumer sciences and allied fields. Targeted clients for ***research*** are peers and extension specialists. Clients for ***extension specialists*** are CTAHR's county extension agents; the counterpart professional personnel of sister state and federal agencies,such as the Hawai'i State Departments of Health, and Social Service; youth, families, and extended families; the general public extension staff in other CTAHR units and at sister institutions; and other members of the professional community who deal with family, youth and health issues. Clients for ***extension agents*** are youth, families, and extended families, especially those on limited budgets, youth

and adults at risk for obesity and diabetes and related diseases, farmers and farm workers, especially those that are immigrants, the general public and consumers of local produce, extension staff in other CTAHR units and at sister institutions, and other members of the professional community who deal with family, youth and health issues.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2012	10500	55000	3000	8000
2013	11000	57000	3000	8000
2014	11000	60000	3000	8000
2015	11000	60000	3000	8000
2016	11000	60000	3000	8000

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

2012:0 **2013:**0 **2014:**0 **2015:**0 **2016:**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2012	12	3	15
2013	12	3	15
2014	12	3	15
2015	12	3	15
2016	12	3	15

V(H). State Defined Outputs

1. Output Target

- Number of outreach activities and events conducted

  2012:500 **2013:**500 **2014:**500 **2015:**500 **2016:**500

- Presentations at international and national meetings.

  2012:15 **2013:**15 **2014:**15 **2015:**15 **2016:**15

- Grant proposals submitted.

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

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of people trained and who receive their pesticide applicators license
2	Number of people who changed their behavior to better their health
3	Number of people who increased their knowledge in health and wellness through outreach activities
4	Total dollar value of grants and contracts obtained.

Outcome # 1

1. Outcome Target

Number of people trained and who receive their pesticide applicators license

2. Outcome Type :

- (●) Change in Knowledge Outcome Measure
- ( ) Change in Action Outcome Measure
- ( ) Change in Condition Outcome Measure

2012:95	**2013:**95	**2014:**100	**2015:**100	**2016:**100

3. Associated Knowledge Area(s)

- ☐ 131 - Alternative Uses of Land
- ☐ 607 - Consumer Economics
- ☐ 608 - Community Resource Planning and Development
- ☐ 701 - Nutrient Composition of Food
- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☐ 703 - Nutrition Education and Behavior
- ☑ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and
- ☑ 723 - Hazards to Human Health and Safety
- ☐ 724 - Healthy Lifestyle
- ☐ 802 - Human Development and Family Well-Being
- ☐ 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- ☐ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial

4. Associated Institute Type(s)

- ☑ 1862 Extension
- ☐ 1862 Research

Outcome # 2

1. Outcome Target

Number of people who changed their behavior to better their health

2. Outcome Type :

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

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

3. Associated Knowledge Area(s)

- ☐ 131 - Alternative Uses of Land
- ☐ 607 - Consumer Economics
- ☐ 608 - Community Resource Planning and Development
- ☑ 701 - Nutrient Composition of Food
- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 703 - Nutrition Education and Behavior
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and
- ☑ 723 - Hazards to Human Health and Safety
- ☑ 724 - Healthy Lifestyle
- ☑ 802 - Human Development and Family Well-Being
- ☐ 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- ☐ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial

4. Associated Institute Type(s)

- ☑ 1862 Extension
- ☐ 1862 Research

Outcome # 3

1. Outcome Target

Number of people who increased their knowledge in health and wellness through outreach activities

2. Outcome Type :

- ◉ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

2012:3000 **2013:**3000 **2014:**3000 **2015:**3000 **2016:**3000

3. Associated Knowledge Area(s)

- ☐ 131 - Alternative Uses of Land
- ☐ 607 - Consumer Economics
- ☑ 608 - Community Resource Planning and Development
- ☑ 701 - Nutrient Composition of Food
- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 703 - Nutrition Education and Behavior
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and
- ☑ 723 - Hazards to Human Health and Safety
- ☑ 724 - Healthy Lifestyle
- ☐ 802 - Human Development and Family Well-Being
- ☐ 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- ☐ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial

4. Associated Institute Type(s)

- ☑ 1862 Extension
- ☐ 1862 Research

Outcome # 4

1. Outcome Target

Total dollar value of grants and contracts obtained.

2. Outcome Type :

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

2012:500000 **2013:**500000 **2014:**500000 **2015:**600000 **2016:**600000

3. Associated Knowledge Area(s)

- ☐ 131 - Alternative Uses of Land
- ☐ 607 - Consumer Economics
- ☑ 608 - Community Resource Planning and Development
- ☐ 701 - Nutrient Composition of Food
- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 703 - Nutrition Education and Behavior
- ☑ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and
- ☑ 723 - Hazards to Human Health and Safety
- ☑ 724 - Healthy Lifestyle
- ☑ 802 - Human Development and Family Well-Being

- ☑ 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- ☑ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial

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
- ☑ Government Regulations
- ☑ Competing Public priorities
- ☑ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Description

- When the economy is weak, public and private funding decreases and is more difficult to obtain.

- When funding has decreased, other issues may be concerned priorities and compete for available funds.

- High cost of petroleum and increased worked demand are directly or indirectly increasing the cost of all goods and services.

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

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☐ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☑ During (during program)

- ☐ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Description

All projects conducted under this program were peer-reviewed before initiation. Annual progress reports were collected and evaluated by Associate Deans for research and extension. Funds were not released for those projects which did not show tangible progress

2. Data Collection Methods

- ☐ Sampling
- ☐ Whole population

Survey (Mail, Telephone, On-Site).

- ☐ Mail
- ☐ Telephone
- ☐ On-Site

Interview

- ☐ Structured
- ☐ Unstructured

- ☐ Case Study
- ☑ Observation
- ☑ Portfolio Reviews
- ☐ Tests
- ☐ Journals
- ☐ Other

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Global Food Security and Hunger

2. Brief summary about Planned Program

CTAHR can play a pivotal role in supporting the national priorities in global food security and hunger because Hawai'i has an environment that is similar to that of other developing countries in the tropical and subtropical regions. This planned program will utilize integrated research, extension, and education projects to provide knowledge and technologies to generate and improve products and processes for existing and expanded markets.

The call for increased production of local food has brought increased attention to expanding commercial agricultural production. CTAHR has an extension program specifically designed to assist producers interested in starting or expanding operations. At the same time, the traditional extension programming is continuing to focus on assisting new and existing producers. Small-scale agriculture, which can easily be used for backyard or subsistence, is a high-priority activity for CTAHR extension programming, and work has just begun to integrate a portion of this effort into a statewide Master Gardener program. Hawai'i livestock and aquaculture industries also contribute to the value of Hawai'i's agriculture sector.

CTAHR will engage in research, extension, and instruction in support of these industries. Specific research efforts include investigations of reproductive performance for ruminants and cattle, the suppression of excess fat in poultry, the genetic improvement of sheep and cattle, the increase in muscle mass in cattle, the development of cooling systems for cows in hot-humid climates, remediation of former sugarcane lands for livestock production, and new marketing opportunities for value-added beef products. CTAHR also a very active research and extension program in the area of aquaculture. Specialized aquaculture management models and applied research concerned with increasing productivity and reducing costs are being developed. At the same time, work aimed at increasing backyard and subsistence efforts that move towards altering a household's production function and decrease the reliance on purchased, imported food is also underway.

3. Program existence :

- ○ New (One year or less)
- ○ Intermediate (One to five years)
- ◉ Mature (More than five years)

4. Program duration :

- ○ Short-Term(One year or less)
- ○ Medium-Term (One to five years)
- ◉ Long-Term (More than five years)

5. Expending formula funds or state-matching funds :

- ◉ Yes
- ○ No

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

- ◉ Yes
- ○ No

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	5%		10%	
205	Plant Management Systems	10%		7%	
301	Reproductive Performance of Animals	20%		12%	
303	Genetic Improvement of Animals	12%		10%	
305	Animal Physiological Processes	10%		15%	
306	Environmental Stress in Animals	8%		10%	
307	Animal Management Systems	10%		3%	
403	Waste Disposal, Recycling, and Reuse	10%		2%	
503	Quality Maintenance in Storing and Marketing Food Products	5%		11%	
511	New and Improved Non-Food Products and Processes	5%		12%	
601	Economics of Agricultural Production and Farm Management	3%		5%	
607	Consumer Economics	2%		3%	
	Total	100%		100%	

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

1. Situation and priorities

With the closing or downsizing of the large sugar and pineapple operations in Hawai'i, the number of small, entrepreneurial operations that produce a diversity of crops and agricultural products has increased. Opportunities exist for replacing imports to local supermarket chains, hotels, restaurants, local cruise lines. However, because of the small size of most local farms, many are not able to meet the continuous supply requirements. Although farmers are notoriously independent, collaboration among farmers to synchronize production or coordinate marketing to meet the needs of buyers would significantly help towards filling the needs of buyers with local produce.

Value added products can increase profitability of a crop significantly. Many of Hawai'i's products can made into ready-to-eat products. Success stories abound of local value added products, such as the "Mountain Apple Brand" developed by a local supermarket chain that features local produce. CTAHR will continue to provide assistance and expertise in developing new products, processes, and new markets.

Hawaii is particularly vulnerable should in-shipments to the State be stopped for any reason because more than 80% of the State's food supply is imported. Estimates indicate that only a two week supply of food exist within the State at any one time and policy makers are increasing interested in efforts to increase Hawai'i's food self-sufficiency. The call for increased production of local food has brought increased attention to expanding commercial agricultural production.

CTAHR has research programs in vegetable production, taro, and tropical fruits production which is relevant to our state, but also other tropical and subtropical regions of the world. Diseases and pests continue to be major constraints in growing food crops on the islands, and our research programs are designed to resolve these challenges.

CTAHR has an extension program specifically designed to assist producers interested in expanding operations. At the same time, the traditional extension programming is continuing to focus on assisting new and existing producers. While Hawaii has been relatively successful in increasing the production of fruits and vegetables, the production of starch and protein is more challenging.

Increasing urbanization has also increased the interest in urban horticultural programs, since many of Hawaii's urban areas can be classified as food deserts. Small scale agriculture, which can easily be used for backyard or subsistence is a high priority activity for CTAHR extension programming. Work has just begun to integrate a portion of this effort into establishing a Statewide Master Gardner program.

Livestock and aquaculture systems occupy an important place in the State diversified agricultural sector. Aquaculture was ranked fourth in terms of total value in 2008 at $35 million, with cattle placing eighth at $26 million, followed by eggs at $9 million, milk at $5 million, and hogs at $3 million. This group, then accounted for more than $76 million in total value in 2008. Policymakers are interested in these industries because the State currently imports large amounts of protein. Significant production costs, particularly for feed and processing, coupled with the high cost of land, reduces the competitiveness of Hawai'i's livestock and aquaculture industries.

CTAHR is involved in research and extension efforts to improve the genetics of cattle in the characteristics of tenderness, rib eye area, and marbling with the focus on forage finishing. Although Hawai'i does not expect to be self-sufficient in beef, the overall goal is to retain a greater portion of locally produced beef. Interest in forage finished natural beef has increased, with work on value added products continuing.

Great strides have been made in marine aquaculture technologies in the past decade, and it is now possible to produce many species of fish in land-based intensive culture systems at costs that are substantially below those of harvesting wild stocks. Yet, expansion of land-based aquaculture is limited due to competing interests for suitable land and because of environmental concerns. Offshore aquaculture production has been viewed as a means towards meeting future seafood demands in an environmentally acceptable way. NOAA has enunciated a policy toward increasing aquaculture production in the U.S. from 1 to 5 billion pounds by 2025, and has focused on the development of offshore aquaculture as a primary means of achieving that goal. CTAHR will expand our aquaculture program to meet this future demand. CTAHR is coordinating our efforts with faculty members outside our college to strengthen our aquaculture program. A new undergraduate degree program is being planned, and an additional faculty position has been added to support this 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

- External funds and resources are available.
- Staff with the appropriate expertise is available or can be recruited.
- People will be motivate to learn/change.
- Opportunities for value added products exist.
- Cost efficient production and processing systems can be developed.

2. Ultimate goal(s) of this Program

- Hawaii will become more self-sufficient food production and reduce the reliance on imported food.
- New value added products are developed using locally produced crops and livestock.
- Current products and processes are improved using knowledge and expertise in CTAHR.
- Local producers and manufacturers become more efficient, more profitable, and more competitive with the technical and business management assistance and training received from CTAHR.
- Develop a profitable and sustainable livestock industry in Hawaii.
- Develop a profitable and sustainable aquaculture industry in Hawaii.

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

Year	Extension		Research	
	1862	1890	1862	1890
2012	8.0	0.0	22.0	0.0
2013	8.0	0.0	23.0	0.0
2014	9.0	0.0	24.0	0.0
2015	9.0	0.0	24.0	0.0
2016	9.0	0.0	24.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct needs assessment for stakeholders in urban and rural areas.
- Develop and deliver educational programs aimed at increasing local food production by households and commercial producers.
- Conduct varietal-testing trials to identify disease-resistant varieties for Hawai'i planting.
- Develop sustainable farming techniques for local farmers.
- Conduct soil- and water-use trials to reduce soil erosion and lessen water usage.
- Explore new foods' and fruit crops' potential for island use.
- Conduct portfolio and industry analyses to identify bottlenecks for industry expansion.
- Develop new value-added products from locally grown crops and livestock.
- Conduct research station field days, demonstration sites conferences, and other outreach and educational activities for stakeholders.
- Identify the period when shrimp are receptive to the sex-reversing effects of exogenous androgenic hormone.
- Develop marketing models and economic analyses of the key segments of the beef industry.
- Develop a gender-specific molecular sex marker in shrimp and prawns.
- Provide consulting service to individual farmers, processors, packers, and industry groups with a view toward developing new markets, developing new marketing strategies, and writing successful business/marketing plans to expand their business.

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	☐ Billboards
☑ Group Discussion	☑ Newsletters
☑ One-on-One Intervention	☐ TV Media Programs
☑ Demonstrations	☑ Web sites
☐ Other 1	☐ Other 1
☐ Other 2	☐ Other 2

3. Description of targeted audience

As intended by the Land Grant perspective, CTAHR's "targeted" clients for this program in ***instruction*** are the undergraduate and graduate students in CTAHR's related programs. Targeted clients for ***research*** are peers and extension specialists. Clients for ***extension specialists*** are CTAHR's county extension agents; the counterpart professional personnel of sister state and federal agencies, such as the Hawai`i State Departments of Agriculture, Health, and Land and Natural Resources, and the USDA Natural Resources Conservation Service; new and existing agricultural producers and the organizations that represent them, such as such as the Hawai'i Association of Soil and Water Conservation Districts, Hawai'i Macadamia Nut Association, Hawai'i Papaya Industry Association, and the Hawai'i Farm Bureau Federation; other businesses with forward or backward linkages to the agricultural sector; and community residents interested or involved in agriculture. Clients for ***extension agents*** are potential and existing farmers/producers and their organizations, such as the Hawai'i Association of Soil and Water Conservation Districts, Hawai'i Macadamia Nut Association, Hawai'i Papaya Industry Association, and the Hawai'i Farm Bureau Federation, packing houses and shippers, extension colleagues, and other members of the community who are involved in the agriculture sector.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2012	2000	15000	300	600
2013	2500	15000	300	600
2014	2500	15000	300	600
2015	2500	15000	300	600
2016	2500	15000	300	600

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

2012:1 **2013:**1 **2014:**1 **2015:**1 **2016:**1

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2012	30	5	35
2013	30	5	35
2014	30	5	35
2015	30	5	35
2016	30	5	35

V(H). State Defined Outputs

1. Output Target

- Number of workshops, field days and demonstrations.

  2012:150 **2013:**150 **2014:**150 **2015:**150 **2016:**150

- Presentations at international and national meetings

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

- Grant proposals submitted

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

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of people that adopt one or more recommended practices.
2	Total dollar value of grants and contracts obtained

Outcome # 1

1. Outcome Target

Number of people that adopt one or more recommended practices.

2. Outcome Type :

- (●) Change in Knowledge Outcome Measure
- ( ) Change in Action Outcome Measure
- ( ) Change in Condition Outcome Measure

2012:1000 **2013:**1000 **2014:**1000 **2015:**2000 **2016:**2000

3. Associated Knowledge Area(s)

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 205 - Plant Management Systems
- ☐ 301 - Reproductive Performance of Animals
- ☑ 303 - Genetic Improvement of Animals
- ☑ 305 - Animal Physiological Processes
- ☐ 306 - Environmental Stress in Animals
- ☑ 307 - Animal Management Systems
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☑ 503 - Quality Maintenance in Storing and Marketing Food Products
- ☑ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 607 - Consumer Economics

4. Associated Institute Type(s)

- ☑ 1862 Extension
- ☐ 1862 Research

Outcome # 2

1. Outcome Target

Total dollar value of grants and contracts obtained

2. Outcome Type :

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

2012:2000000 **2013:**2000000 **2014:**2500000 **2015:**2500000 **2016:**2500000

3. Associated Knowledge Area(s)

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 205 - Plant Management Systems
- ☑ 301 - Reproductive Performance of Animals
- ☐ 303 - Genetic Improvement of Animals
- ☑ 305 - Animal Physiological Processes
- ☑ 306 - Environmental Stress in Animals
- ☑ 307 - Animal Management Systems
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 503 - Quality Maintenance in Storing and Marketing Food Products
- ☑ 511 - New and Improved Non-Food Products and Processes
- ☑ 601 - Economics of Agricultural Production and Farm Management
- ☑ 607 - Consumer Economics

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
- ☑ Government Regulations
- ☑ Competing Public priorities
- ☑ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Description

• Natural disasters can affect food production. In some cases, the entire food production/marketing system may be disrupted.
• The economic outlook can affect those interested in starting or expanding operations and those interested in household food production.
• Raw products are available to make into value added products.
• Collaboration and partnerships can be developed and maintained with other governmental agencies.
• A population of forward thinking businesses are willing to invest in new ideas, new products and new markets.
• Producers are willing and wanting to coordinate production to meet consistent, year round demands for their products.

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

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☐ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☑ During (during program)
- ☐ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Description

All projects will be peer-reviewed prior to inception. Progress report is needed for all project, and satisfactory progress will be monitored by associate deans for research and extension each year before releasing funding for subsequently years.

2. Data Collection Methods

- ☐ Sampling
- ☐ Whole population

Survey (Mail, Telephone, On-Site).

- ☐ Mail
- ☐ Telephone
- ☐ On-Site

Interview

- ☐ Structured
- ☐ Unstructured

- ☐ Case Study

- ☑ Observation
- ☑ Portfolio Reviews
- ☐ Tests
- ☐ Journals
- ☐ Other

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Climate Change

2. Brief summary about Planned Program

Global climate change will continue to affect Hawai'i's tropical environment. The availability of water is of great concern, particularly in rural areas where water-delivery systems that used to be maintained by the large plantations have fallen into disrepair. Water catchment systems are a common solution; however, water quality is affected by many variables. For example, acid rain caused by volcanic gas (VOG) is a major concern in the state, particularly on Hawai'i Island. Wild fires are concerns in pasture and forest land, and models of fuel load and fire behavior developed in temperate regions must be modified to fit tropical conditions. Similarly, the effects of variations in rainfall on rangeland productivity must be assessed. Increased urbanization also contributes to global warming, and researchers and extension personnel are pursuing mitigation efforts via urban horticulture and forestry.

3. Program existence :

- ○ New (One year or less)
- ◉ Intermediate (One to five years)
- ○ Mature (More than five years)

4. Program duration :

- ○ Short-Term(One year or less)
- ○ Medium-Term (One to five years)
- ◉ Long-Term (More than five years)

5. Expending formula funds or state-matching funds :

- ◉ Yes
- ○ No

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

- ◉ Yes
- ○ No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
104	Protect Soil from Harmful Effects of Natural Elements	0%		10%	
111	Conservation and Efficient Use of Water	50%		0%	
112	Watershed Protection and Management	20%		20%	
122	Management and Control of Forest and Range Fires	0%		20%	
123	Management and Sustainability of Forest Resources	0%		15%	
132	Weather and Climate	10%		10%	
133	Pollution Prevention and Mitigation	20%		15%	
136	Conservation of Biological Diversity	0%		10%	
	Total	100%		100%	

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

1. Situation and priorities

Global climate change has affected Hawaii's tropical environment. The availability of water is of great concern, particularly in rural areas where water delivery systems that used to be maintained by the large plantations have fallen into disrepair. Water catchment systems are a common solution, however, the water quality in catchment system is affected by many variables, which must be managed by the owner. Acid rain caused by volcanic gas or VOG is a big concern in the State, particularly on Hawaii island. This rain is of concern for catchment systems and the impacts of variable rainfall on catchment water quantity and quality are being monitored.

Increased urbanization also contributes to global warming. Urban forestry provides one approach to mitigating global warming, to some degree. Efforts to increase the size of the urban forests in Hawaii via CTAHR outreach programs are underway.

Research is underway to predict the impacts of temperature changes on terrestrial ecosystems using Hawaii's existing temperature variations with elevations gradients. Also the effects of climate variation on the incidence and severity of forest and rangeland fires is being studied in Hawaii.

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

- A core of qualified extension and research staff is available.
- Additional external funds and other resources are available.
- Partnerships can continue and expand to coordinate efforts and share resources.
- Stakeholders are willing to implement best management practices.
- People are motivated to learn/change.

2. Ultimate goal(s) of this Program

Hawaii strive to develop long term strategies to mitigate or prevent the negative impact of global warming on the State's residents, visitors, the economy and the environment.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2012	1.0	0.0	1.0	0.0
2013	1.0	0.0	2.0	0.0
2014	1.0	0.0	2.0	0.0
2015	1.0	0.0	2.0	0.0
2016	1.0	0.0	2.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct a needs assessment for stakeholders in urban and rural areas.
- Develop and deliver educational programs directed at catchment systems and urban horticulture in order to mitigate or prevent the negative effects of global warming.
- Develop appropriate fuel load and wild fire management models for tropical conditions.

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	☐ Billboards
☑ Group Discussion	☑ Newsletters
☑ One-on-One Intervention	☐ TV Media Programs
☑ Demonstrations	☑ Web sites
☐ Other 1	☐ Other 1
☐ Other 2	☐ Other 2

3. Description of targeted audience

As intended by the Land Grant perspective, CTAHR's "targeted" clients for this program in ***instruction*** are the undergraduate and graduate students in related CTAHR programs. Targeted clients for ***research*** are peers and extension specialists. Clients for ***extension specialists*** are CTAHR's county extension agents; the counterpart professional personnel of sister state and federal agencies, such as the Hawai'i State Department of Land and Natural Resources; and the general public. Clients for ***extension agents*** are the general public.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2012	1500	15000	40	100
2013	1500	15000	65	150
2014	1500	15000	65	150
2015	1500	15000	65	150
2016	1500	15000	60	150

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

2012:0 **2013:**0 **2014:**0 **2015:**1 **2016:**1

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total

Year	Research Target	Extension Target	Total
2012	2	1	3
2013	2	2	4
2014	5	2	7
2015	5	2	7
2016	5	2	7

V(H). State Defined Outputs

1. Output Target

- Number of workshops, field days, or demonstrations conducted

2012:20 **2013:**30 **2014:**30 **2015:**35 **2016:**35

- Presentations at national and international meetings.

2012:10 **2013:**10 **2014:**10 **2015:**10 **2016:**10

- Grant proposals submitted.

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

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of people that adopt one or more recommended practice.
2	Number of people who increase their knowledge or complete non-formal education on climate change related issues.
3	Dollar value of grants and contracts obtained.

Outcome # 1

1. Outcome Target

Number of people that adopt one or more recommended practice.

2. Outcome Type :

- (●) Change in Knowledge Outcome Measure
- ( ) Change in Action Outcome Measure
- ( ) Change in Condition Outcome Measure

2012:30 **2013:**40 **2014:**40 **2015:**45 **2016:**45

3. Associated Knowledge Area(s)

- ☐ 104 - Protect Soil from Harmful Effects of Natural Elements
- ☑ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☑ 122 - Management and Control of Forest and Range Fires
- ☑ 123 - Management and Sustainability of Forest Resources
- ☐ 132 - Weather and Climate
- ☑ 133 - Pollution Prevention and Mitigation
- ☐ 136 - Conservation of Biological Diversity

4. Associated Institute Type(s)

- ☑ 1862 Extension
- ☐ 1862 Research

Outcome # 2

1. Outcome Target

Number of people who increase their knowledge or complete non-formal education on climate change related issues.

2. Outcome Type :

- (●) Change in Knowledge Outcome Measure
- ( ) Change in Action Outcome Measure
- ( ) Change in Condition Outcome Measure

2012:2000 **2013:**2000 **2014:**2000 **2015:**2000 **2016:**2000

3. Associated Knowledge Area(s)

- ☐ 104 - Protect Soil from Harmful Effects of Natural Elements
- ☑ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☑ 122 - Management and Control of Forest and Range Fires
- ☑ 123 - Management and Sustainability of Forest Resources
- ☑ 132 - Weather and Climate
- ☑ 133 - Pollution Prevention and Mitigation
- ☐ 136 - Conservation of Biological Diversity

4. Associated Institute Type(s)

- ☑ 1862 Extension
- ☑ 1862 Research

Outcome # 3

1. Outcome Target

Dollar value of grants and contracts obtained.

2. Outcome Type :

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

2012:200000 **2013:**200000 **2014:**200000 **2015:**300000 **2016:**300000

3. Associated Knowledge Area(s)

- ☐ 104 - Protect Soil from Harmful Effects of Natural Elements
- ☑ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☑ 122 - Management and Control of Forest and Range Fires
- ☑ 123 - Management and Sustainability of Forest Resources
- ☑ 132 - Weather and Climate
- ☑ 133 - Pollution Prevention and Mitigation
- ☐ 136 - Conservation of Biological Diversity

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
- ☑ Government Regulations
- ☑ Competing Public priorities
- ☑ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Description

- Any natural disaster may alter the effect of climate change on Hawaii.
- The economic situation will determine what resources are available via appropriations and other funding mechanisms.
- Other issues may affect the interest in global warming at the community, state of federal level. As interest changes, then public policy, government regulations, other priorities and other programming will be affected.

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

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☐ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☑ During (during program)
- ☐ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Description

All projects will be peer-reviewed prior to inception. Progress report is needed for all project, and satisfactory progress will be monitored by associate deans for research and extension each year before releasing funding for subsequently years.

2. Data Collection Methods

- ☐ Sampling
- ☐ Whole population

Survey (Mail, Telephone, On-Site).

- ☐ Mail
- ☐ Telephone
- ☐ On-Site

Interview

- ☐ Structured
- ☐ Unstructured

- ☐ Case Study
- ☑ Observation
- ☑ Portfolio Reviews
- ☐ Tests
- ☐ Journals
- ☐ Other

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Sustainable Energy

2. Brief summary about Planned Program

The state of Hawai'i depends heavily upon imported fossil fuels for power and transportation. The ultimate goals of this program are to efficiently grow perennial crops on marginal lands as feedstock for biofuels and to develop and promote the use of these locally produced biofuels as alternatives to imported fossil fuels.

The objectives of this program are to (1) demonstrate the technical and economic feasibility of producing ethanol from lignocellulosic biomass, (2) demonstrate the technical and economic feasibility of producing vegetable oil for biodiesel production, and (3) demonstrate the technical and economic feasibility of producing charcoal from bioresidue generated in the course of producing ethanol and biodiesel.

3. Program existence :

- ○ New (One year or less)
- ◉ Intermediate (One to five years)
- ○ Mature (More than five years)

4. Program duration :

- ○ Short-Term(One year or less)
- ○ Medium-Term (One to five years)
- ◉ Long-Term (More than five years)

5. Expending formula funds or state-matching funds :

- ◉ Yes
- ○ No

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

- ◉ Yes
- ○ No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
511	New and Improved Non-Food Products and Processes	0%		100%	
	Total	0%		100%	

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

1. Situation and priorities

Hawaii is surrounded by oceans. We import more than 90% of everything we consume and use on the islands. State of Hawaii wants to use as much as possible locally produced fuels, including biomass energy. Our warm tropical weather and open lands left unused from the sugar plantation days provides an ideal environment to grow tropical grasses, and oil-seed crops for ethonal and biodiesel production. CTAHR has identified bioenergy as one of our top research priorities.

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

1. Price for fossil fuels continue to rise.
2. Political will to use alternative energy to replace fossil fuels continues.
3. Adequate funding support is available.
4. Appropriate combination of expertise on our research team.

2. Ultimate goal(s) of this Program

The goal of this program is to ultimately poduce feedstock on marginal lands by growing perennial crops that make efficient use of water and nutrients, and the use of the feedstock for biofuels for local consumption.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2012	0.0	0.0	1.5	0.0
2013	0.0	0.0	1.5	0.0
2014	0.0	0.0	1.5	0.0
2015	0.0	0.0	2.0	0.0
2016	0.0	0.0	2.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

• Determine the optimal yield and quality of guinea grass for conversion as a function of harvesting frequency, irrigation, and fertilizer treatments.
• Conduct field experiments with Jatropha curcas, a tree that produces a nut with great potential as a source of oil for conversion into biodiesel.
• Develop and demonstrate the use of dried guinea grass and the shell and husk of Jatropha nuts as feedstock for conversion into charcoal using flash carbonization.

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	☐ Billboards
☑ Group Discussion	☑ Newsletters
☑ One-on-One Intervention	☑ TV Media Programs
☑ Demonstrations	☑ Web sites
☐ Other 1	☐ Other 1
☐ Other 2	☐ Other 2

3. Description of targeted audience

Individual farmers who may be interested in planting energy crops. Energy producers such as Hawaiian Electric Company. State Agencies interested in lessening state dependence on imported fossil fuels such as Department of Agriculture.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2012	10	10	0	0
2013	10	10	0	0
2014	10	10	0	0
2015	10	10	0	0
2016	10	10	0	0

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

2012:0 **2013:**0 **2014:**1 **2015:**0 **2016:**1

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2012	1	0	1
2013	1	0	1
2014	1	0	1
2015	1	0	1
2016	2	0	2

V(H). State Defined Outputs

1. Output Target

- Grant proposals submitted

2012:4 **2013:**5 **2014:**5 **2015:**5 **2016:**5

- Presentations at national and international meetings.

2012:2 **2013:**4 **2014:**4 **2015:**4 **2016:**4

- Number of workshops and other educational/outreach activities held.

2012:1 **2013:**1 **2014:**2 **2015:**2 **2016:**2

V(I). State Defined Outcome

O. No	Outcome Name
1	Identified types of bioenergy crops suitable for Hawaii environment.
2	Dollar value of grants and contracts received

Outcome # 1

1. Outcome Target

Identified types of bioenergy crops suitable for Hawaii environment.

2. Outcome Type :

- (●) Change in Knowledge Outcome Measure
- ( ) Change in Action Outcome Measure
- ( ) Change in Condition Outcome Measure

2012:1 **2013:**1 **2014:**1 **2015:**1 **2016:**1

3. Associated Knowledge Area(s)

- ☑ 511 - New and Improved Non-Food Products and Processes

4. Associated Institute Type(s)

- ☐ 1862 Extension
- ☑ 1862 Research

Outcome # 2

1. Outcome Target

Dollar value of grants and contracts received

2. Outcome Type :

- ( ) Change in Knowledge Outcome Measure
- (●) Change in Action Outcome Measure
- ( ) Change in Condition Outcome Measure

2012:50000 **2013:**50000 **2014:**50000 **2015:**50000 **2016:**50000

3. Associated Knowledge Area(s)

- ☑ 511 - New and Improved Non-Food Products and Processes

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
- ☑ Government Regulations
- ☑ Competing Public priorities
- ☑ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Description

Cost is a decisive factor in developing alternative fuels industry! Government policy and regulations are providing most support for research efforts in alternative fuels. Without government support, market force will abandon alternative energy research. Like any other programs, sustainable energy program will have to compete for limited funding from all sources.

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

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☐ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☑ During (during program)
- ☐ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Description

This research program has gone through a peer review process prior to its launching. We are continuing to monitor its program, and will release funds after a satisfactory progress has been made in previous year. We will compare its progress using major milestones established at onset of this program.

2. Data Collection Methods

- ☐ Sampling
- ☐ Whole population

Survey (Mail, Telephone, On-Site).

- ☐ Mail
- ☐ Telephone
- ☐ On-Site

Interview

- ☐ Structured
- ☐ Unstructured

- ☐ Case Study
- ☐ Observation
- ☑ Portfolio Reviews
- ☐ Tests
- ☐ Journals
- ☐ Other

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Childhood Obesity

2. Brief summary about Planned Program

Health and wellness have long been issues for Hawai'i's communities. The high cost of living in Hawai'i and the resulting need for multiple incomes in the household reduce time and energy available for food preparation, leading to greater consumption of fast food. In addition, cultural practices in Hawai'i place great emphasis on food consumption as a part of virtually all social activities, and the local diet is high in starch (e.g., white rice, macaroni salad) and fat (e.g., processed meat products, fried items). Although traditional health and wellness programming in CTAHR has focused on adults, growing concern over childhood obesity has shifted the focus to youth in the past few years. For example, the rate of obesity in children in Hawai'i ages 6 to 11 is twice the national average.

Extension activities in CTAHR focus on nutrition education in order to help parents and children improve their diets, and on integrating increased physical activity into youth development programs. Research efforts to support these outreach activities and to identify physical, cultural, or social factors impeding their adoption are new in the college, but will be increasingly important over the next several years.

3. Program existence :

- ○ New (One year or less)
- ◉ Intermediate (One to five years)
- ○ Mature (More than five years)

4. Program duration :

- ○ Short-Term(One year or less)
- ○ Medium-Term (One to five years)
- ◉ Long-Term (More than five years)

5. Expending formula funds or state-matching funds :

- ◉ Yes
- ○ No

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

- ◉ Yes
- ○ No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
703	Nutrition Education and Behavior	50%		50%	
704	Nutrition and Hunger in the Population	10%		50%	
724	Healthy Lifestyle	40%		0%	
	Total	100%		100%	

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

1. Situation and priorities

Health and wellness has long been an issue for Hawaii's communities. The rates of obesity in State's children ages 6 to 11 is twice the national average. The high cost of living means that more people in the household will work one or more jobs, which affects the time that is available for preparing food and tend to increase the consumption of fast food. At the same time, the local culture dictates that all social activities involve food, particularly items that are not considered to be particularly nutritious, such as white rice, fatty/fried meat, processed meat products, and macaroni salad. In fact, Hawaii consumes more Spam, a processed, canned meat product, than any other location in the World.

The youth of Hawaii also increasingly engage in sedentary activities such as playing video games, watching television and surfing the internet just as children in other parts of the world do. In conjunction with the consumption of excess calories, this encourages obesity.

CTAHR's programming in childhood obesity currently focuses on better nutrition and on increasing physical activity.

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

- Partners are willing to cooperate and do their part.
- External funds and resources are available.
- Staff with the appropriate expertise is available or can be recruited.
- People will be motivate to learn/change.

2. Ultimate goal(s) of this Program

The children of Hawaii will be a normal weight and will be free of the heath complication of obesity as they age.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2012	1.0	0.0	1.0	0.0
2013	1.0	0.0	1.0	0.0
2014	2.0	0.0	1.0	0.0
2015	2.0	0.0	1.0	0.0
2016	2.0	0.0	1.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Provide adult development programs for volunteers that include content encouraging better nutrition and increased physical activity for the youth for whom these adults are responsible.
- Develop, adapt (localize), and/or expand 4-H or other youth curricula to encourage better nutrition and increased physical activity in youths.
- Conduct research to identify and mitigate the physical, social, and/or cultural barriers to improved nutrition and physical well-being of youth in Hawai'i.

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	☐ Billboards
☑ Group Discussion	☑ Newsletters
☑ One-on-One Intervention	☐ TV Media Programs
☑ Demonstrations	☑ Web sites
☐ Other 1	☐ Other 1
☐ Other 2	☐ Other 2

3. Description of targeted audience

As intended by the Land Grant perspective, CTAHR's "targeted" clients for this program in ***instruction*** are the undergraduate and graduate students in related CTAHR programs. Targeted clients

for ***research*** are peers and extension specialists. Clients for ***extension specialists*** are CTAHR's county extension agents; the counterpart professional personnel of sister state and federal agencies,such as the Hawai'i State Departments of Health, and Social Service; youth, families, and extended families; the general public extension staff in other CTAHR units and at sister institutions; and other members of the professional community who deal with family, youth and health issues. Clients for ***extension agents*** are youth, families, and extended families, especially those on limited budgets, youth and adults at risk for obesity and diabetes and related diseases, farmers and farm workers, especially those that are immigrants, the general public and consumers of local produce, extension staff in other CTAHR units and at sister institutions, and other members of the professional community who deal with family, youth and health issues.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2012	200	2000	300	600
2013	200	2000	500	800
2014	200	2000	500	1000
2015	200	2000	500	1000
2016	200	2000	500	1000

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

2012:0 **2013:**0 **2014:**0 **2015:**0 **2016:**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2012	1	1	2
2013	1	1	2
2014	1	1	2
2015	1	1	2
2016	1	1	2

V(H). State Defined Outputs

1. Output Target

- Number of workshops, filed days, or demonstrations conducted.

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

- Presentations at national and international meetings.

2012:1 **2013:**1 **2014:**2 **2015:**2 **2016:**2

- Grant proposals submitted.

2012:5 **2013:**5 **2014:**5 **2015:**5 **2016:**5

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of stakeholders who increased knowledge in at least one issue.
2	Number of stakeholders completing non-formal education programs on childhood obesity issues.
3	Dollar value of grants and contracts obtained.

Outcome # 1

1. Outcome Target

Number of stakeholders who increased knowledge in at least one issue.

2. Outcome Type :

- (●) Change in Knowledge Outcome Measure
- ( ) Change in Action Outcome Measure
- ( ) Change in Condition Outcome Measure

2012:100 **2013:**125 **2014:**150 **2015:**200 **2016:**200

3. Associated Knowledge Area(s)

- ☑ 703 - Nutrition Education and Behavior
- ☑ 704 - Nutrition and Hunger in the Population
- ☑ 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- ☑ 1862 Extension
- ☐ 1862 Research

Outcome # 2

1. Outcome Target

Number of stakeholders completing non-formal education programs on childhood obesity issues.

2. Outcome Type :

- (●) Change in Knowledge Outcome Measure
- ( ) Change in Action Outcome Measure
- ( ) Change in Condition Outcome Measure

2012:300 **2013:**300 **2014:**350 **2015:**350 **2016:**350

3. Associated Knowledge Area(s)

- ☑ 703 - Nutrition Education and Behavior
- ☑ 704 - Nutrition and Hunger in the Population
- ☑ 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- ☑ 1862 Extension
- ☑ 1862 Research

Outcome # 3

1. Outcome Target

Dollar value of grants and contracts obtained.

2. Outcome Type :

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

2012:50000 **2013:**50000 **2014:**50000 **2015:**100000 **2016:**100000

3. Associated Knowledge Area(s)

- ☑ 703 - Nutrition Education and Behavior
- ☑ 704 - Nutrition and Hunger in the Population
- ☑ 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

- ☐ Natural Disasters (drought, weather extremes, etc.)
- ☑ Economy
- ☑ Appropriations changes
- ☑ Public Policy changes
- ☑ Government Regulations
- ☑ Competing Public priorities
- ☑ Competing Programmatic Challenges
- ☑ Populations changes (immigration, new cultural groupings, etc.)

☐ Other

Description

• Economic concerns may redirect funding to other programmatic areas and other public priorities.
• Population trends may cause a change programming effectiveness. For example, Pacific Islanders value obesity and the consumption of various unhealthy foods, which will increase programmatic challenges.

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

1. Evaluation Studies Planned

☑ After Only (post program)
☐ Retrospective (post program)
☑ Before-After (before and after program)
☑ During (during program)
☐ Time series (multiple points before and after program)
☐ Case Study
☐ Comparisons between program participants (individuals, group, organizations) and non-participants
☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
☐ Comparison between locales where the program operates and sites without program intervention
☐ Other

Description

All projects conducted under this program will be peer-reviewed before initiation. Annual progress will be monitored by the associate deans for research and extension.

2. Data Collection Methods

☐ Sampling
☐ Whole population

Survey (Mail, Telephone, On-Site).

☐ Mail
☐ Telephone
☐ On-Site

Interview

☐ Structured
☐ Unstructured

☐ Case Study
☑ Observation

- ☑ Portfolio Reviews
- ☐ Tests
- ☐ Journals
- ☐ Other

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Food Safety

2. Brief summary about Planned Program

Stakeholders across the state of Hawai'i have various needs relative to food safety. Businesses, including agricultural operators and food processors, have a variety of concerns relative to bioterrorism (of increasing importance); good agricultural practices (in order to avoid bacterial or other contamination of produce); food allergen control; and general food safety (e.g., food additives). In response to these needs, CTAHR has developed and maintained a strong food safety program targeted at food processors for over 20 years. Expansion of this program to educate producers (farmers, ranchers) on good agricultural practices, and to coach them in becoming food-safety certified, is a very recent development in the college. Both processors and consumers are increasingly concerned about the safety of the food they purchase, as evidenced by national media, public, and political reactions to recent instances of bacterial contamination of fresh produce. Certification of agricultural producers in their use of good agricultural practices is a clear trend and is challenging for many of Hawai'i's small farms, many of which are operated by recent immigrants with limited English language skills.

In addition to addressing their increasing concern about the safety of the food they purchase, consumers also need information on safe food storage, handling, and preparation. Local customs dictate that food consumption be included in virtually all social events. In addition, Hawai'i's tropical climate may compromise food safety more quickly than stakeholders realize.

3. Program existence :

- ○ New (One year or less)
- ◉ Intermediate (One to five years)
- ○ Mature (More than five years)

4. Program duration :

- ○ Short-Term(One year or less)
- ○ Medium-Term (One to five years)
- ◉ Long-Term (More than five years)

5. Expending formula funds or state-matching funds :

- ◉ Yes
- ○ No

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

- ◉ Yes
- ○ No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
402	Engineering Systems and Equipment	0%		8%	
501	New and Improved Food Processing Technologies	25%		24%	
502	New and Improved Food Products	10%		0%	
503	Quality Maintenance in Storing and Marketing Food Products	30%		0%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	15%		4%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	20%		47%	
722	Zoonotic Diseases and Parasites Affecting Humans	0%		17%	
	Total	100%		100%	

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

1. Situation and priorities

In order to add value to agricultural products, businesses across Hawaii need to be in compliance with all state and federal regulations. The competitive advantage that these products enjoy is, in part, due to the positive image associated with being produced in Hawaii. If something were to occur that destroyed the public's confidence in a fresh or processed food product, the profitability of these businesses would be

affected dramatically. CTAHR established a food safety program aimed at food processor more than 20 years ago and the program has proven very effective at meeting the needs of food processors.

Recently, with concerns about bioterrorism and the interest in food traceability, CTAHR food safety program has expanded to include a coaching program that educates farmers about good agricultural practices so that they can become food safety certified. While not all wholesalers and retailers now require that farmers have food safety certification, many do require certification and trends indicate that soon everyone will require such certification. CTAHR's program aimed at agricultural producers in just a few years old and has provided the educational assistance that many of the State's small inexperienced producers need to become certified.

Food handling safety by consumers has long been a concerned in CTAHR. The importance of food in all social activities, coupled with the preparation and storage methods used for many local, ethnic foods created the need for the educational programs conducted by CTAHR for many years as a component of nutrition education. Cooking and storage guidelines, food preparation tips, and resource information are all included in CTAHR's traditional programming.

E. coli O157:H7, Salmonella, and L. monocytogenes are three serious pathogenic bacteria known to be present on fresh produce and able to survive in certain acidic juices. Little is known about the fate of these pathogenic bacteria in pineapple and guava juices. Moreover, the deadly pathogens may enter a viable-but-nonculturable state in response to stressing acidic conditions. Maintaining virulence and pathogenic potential, stressed cells of the pathogenic bacteria may be underestimated or even escape detection if standard culture methods are solely employed. Our research project will investigate how the pathogenic bacteria survive in pineapple and guava juices. Novel methods will be developed to enhance recovery and detection of stressed bacterial cells in the acidic fruit juices.

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

-A core of qualified extension and research faculty is available.
-Additional external funds and other resources are available.
-Partnerships can continue and expand to coordinate efforts and share resources.
-Information on best management practices exists for food safety.
-People are motivated to learn/change.
-Stakeholders are willing to implement best management practic e.

2. Ultimate goal(s) of this Program

Hawaii has a safe food supply from the farmers' fields to final consumption.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2012	1.0	0.0	1.5	0.0
2013	1.5	0.0	1.5	0.0
2014	1.5	0.0	1.5	0.0
2015	1.5	0.0	1.5	0.0
2016	1.5	0.0	1.5	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

• Conduct needs assessments for various stakeholders groups: farmers and ranchers, consumers, and those in food service and wholesale and retail businesses.
• Conduct research that will identify the best technologies and management practices that meet applicable laws and regulations.
• Research, develop, and deliver timely and relevant outreach programming to stakeholders, in collaboration with partners across the state.
• Conduct laboratory studies to develop effective and rapid detection methods for various pathogens. This latter activity will emphasize three pathogenic bacteria (E. coli O157:H7, Salmonella, and L. monocytogenes) known to be present on fresh produce and able to develop in acidic fruit juices. Little is known about the fate of these pathogenic bacteria in pineapple; and they may escape detection when standard culture methods of bacterial culture are used, due to their ability to enter a resting stage under stress. Research efforts will focus on mechanisms of survival of these serious pathogens in pineapple and guava juices; and on development of novel methods to enhance recovery and detection of stressed bacterial cells in these acidic fruit juices.

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	☐ Billboards
☑ Group Discussion	☑ Newsletters
☑ One-on-One Intervention	☐ TV Media Programs
☐ Demonstrations	☑ Web sites
☐ Other 1	☐ Other 1
☐ Other 2	☐ Other 2

3. Description of targeted audience

As intended by the Land Grant perspective, CTAHR's "targeted" clients for this program in ***instruction; and consumers of local produce. Clients for extension agents are farmers and farm workers, especially those that are immigrants, the general public and consumers of local produce, extension staff in other CTAHR units and at sister institutions, and other members of the professional community who deal with food safety issues.*** are the undergraduate and graduate students in related CTAHR programs. Targeted clients for ***research*** are peers and extension specialists. Clients for ***extension specialists*** are CTAHR's county extension agents; the counterpart professional personnel of sister state and federal agencies,such as the Hawai'i State Departments of Agriculture; agricultural producers and processors, along with their organizations; the general public

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2012	1000	5000	100	1000
2013	1000	5000	100	1000
2014	1000	5000	100	1000
2015	1000	5000	100	1000
2016	1000	5000	100	1000

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

2012:0 **2013:**0 **2014:**0 **2015:**0 **2016:**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2012	1	0	1
2013	2	0	2

Year	Research Target	Extension Target	Total
2014	3	0	3
2015	3	0	3
2016	3	0	3

V(H). State Defined Outputs

1. Output Target

- Number of workshops, field days and demonstrations

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

- Presentations at national and international meetings.

2012:1 **2013:**2 **2014:**2 **2015:**2 **2016:**2

- Grant proposals submitted.

2012:5 **2013:**5 **2014:**5 **2015:**5 **2016:**5

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of people adopting one or more practices which result in improved food safety.
2	Dollar value of grants and contracts obtained.

Outcome # 1

1. Outcome Target

Number of people adopting one or more practices which result in improved food safety.

2. Outcome Type :

- (●) Change in Knowledge Outcome Measure
- ( ) Change in Action Outcome Measure
- ( ) Change in Condition Outcome Measure

2012:200 **2013:**200 **2014:**300 **2015:**300 **2016:**300

3. Associated Knowledge Area(s)

- ☑ 402 - Engineering Systems and Equipment
- ☑ 501 - New and Improved Food Processing Technologies
- ☑ 502 - New and Improved Food Products
- ☑ 503 - Quality Maintenance in Storing and Marketing Food Products
- ☑ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and
- ☑ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally
- ☐ 722 - Zoonotic Diseases and Parasites Affecting Humans

4. Associated Institute Type(s)

- ☑ 1862 Extension
- ☑ 1862 Research

Outcome # 2

1. Outcome Target

Dollar value of grants and contracts obtained.

2. Outcome Type :

- (●) Change in Knowledge Outcome Measure
- ( ) Change in Action Outcome Measure
- ( ) Change in Condition Outcome Measure

2012:50000 **2013:**50000 **2014:**50000 **2015:**100000 **2016:**100000

3. Associated Knowledge Area(s)

- ☑ 402 - Engineering Systems and Equipment
- ☑ 501 - New and Improved Food Processing Technologies

- ☑ 502 - New and Improved Food Products
- ☑ 503 - Quality Maintenance in Storing and Marketing Food Products
- ☑ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and
- ☑ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally
- ☑ 722 - Zoonotic Diseases and Parasites Affecting Humans

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
- ☑ Government Regulations
- ☑ Competing Public priorities
- ☑ Competing Programmatic Challenges
- ☑ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Description

State and federal laws and regulations could change, which would affect the behavior of businesses relative to food safety.

Natural disasters could interrupt control systems and prevent them from coming back on-line.

Public policy change could impact the expectations of consumers and others in the marketing channel, relative to food safety.

A shortage of resources due to the economic situation, or a change in competing public or programmatic interests could draw attention away from food safety.

An increase in immigrates involved in agriculture or food processing could increase the need for food safety educational programs.

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

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☐ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☑ During (during program)
- ☐ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Description

All projects will submit annual progress report to ducument their accomplishments. Associate deans for research and extension are responsible for monitoring satisfactory progress has been made before funding release.

2. Data Collection Methods

- ☐ Sampling
- ☐ Whole population

Survey (Mail, Telephone, On-Site).

- ☐ Mail
- ☐ Telephone
- ☐ On-Site

Interview

- ☐ Structured
- ☐ Unstructured

- ☐ Case Study
- ☑ Observation
- ☑ Portfolio Reviews
- ☐ Tests
- ☐ Journals
- ☐ Other

Description

{NO DATA ENTERED}