

2009 University of Hawaii Combined Research and Extension Plan of Work

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I. Plan Overview

1. Brief Summary about Plan Of Work

As the originating body of the only public institution of higher education in the state of Hawai'i, 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 105 years. Committed to providing knowledge and service and improving the quality of life for Hawai'i's citizens, CTAHR has educated thousands of students, helped hundreds of businesses, facilitated informed decision-making by government and community leaders, and enhanced the lives of so many 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, the college developed its current strategic plan on which this POW is based to ensure that our priorities and the way we function are aligned with the needs and aspirations of those we are committed to serve. The process solicited extensive input from faculty, students, staff, and stakeholders. Not far into the development process, it became apparent that in addition to identifying and prioritizing programmatic strategies, we also needed to identify and prioritize management and administrative opportunities and goals to increase our resources and improve our efficiency. Care has been taken to ensure that CTAHR's strategic plan is well aligned with the strategic plans of UH and other related institutions. CTAHR has close working relationships with USDA/ARS Pacific Basin Agriculture Research Center, Hawaii Agricultural Research Center, and UH Hilo. Scientists from these institutions serve as co-investigators or collaborators in many projects and grants.

Tourism continues to be the State's number one industry and the environment is the major attraction, making the quality of the environment crucial to the Hawai'i's continued prosperity. The military is the State's second largest industry in terms of value, with agriculture the third largest sector in the State'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. The sugar and pineapple industries continues to decline with DelMonte pineapple ceasing operations in 2007 and Maui Land and Pineapple closing its cannery operations, also in 2007. Every island has suffered closures of sugar plantation and pineapple plantations. These closures and corporate downsizing have resulted in high unemployment among agricultural workers, as well as economic and social stress in rural communities. At the same time, the closures have released thousands of prime agricultural lands creating new opportunities for diversified agriculture.

Diversified agriculture is replacing a portion of the revenues generated by sugar and pineapple in the State's economy. However, many former sugar workers are unprepared and lack critical skills required for success in diversified agriculture. Hawai'i diversified agricultural operations have an average size of less than five acres. Thus, at a time when most of U.S. agriculture is moving toward larger corporate farms, Hawai'i is dramatically increasing in small farm agriculture.

Urban and tourism uses for land and water compete with agriculture, 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 added value of existing products and/or increase consumer demand for new or existing products, while extension programs disseminate this information to the relevant target audiences. Hawai'i's agriculture strategy is to replace imports, since over 90% of our food is imported, and to develop high value, niche crops for local use and export.

More than 90 percent of the energy consumed in Hawai'i comes from imported fossil fuels, mostly petroleum. The percentage of our energy derived from petroleum is the highest in the nation, and our gasoline and electricity routinely top U.S. price charts. Our reliance on oil makes us vulnerable to sudden disruptions in supply. And each tanker that arrives at our shores has the potential to spill its cargo and damage our fragile coasts. Developing Hawai'i's renewable energy resources will improve our energy security and protect our 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, open space. Moreover, biofuels do not promote global warming as fossil fuels do. Biofuels are carbon neutral: carbon dioxide is removed from the atmosphere by the growing fuel crops and added back again once the fuel is used.

CTAHR has been conducting exploratory research in this field for many years but will be redirecting and increasing resources towards research, extension and teaching to address this issue because of its upgraded priority. Hawai'i's high dependence on imported petroleum, and the desire to be less dependent on costly imported oil, year-round growing conditions, experience with sugar cane, desire to keep Hawaii green, and other factors 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 the use of non-fossil fuels by electric utilities. Economic factors, and impact on the fragile Hawaiian environment and rural communities will be other important points that will be considered. Through bioenergy research, CTAHR is helping chart Hawaii’s sustainable future.

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

Year	Extension		Research	
	1862	1890	1862	1890
2009	43.0	0.0	43.0	0.0
2010	44.0	0.0	44.5	0.0
2011	45.0	0.0	45.0	0.0
2012	48.0	0.0	45.0	0.0
2013	48.0	0.0	45.0	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 Non-University Panel
- Expert Peer Review

2. Brief Explanation

CTAHR encourages all faculty and staff to participate with the development and prioritization of the College’s Strategic Plan and Implementation Actions, and to review the CTAHR Plan of Work. CTAHR also uses an expert peer review panels to review individual Plans of Work and projects. All Reviewers utilize their knowledge and experiences to review programs and ensure that the planned programs address the critical issues of strategic importance, including those identified by the stakeholders; utilize multi-disciplinary approaches and provide evidence of integration of research and extension; address the needs of under-served populations of the State; describe the expected outcomes and impacts; and result in improved effectiveness and/or efficiency. Each degree programs go through a comprehensive review by the university every five years. Natural Resource and Environmental Management department went through the CSREES review last year. Human Nutrition, Food and Animal Science Department will conduct their review this year. Family and Consumer Sciences Department plans to have their review done next year.

CTAHR’s peer review process that has been in use for some time. The 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, diversify and strengthen the State’s economy, protect and enhance the environment and Hawaii’s resources, and strengthen families and communities.

We have initiated many new projects in diversified agriculture, including blueberry production, tea production, and a biomass energy program. The first two projects are aiming to develop new industries to boost local agricultural industry, and the biomass energy program intends to use under-utilized farmland to address some local energy needs. Another good example is our beef initiative established four years ago to address the decline of livestock industry in Hawaii. We assembled a team of extension and research faculty members to re-evaluate the challenges facing the beef industry in Hawaii. This team approach initiative is organized in response to the stakeholders' request, and is generating good results to meet stakeholders' needs. The College was a partner in the development of a genetically engineered papaya which was started many years before there was a need for it which eventually saved the papaya industry in Hawaii from devastation from the papaya ringspot virus. The College is 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.

The youth and remoteness of Hawaii has created an ensemble of unique plants and fauna and physical features that 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 beauty of our environment for our largest industry, tourism. Being an island state and over 2,000 miles from the nearest continent, we are especially dependent on our environment for our sustained presence. CTAHR has been and will continue to focus on issues that insure 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 other to insure that health and well being of our natural resources.

Hawaii's diverse social and ethnic diversity is legendary. Many cultures have come to Hawaii and contributed to the uniqueness that Hawaii is known for. Hawaii's people face the same problems as most anywhere in the country. The high cost of living require most families to have two or more income, multi-generational households are the norm, obesity, diabetes, heart disease, homeless people, a growing elderly population, and low income are examples of challenges that face the people of Hawaii. CTAHR has been active in research and outreach programs addressing many of these issues such as the Nutritional Education for Wellness programs; the Youth Development program; the Center of the Family does research and collects statistics and other data on many aspects of youth and families in Hawaii, and provides training in financial literacy and parenting and family education.

CTAHR works very closely with colleagues from ARS/PBARC, HARC, 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's integrated projects have made significant progress in serving ethnic groups and cultures that often are not sufficiently served by most federal programs. We are continuing to encourage our faculty to establish new programs to address the needs of under-served populations in the state. One example is our farm risk management program. A farm risk management program specifically targeting underserved farmers (immigrant farmers from countries such as the Philippines, Laos, Cambodia, Korea, and Tonga) is being conducted statewide. It was recognized that 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 through 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 impact 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 format and concept described by the Logic Model.

Overall, our programs are producing valuable outcomes and impacts for our stakeholders and represent sound investments of our federal appropriation. We were able to obtain additional funding from non-federal sources to support our programs. This is a reflection of the credibility and productivity of our programs. 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 efficiency?

University of Hawai'i at Mānoa has a unique organizational approach that integrate research, extension and education program. All faculty in the statewide branch stations and extension offices have an academic home in a campus department. They are full members of the department faculty and are fully enfranchised in the departments, colleges and university. For example, extension faculty who are stationed in a county hold an academic appointment in a department and fully participate in promotion and tenure activities of the department. We encourage our faculty to establish integrated project incorporating extension education activities with most of our research efforts. We have reduced the Hatch research projects and converted them into Hatch Integrated projects in the past year. 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

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

Brief explanation.

CTAHR will employ a variety of stakeholder input methods including soliciting input from the CTAHR Board of Advisors, face-to-face discussions with industry representatives, the Hawai'i Farm Bureau Federation, and a long-standing "Industry Analysis Process" that has provided valuable input into research and extension program planning. 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 will assemble 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 of the commodity group. The draft analysis will consider the present status of the commodity including current production, value and recent trends. Of particular importance is the development of an understanding of the reasonable potential and the underlying assumptions. Based on the above, the analysis will identify 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 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 there is a strong commodity association, 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 key stakeholders during industry association meetings, one to one meetings with 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. Organic agriculture and beef analyses are currently ongoing.

Through our Industry Analysis Process, stakeholders will assist CTAHR to maintain relevance of overall programs and help to assure program coordination among teaching, research and extension/outreach programs. In general, stakeholders will include producers, processors, consumers, decision-makers, students, alumni, and members of the business community. In the past year, we have conducted analyses on organic agriculture and beef, tropical fruits will be next. The inputs collected through these analyses are incorporated into our programming.

We have also strengthened our stakeholder input process in project and individual faculty plan of work writing process. We specifically requested our new faculty and new project to identify who are the stakeholders on these new projects, and how have they collected inputs from the identified stakeholders, and they must describe how these inputs are used in designing their projects. We are instilling the discipline of stakeholder first in our new faculty members.

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

Brief explanation.

Hawai'i has over 100 commodity commissions and grower organizations. Most of these groups have research committees. Hawai'i also has 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 represent a wide array of disciplines at University'i at Mānoa. Their scope of impact reaches stakeholders at the local, state and national levels. In an effort to solicit input from these stakeholders, there are several levels of participation that directly result in opportunities for discussion necessary for continual advancement toward recommended program goals. CTAHR has a Board of Advisors, chosen from various stakeholder groups and appointed by the Dean for a five-year term, provides inputs on strategic issues facing our college and clients. Many departments and counties also have their own advisory board to address local issues. To establish Hatch and/or extension projects, faculty members must identify the stakeholders their projects are serving, and how input is solicited from these stakeholders. Inputs from stakeholders are used to formulate and implement research and extension projects.

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 specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Survey of traditional Stakeholder individuals
- Meeting with traditional Stakeholder groups
- Meeting specifically with non-traditional groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals

Brief explanation

Most CTAHR faculty, especially the county agents and extension specialists, 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 legislature, county councils, school teachers, and many more. Informal and formal input (e.g., letters, minutes of meetings, resolutions, Industry Analyses, strategic plans, etc.) is provided to CTAHR on a regular basis. CTAHR faculty can request these documents and other input from these organizations whenever required.

Input and feedback is also obtained during workshops, open houses, telephone calls, letters written to CTAHR from both traditional and non-traditional individuals on a less regular basis. These inputs are combined with other inputs and considered and evaluated together. Inputs are also solicited from specific stakeholders if certain stakeholders have not been represented. Some faculty and administrators in the college serve on boards of Economic Opportunity Councils and receive input and feedback from this and similar groups. CTAHR has close working relationship with scientists from USDA/ARS Pacific Basin Agriculture Research Center, Hawaii Agricultural Research Center, UH Hilo, Oceanic Institute, UH Community colleges. Inputs from these sister institutions are routinely collected, evaluated, and incorporated into our programs.

3. A statement of how the input will be considered

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

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 that reach the communities we serve. Input from the CTAHR Board of Advisors is considered at the strategic level, and in 2005, they helped shape the new 2006-2010 Strategic Plan for CTAHR.

V. Planned Program Table of Content

S. NO.	PROGRAM NAME
1	3. Hawaii's Livestock and Aquaculture Systems For Sustainability and Competitiveness
2	1. Sustain, Protect, and Manage Hawaii's Natural Resources and Environment
3	2. Hawaii's Diversified Tropical Crop Systems for Sustainability and Competitiveness
4	5. Youth, Family and Community Development
5	6. Health and Wellness of Hawaii's Families and Communities
6	7. Generate and Improve Hawaii's Products, Processes and Market
7	4. Invasive Species Education and Management

V(A). Planned Program (Summary)

Program #1

1. Name of the Planned Program

3. Hawaii's Livestock and Aquaculture Systems For Sustainability and Competitiveness

2. Brief summary about Planned Program

Hawai'i livestock and aquaculture industries are small, but important contributors to the value of Hawai'i's agriculture sector. Cattle (beef cows, milk cows, heifers, steers, bulls, calves) and milk; swine (hogs, sows, pigs); chicken (chickens, eggs); equine; goats; sheep and lambs, and aquaculture (finfish, shellfish, ornamental fish, seed and brood stock) make up Hawai'i animal-based industries.

CTAHR's support to the animal industries comes in a variety of forms including campus research and formal education, field research on college stations, and extension. Specific research efforts include investigations of reproductive performance and influences in 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; loss factors in calves born in hot climates; remediation of former sugarcane lands for livestock production, and new marketing opportunities for cattle. CTAHR faculty are partnering with colleagues from UH Hilo, Oceanic Institute, Sea Grant Program on many projects.

This planned program will utilize integrated research, extension and education projects to strengthen our animal and aquaculture industries. This planned program will:

- Provide integrated research, extension, and education for livestock industry.
- Develop a quantitative management model to assist aquaculture producers to determine the optimal harvesting strategies.
- Develop a sex-ratio control technology to produce a female-superior aquacultured shrimp and prawns.

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

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

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

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

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals	30%		20%	
303	Genetic Improvement of Animals	20%		20%	
304	Animal Genome	10%		10%	
305	Animal Physiological Processes	10%		10%	
306	Environmental Stress in Animals	5%		10%	
307	Animal Management Systems	15%		15%	
308	Improved Animal Products (Before Harvest)	10%		5%	
312	External Parasites and Pests of Animals	0%		5%	
313	Internal Parasites in Animals	0%		5%	
Total		100%		100%	

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

1. Situation and priorities

Diversified agriculture continues to be important to Hawai'i as evidenced by steady gains in farm revenues in the past decade. The cattle industry offers the greatest potential for growth. Land is available because of the downsizing of sugarcane and pineapple. CTAHR has established a new beef initiative to address and fill informational gaps in the new paradigm of Hawaiian beef production. Most of Hawai'i's ranchers, especially the larger ranches are cow/calf operations and the bulk of the cattle is exported as weaned-off calves. CTAHR is involved in research and extension efforts to improve the genetics of cattle in the characteristics of tenderness, ribeye area, and marbling with the focus on forage finishing. Although we do not expect to be self-sufficient in beef, we hope to retain a greater portion of the beef market in Hawai'i. Through past efforts, interest in forage finished natural beef has increased and are being featured in top rated regional cuisine chefs. We believe that the key to this program is to produce a consistently high quality, and tender product.

It is well recognized worldwide that capture harvest of wild fisheries has reached critical levels and will not be sustainable into the next decade and future increases in supplies will come from aquaculture. With a seafood deficit currently at \$8 billion, the U.S. faces critical issues in being able to meet growing domestic seafood demands. 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, substantial 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 additional faculty position has been requested to support this new initiative.

2. Scope of the Program

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

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

1. Assumptions made for the Program

- Consumers will pay a premium for locally produced products

Lands are available for livestock operations

Feedstuffs suitable for tropical environments are identified

2. Ultimate goal(s) of this Program

- Develop a profitable, and sustainable livestock industry in Hawai'i.
- Develop a profitable and sustainable aquaculture industry in Hawai'i.

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
2009	4.0	0.0	4.2	0.0
2010	4.0	0.0	4.2	0.0
2011	4.0	0.0	4.7	0.0
2012	5.0	0.0	4.7	0.0
2013	5.0	0.0	4.7	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Develop marketing models and economic analyses of the key segments of the beef industry.

Evaluate best management practices and technologies for conversions of intensive mono cropping systems to sustainable tropical grazing production.

Initiate program for genetic identification for the university's beef research herd and seed stock producers and analyze for economically important markers under tropical ecosystems.

Conduct research station field days, demonstration sites conferences, and other outreach and educational activities for stakeholders.

•
Develop a gender-specific molecular sex marker in shrimp and prawns.

•
Identify the period when shrimps are receptive to the sex reversing effects of exogenous androgenic hormone.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Education Class ● Demonstrations ● One-on-One Intervention ● Group Discussion ● Workshop 	<ul style="list-style-type: none"> ● Newsletters ● Web sites

3. Description of targeted audience

As intended by the Land Grant perspective, CTAHR's "targeted" clients for this program in teaching are the undergraduate and graduate students in agriculture 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 Agriculture, and Land and Natural Resources, and the USDA Natural Resources Conservation Service, NRCS). Clients for extension agents are land users and commodity producers and their organizations, extension staff in other CTAHR units and at sister institutions, and other members of the professional community who deal with livestock and aquaculture industries.

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	625	2225	40	10
2010	625	2225	40	10
2011	625	2250	45	12
2012	650	2250	45	12
2013	650	2250	50	15

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

Expected Patent Applications

2009 :0 2010 :0 2011 :0 2012 :0 2013 :0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	10	3	0
2010	10	3	0
2011	10	3	0
2012	10	3	0
2013	10	3	0

V(H). State Defined Outputs

1. Output Target

- Number of workshops, conferences and other outreach events

2009 :10 2010 :11 2011 :11 2012:12 2013 :12

- Write grant proposal to secure additional funds

2009 :6 2010 :6 2011 :7 2012:7 2013 :7

V(I). State Defined Outcome

O. No	Outcome Name
1	Total dollar value of grants and contracts obtained.
2	Number of ranchers who have adopted a recommended practice
3	Increased numbers of beef cattle kept in Hawai'i for local consumption

Outcome #1

1. Outcome Target

Total dollar value of grants and contracts obtained.

2. Outcome Type : Change in Knowledge Outcome Measure

2009 :125000 **2010 :** 135000 **2011 :** 150000 **2012 :**150000 **2013 :** 200000

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)

Outcome #2

1. Outcome Target

Number of ranchers who have adopted a recommended practice

2. Outcome Type : Change in Action Outcome Measure

2009 :9 **2010 :** 9 **2011 :** 10 **2012 :**10 **2013 :** 10

3. Associated Institute Type(s)

- 1862 Extension

4. Associated Knowledge Area(s)

- 303 - Genetic Improvement of Animals
- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)

Outcome #3

1. Outcome Target

Increased numbers of beef cattle kept in Hawai'i for local consumption

2. Outcome Type : Change in Action Outcome Measure

2009 :250 **2010 :** 250 **2011 :** 300 **2012 :**300 **2013 :** 300

3. Associated Institute Type(s)

- 1862 Extension

4. Associated Knowledge Area(s)

- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

- Processing facilities will be able to handle increased production.
- When the economy is poor, public and private funding decreases and is more difficult to obtain.
- When monies are short, higher public priorities may compete for available funds.
- Local producers are able to work together in concert and not compete against each other.
- Significant drought may affect forage and other natural disasters may damage facilities.
 - Hi petroleum costs affects shipping rates that increase cost of shipping feed and animals.

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

1. Evaluation Studies Planned

- During (during program)
- Before-After (before and after program)

Description

{NO DATA ENTERED}

2. Data Collection Methods

- Observation
- Portfolio Reviews

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program #2

1. Name of the Planned Program

1. 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 hazardous materials, and water quality. Research and extension efforts into preserving, protecting, and renewing Hawaii's natural resources continue to be an area of focus.

This planned program will utilize integrated research, extension and educational projects to provide knowledge and technologies to improve the management of Hawaii's resources to support agricultural production and enhance the environment. This planned program will strengthen our 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 : Mature (More than five years)

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

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

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

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	25%		30%	
111	Conservation and Efficient Use of Water	10%		25%	
112	Watershed Protection and Management	10%		5%	
121	Management of Range Resources	5%		5%	
123	Management and Sustainability of Forest Resources	20%		0%	
124	Urban Forestry	5%		5%	
125	Agroforestry	10%		0%	
133	Pollution Prevention and Mitigation	5%		2%	
401	Structures, Facilities, and General Purpose Farm Supplies	0%		11%	
402	Engineering Systems and Equipment	0%		5%	
403	Waste Disposal, Recycling, and Reuse	10%		10%	
404	Instrumentation and Control Systems	0%		2%	
	Total	100%		100%	

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

1. Situation and priorities

Hawaii's unique and precious tropical island environment and its broad biological, physical, and social diversity enrich the lives of local residents and provide an inviting setting that attracts visitors from all corners of the world. The sustainability of natural resources, stability of agroecosystems, and quality of life of Hawaii's people are intrinsically dependent on the judicious use and management of our land and other 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 in the near term, developing and applying sound management strategies, combined with thorough understanding of complex interdependencies of natural systems, can yield sustainable benefits from our resources and satisfy most diverse and competing interests over the longer term. In partnership with communities and government agencies, CTAHR needs to 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 should strive not only to deliver food and fiber sustainably but also to develop ecosystem management approaches that mitigate environmental problems.

2. Scope of the Program

- Integrated Research and Extension
- Multistate Integrated Research and Extension
- In-State Research
- In-State 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.
- Information on best management practices exists for the management of natural resources.
- Stakeholders willing to implement best management practices.
- People are motivated to learn/change.

2. Ultimate goal(s) of this Program

Hawai'i 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
2009	1.0	0.0	6.4	0.0
2010	1.0	0.0	6.4	0.0
2011	2.0	0.0	6.4	0.0
2012	2.0	0.0	6.4	0.0
2013	2.0	0.0	6.4	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Develop improved policies and plans for the best management of forest, watershed (including coastal zone management), and agroforestry ecosystems.
- 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 environment resource management with goal of identifying needs to help Hawai'i its ahupua'a 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.
- Develop a statewide emergency response team with internal and external partners (HDOA Plant Industry, Quarantine, State wide invasive species committees; etc) to quickly identify, mitigate, and transfer information about new pest invaders.
- Provide knowledge and technologies to improve the management of Hawai'i's resources to support agricultural production and enhance the environment.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● One-on-One Intervention ● Demonstrations ● Group Discussion ● Education Class ● Workshop 	<ul style="list-style-type: none"> ● Newsletters ● Web sites

3. Description of targeted audience

As intended by the Land Grant perspective, CTAHR's "targeted" clients for this program in teaching are the undergraduate and graduate students in agriculture 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 Agriculture, Health, and Land and Natural Resources, and the USDA Natural Resources Conservation Service, NRCS). 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 to facilitate making decisions is an important expectation for effectively meeting its commitments.

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	1000	1600	50	150
2010	1100	1700	55	200
2011	1100	1800	60	250
2012	1200	1900	65	300
2013	1300	2000	65	350

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

Expected Patent Applications

2009 :0 2010 :0 2011 : 1 2012 :0 2013 :0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	10	6	16
2010	11	7	18
2011	11	8	19
2012	12	10	22
2013	12	15	27

V(H). State Defined Outputs

1. Output Target

- Grant proposals submitted.

2009 :5 2010 :5 2011 : 5 2012 :5 2013 :0

- Presentations at international and national meetings.

2009 :6 2010 :6 2011 : 6 2012 :6 2013 :6

- Number of workshops and other educational activities held

2009 :20 2010 :25 2011 : 25 2012 :25 2013 :25

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 Action Outcome Measure

2009 :17 **2010 :** 20 **2011 :** 20 **2012 :**20 **2013 :** 20

3. Associated Institute Type(s)

- 1862 Extension

4. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 125 - Agroforestry
- 403 - Waste Disposal, Recycling, and Reuse

Outcome #2

1. Outcome Target

Total dollar value of grants and contracts obtained.

2. Outcome Type : Change in Action Outcome Measure

2009 :300000 **2010 :** 330000 **2011 :** 350000 **2012 :**350000 **2013 :** 350000

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

4. 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
- 133 - Pollution Prevention and Mitigation
- 403 - Waste Disposal, Recycling, and Reuse

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

- Natural disasters such as hurricanes, typhoons, floods, fires, often are destructive but not permanent 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 short, higher public priorities may compete for available funds.

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

1. Evaluation Studies Planned

- During (during program)
- Before-After (before and after program)

Description

{NO DATA ENTERED}

2. Data Collection Methods

- Portfolio Reviews
- Observation

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program #3

1. Name of the Planned Program

2. Hawaii's Diversified Tropical Crop Systems for Sustainability and Competitiveness

2. Brief summary about Planned Program

Hawai'i agriculture expansion is focused on two strategies: The first is on import replacement. Hawai'i currently imports about 90% of it's food needs. There are ample opportunities to grow many of fruits and vegetables that are now imported. Watermelon and pumpkins are good examples of crops which made the transition from being almost entirely imported to where nearly all of them are now grown locally.

The second strategy is to produce high value specialty crops for niche markets. Kona coffee is world renowned for its high quality and gourmet status that sells for over five times the commodity price of coffee. Anthuriums, potted Dracaenas, palms and other ornamental plants, exotic tropical fruits from Hawai'i are other top quality products grown in Hawai'i and command high prices. To that end, identifying other potentially high value crops for niche markets for local sales or export and providing the assistance to entrepreneurs to make their business successful is a challenge for the College. Agricultural production and processing research and extension presently are being directed at expanding agri-industries in Hawai'i: banana, coffee, papaya, specialty seed crops, tropical tree fruits, and aquaculture. Expansion to other industries will follow. The development of new products and co-products from existing crops and services and targeting commodity as well as niche and high-valued markets are to generate additional income and expand market opportunities for traditional crops such as sugarcane. Demand for organic foods are booming on the mainland and Hawai'i is no exception. Outreach programs on all aspects of organic farming are being conducted and planned. We are actively partnering with colleagues from ARS, HARC, and UH Hilo in our proram.

Hawai'i relies heavily on its environment as a major attractant for the visitor industry. The "green industry" (the design, installation and maintenance of landscapes) plays an essential role in the visitor industry by providing flowers and landscape plants that provide the tropical ambiance in hotels and shops. Production facilities provide unique opportunities for visitors to gain first-hand knowledge of tropical plants. The golf industry is intimately linked to the tourism industry as many visitors specifically come for this activity. These industries provide the scents, visual, and experiential experiences that comprise a visit to Hawai'i.

The planned program will utilize integrated research, extension and education projects to support diversified agriculture 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 : Mature (More then five years)

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

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

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

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		4%	
202	Plant Genetic Resources	10%		3%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	5%		11%	
204	Plant Product Quality and Utility (Preharvest)	10%		14%	
205	Plant Management Systems	20%		42%	
206	Basic Plant Biology	0%		11%	
211	Insects, Mites, and Other Arthropods Affecting Plants	15%		1%	
212	Pathogens and Nematodes Affecting Plants	10%		4%	
213	Weeds Affecting Plants	5%		0%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	5%		0%	
216	Integrated Pest Management Systems	20%		10%	
	Total	100%		100%	

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

1. Situation and priorities

Change and diversification are keywords describing the agriculture sector. The sugar industry has drastically downsized during the past 12 years and now occurs only on the islands of Maui and Kauai. These factors have contributed to an explosive increase in land available for diversified agriculture and as a result many new growers entering the business of agriculture. A recent census of agriculture in Hawaii indicates the presence of at least 5,500 farms, an increase of 10% over the previous year.

Hawaii's agriculture continues to be a strong sector of the State's economic base. Change and diversification are keywords describing the industry. The sugar industry was drastically downsized during the past 12 years and now occurs only on the islands of Maui and Kauai. Pineapple acreage declined by about 15% percent during the same period, and one of three major producers recently announced the cessation of operations in Hawai'i. These factors have contributed to an explosive increase in land available

for diversified agriculture and coupled with state initiatives to maintain Hawai'i's agricultural base have resulted in many new growers entering the business of agriculture. A recent census of agriculture in Hawai'i indicates the presence of at least 5,500 farms, an increase of 10% over the previous years. These new industries will rely heavily on the University for technology and training. CTAHR continues to play a pivotal role in revitalizing agriculture and improving the economy of the State, while protecting the environment and food supply and producing better informed consumers and families. The college will take the lead in bridging the U.S. with developing economies in the Pacific Rim that need new products and technologies.

Area-wide fruit fly management is now an option for growers of certain fruit fly susceptible high-value fruits and vegetables. The detection and/or eradication of pests so that those products are suitable for export are high priorities for this program. Agricultural production and processing research and extension presently are being directed at expanding agri-industries in Hawaii: banana, coffee, papaya, specialty seed crops, tropical tree fruits, and aquaculture. Expansion to other industries will follow.

Production and manufacturing inputs are intrinsically costly in Hawai'i because equipment, and raw materials, containers must be shipped here. Local businesses need to 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 by local agribusinesses to superior varieties, best production or cultivation management practices, processing and handling technologies, and market information is key to long-term success. Economic diversification includes social enterprise development such as social, human, and nutrition support services, and apparel and textile business development. Through timely and sound research, education, and extension, the college can provide new knowledge and techniques 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. On Big Island alone, we have 8 branch stations, 4 extension offices with 75 staff to serve the local needs.

2. Scope of the Program

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

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

1. Assumptions made for the Program

- Retail and wholesale produce buyers want to buy locally grown produce.
- Buyers require steady supply and quantify.
- Demand for organic foods continues to increase significantly.
- Agricultural pests will continue to be a significant problem in crop production for most crops.
- Export quarantine requirements can be met for selected fruit fly susceptible crops.
- Food safety will continue to be a major issue, with more retail supermarket chains requiring third party food safety audits of farms.
- 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 decrease the percentage of imported food into the state by replacing imported produce with locally grown

produce.

Hawai'i will be able to increase exports 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
2009	15.0	0.0	12.4	0.0
2010	16.0	0.0	12.4	0.0
2011	16.0	0.0	12.4	0.0
2012	17.0	0.0	12.4	0.0
2013	17.0	0.0	12.4	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Conduct basic and applied research to increase productin, efficiency and profitability of diversified agricultural industries while protecting the environment.

Provide diagnostic and analytical services for soil testing, water analysis, plant tissue analyses, plant disease identification, insect pest identification, and feed and forage analyses.

Conduct outreach programs to provide best management practices needed 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 costs of production, identification of niche market opportunities.

Incorporate research-based technology that reduces losses due to pests, disease, and inefficient use of resources into production systems.

Perform a Sector-wide analysis by industries or clusters of industries for existing industries. Use this information to set priorities.

Conduct analysis of sustainable agriculture programs and needs for research and extension. Review and Evaluate academic programs as they relate to sustainable agriculture.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Workshop ● Group Discussion ● Demonstrations ● One-on-One Intervention ● Education Class 	<ul style="list-style-type: none"> ● Web sites ● Newsletters ● TV Media Programs

2009 :225 **2010 :225** **2011 : 230** **2012 :240** **2013 :250**

- Presentations at international and national meetings

2009 :20 **2010 :20** **2011 : 20** **2012 :20** **2013 :20**

- Number of diagnostic samples analyzed

2009 :14000 **2010 :15000** **2011 : 15000** **2012 :15000** **2013 :15000**

- Number of grant proposals submitted.

2009 :25 **2010 :25** **2011 : 25** **2012 :25** **2013 :25**

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	Adoption of best management practices to promote environmentally responsible agricultural and landscape management
3	Number of people completing non-formal education programs
4	Number of people who adopt one or more recommended practices
5	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

2009 :350 **2010 :** 400 **2011 :** 400 **2012 :**400 **2013 :** 400

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 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
- 216 - Integrated Pest Management Systems

Outcome #2

1. Outcome Target

Adoption of best management practices to promote environmentally responsible agricultural and landscape management

2. Outcome Type : Change in Action Outcome Measure

2009 :15 **2010 :** 20 **2011 :** 25 **2012 :**30 **2013 :** 30

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 205 - Plant Management Systems
- 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
- 216 - Integrated Pest Management Systems

Outcome #3

1. Outcome Target

Number of people completing non-formal education programs

2. Outcome Type : Change in Action Outcome Measure

2009 :40 2010 : 40 2011 : 40 2012 :40 2013 : 40

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 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
- 213 - Weeds Affecting Plants
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 216 - Integrated Pest Management Systems

Outcome #4

1. Outcome Target

Number of people who adopt one or more recommended practices

2. Outcome Type : Change in Action Outcome Measure

2009 :25 2010 : 25 2011 : 30 2012 :30 2013 : 30

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 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
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 216 - Integrated Pest Management Systems

Outcome #5

1. Outcome Target

Total dollar value of grants and contracts obtained.

2. Outcome Type : Change in Knowledge Outcome Measure

2009 :4400000 **2010 :** 4600000 **2011 :** 5000000 **2012 :**5000000 **2013 :** 5000000

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 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
- 216 - Integrated Pest Management Systems

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Natural disasters such as hurricanes, typhoons, floods, fires, often are destructive to crops. Annual crops suffer immediate but not permanent damage but orchard crops may cause 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 unprecedented increase in petroleum prices have increased cost of production because of price increases for everything.

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

1. Evaluation Studies Planned

- During (during program)
- Before-After (before and after program)

Description

{NO DATA ENTERED}

2. Data Collection Methods

- Portfolio Reviews
- Observation

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program #4

1. Name of the Planned Program

5. Youth, Family and Community Development

2. Brief summary about Planned Program

More than any other institution, the family has profound influence on the health and well-being of its members, particularly its youth and elderly. The college has both an opportunity and a responsibility to protect and strengthen families in rural and urban environments by providing assistance in areas such as family health and life-span development, personal and family financial and time management, youth development, parenting, and caring for the elderly. We are partnering with colleagues from UH community colleges on several projects.

This planned program will utilize integrated research, extension and education 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
- Enhance financial literacy and management of resources

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

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

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

6. Expending other than formula funds or state-matching funds : 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
801	Individual and Family Resource Management	10%		14%	
802	Human Development and Family Well-Being	15%		70%	
803	Sociological and Technological Change Affecting Individuals, Familie	10%		2%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Res	30%		0%	
805	Community Institutions, Health, and Social Services	20%		10%	
806	Youth Development	15%		4%	
	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. These challenges can be addressed by improving and widely disseminating CTAHR's existing education, research, and outreach programs, developing new programs, and partnering with other successful programs in our communities. These collective efforts will have positive and lasting impacts that empower our families and communities.

National statistics on the family setting and the academic performance of Hawaii's youth indicate that many of our young people are at risk. A high percentage of Hawaii's students are performing below average in national aptitude testing; Hawaii ranks poorer than average, nationwide, in households headed by single parents and in the number of low-income households. There is great need for effective education programs to improve the economic, environmental, and social conditions for youth at risk, such as substance-abuse prevention. All faculty need to play a greater role in extending the educational resources of the college to the state's communities and to help students at all levels of elementary and secondary education become more intellectually engaged and better prepared for higher education. 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 needs to support programs that produce positive impacts on and build upon the strengths of individuals, families, and communities.

Caring for the elderly can be particularly challenging if the care provider does not know where to go for answers or even what questions to ask. The college must take a leadership role in developing programs to help families, professionals, and the members of the general populace provide better care for the elderly. Using the statewide extension service, CTAHR should disseminate information and provide training on improved care for the elderly.

2. Scope of the Program

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

Hawaii's youth, families and communities will practice healthy living and wellness behavior and will thus live a 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
2009	14.0	0.0	3.1	0.0
2010	14.0	0.0	3.6	0.0
2011	14.0	0.0	3.6	0.0
2012	14.0	0.0	3.6	0.0
2013	14.0	0.0	3.6	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Provide professional development programs in youth development.
- Conduct youth development training for youth program staff at military installations, youth program staff at youth organizations such as the Boys and Girls Club, YMCA/YWCA, Boy Scouts, Girl Scouts, etc., utilizing the "Moving Ahead Together" curriculum developed by 4-H/CSREES.
- Share 4-H Juried Curriculum to educators, youth program staff, 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
<ul style="list-style-type: none"> ● Workshop ● Demonstrations ● Group Discussion ● One-on-One Intervention ● Education Class 	<ul style="list-style-type: none"> ● Web sites ● TV Media Programs ● Newsletters

3. Description of targeted audience

As intended by the Land Grant perspective, CTAHR's "targeted" clients for this program in teaching 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). 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 methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	7250	31000	12250	7500
2010	7500	32000	12500	7500
2011	8000	33000	12750	7750
2012	8500	34000	13000	7800
2013	8500	34000	13000	7800

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

Expected Patent Applications

2009 :0 2010 :0 2011 :0 2012 :0 2013 :0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	5	3	8
2010	6	4	10
2011	6	4	10
2012	7	5	12
2013	7	5	12

V(H). State Defined Outputs

1. Output Target

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

2009 :125 **2010** :150 **2011** : 150 **2012** :150 **2013** :150

- Number of volunteer hours

2009 :60000 **2010** :60000 **2011** : 65000 **2012** :65000 **2013** :65000

- Presentations at international and national meetings.

2009 :5 **2010** :5 **2011** : 5 **2012** :5 **2013** :5

- Grant proposals submitted.

2009 :10 **2010** :10 **2011** : 10 **2012** :10 **2013** :10

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

2009 :7 2010 : 8 2011 : 8 2012 :8 2013 : 8

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
- 806 - Youth Development

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 Action Outcome Measure

2009 :60 2010 : 60 2011 : 60 2012 :70 2013 : 70

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 806 - Youth Development

Outcome #3

1. Outcome Target

Total dollar value of grants and contracts obtained.

2. Outcome Type : Change in Knowledge Outcome Measure

2009 :1250000 2010 : 1500000 2011 : 1650000 2012 :1650000 2013 : 1650000

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

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

- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
- 805 - Community Institutions, Health, and Social Services
- 806 - Youth Development

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

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

- During (during program)
- Before-After (before and after program)

Description

{NO DATA ENTERED}

2. Data Collection Methods

- Observation
- Portfolio Reviews

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program #5

1. Name of the Planned Program

6. 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. Young people in the islands are also at risk: in some Hawai'i communities, 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. From diabetes screening to home gardening tips, money management training to youth development, NEW unites diverse outreach elements that can influence food choices. In addition to educational resources developed by members of the college, the NEW Web site provides extensive links to nutrition-related information available from government and nonprofit sources.

NEW's team approach has been spearheaded by extension faculty, but the program's project roster includes research and instruction components as well, such as materials developed for young athletes by food science and human nutrition students. The collaborative projects developed under the NEW umbrella reflect partnerships not only within CTAHR but also with colleagues at mainland universities and local, state, and federal agencies. By linking projects and pooling resources, NEW enables more efficient outreach to improve the health and well-being of Hawai'i's people. In addition, 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 education projects to improve the health and wellness of Hawai'i's families and communities.. This planned 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 : Intermediate (One to five years)

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

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

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

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
702	Requirements and Function of Nutrients and Other Food Component	0%		5%	
703	Nutrition Education and Behavior	10%		25%	
704	Nutrition and Hunger in the Population	10%		0%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residue	20%		35%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Pa	20%		30%	
722	Zoonotic Diseases and Parasites Affecting Humans	10%		0%	
723	Hazards to Human Health and Safety	10%		5%	
724	Healthy Lifestyle	20%		0%	
Total		100%		100%	

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

1. Situation and priorities

CTAHR should serve as a catalyst in strengthening the capacity of Hawai'i's families and communities to improve human health, wellness, and overall quality of life. CTAHR needs to provide leadership in conducting research to identify the most effective health-promotion interventions and disseminate this knowledge to the community. The rise in obesity is contributing to an alarming increase in chronic diseases; nutrition science has linked human health to the nutritional value of foods and the consumer's dietary intake. CTAHR can play 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. 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.

One out of five farms in Hawai'i are owned by immigrant farmers who grow the papayas, vegetables, flowers and many other crops that we enjoy year round. Many 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 should 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.

2. Scope of the Program

- Integrated Research and Extension
- Multistate Extension
- Multistate Integrated Research and Extension
- In-State Research
- In-State 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 remain 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
2009	6.0	0.0	3.0	0.0
2010	6.0	0.0	3.0	0.0
2011	6.0	0.0	3.0	0.0
2012	7.0	0.0	4.0	0.0
2013	7.0	0.0	4.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Develop research, extension, and education 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 formal and information 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
<ul style="list-style-type: none"> ● Group Discussion ● Education Class ● Workshop ● One-on-One Intervention 	<ul style="list-style-type: none"> ● Web sites ● Newsletters ● TV Media Programs

3. Description of targeted audience

As intended by the Land Grant perspective, CTAHR's "targeted" clients for this program in teaching 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 Service). 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 methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	4100	10200	1100	150
2010	4200	10400	1200	150
2011	4300	10500	1300	150
2012	4500	10700	1400	150
2013	4500	10700	1400	150

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

Expected Patent Applications

2009 :0 2010 :0 2011 : 1 2012 :0 2013 :0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	3	2	0
2010	4	2	0
2011	4	3	0
2012	4	3	0
2013	4	3	0

V(H). State Defined Outputs

1. Output Target

- Number of outreach activities and events conducted

2009 :110 2010 :120 2011 : 130 2012 :140 2013 :140

- Presentations at international and national meetings.

2009 :5 2010 :5 2011 : 5 2012 :5 2013 :5

- Grant proposals submitted.

2009 :5 2010 :5 2011 : 5 2012 :5 2013 :5

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

2009 :80 2010 : 85 2011 : 90 2012 :95 2013 : 95

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 723 - Hazards to Human Health and Safety

Outcome #2

1. Outcome Target

Number of people who changed their behavior to better their health

2. Outcome Type : Change in Action Outcome Measure

2009 :75 2010 : 75 2011 : 75 2012 :75 2013 : 75

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

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

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

2009 :120 2010 : 120 2011 : 120 2012 :130 2013 : 130

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

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

Outcome #4

1. Outcome Target

Total dollar value of grants and contracts obtained.

2. Outcome Type : Change in Knowledge Outcome Measure

2009 :250000

2010 : 275000

2011 : 300000

2012 :300000

2013 : 300000

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occuring Toxins
- 722 - Zoonotic Diseases and Parasites Affecting Humans
- 723 - Hazards to Human Health and Safety
- 724 - Healthy Lifestyle

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

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

•

When monies are short, higher public priorities may compete for available funds.

•High cost of petroleum and increased world 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

- During (during program)
- Before-After (before and after program)

Description

{NO DATA ENTERED}

2. Data Collection Methods

- Portfolio Reviews
- Observation

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program #6

1. Name of the Planned Program

7. Generate and Improve Hawaii's Products, Processes and Market

2. Brief summary about Planned Program

If University of Hawai'i at Mānoa represents an engine for economic development in the state of Hawai'i, then CTAHR represents one of the pistons that drives that engine. In fulfilling its tripartite function, CTAHR can play a pivotal role in supporting the state by diversifying Hawai'i's economy, strengthening existing businesses and communities, and creating new business ventures.

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. This planned program will:

- Provide integrated research, extension, and education for businesses to increase employments, profitability, and markets.
- Provide integrated research, extension, and education targeted at new products and services.
- Develop initiatives for promoting and strengthening agritourism.
- Provide technical support and training to businesses.
- Establish statewide agribusiness incubation and business development support program.

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

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

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

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

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
501	New and Improved Food Processing Technologies	10%		14%	
502	New and Improved Food Products	10%		15%	
503	Quality Maintenance in Storing and Marketing Food Products	5%		3%	
511	New and Improved Non-Food Products and Processes	0%		28%	
601	Economics of Agricultural Production and Farm Management	25%		14%	
602	Business Management, Finance, and Taxation	5%		0%	
603	Market Economics	15%		3%	
604	Marketing and Distribution Practices	10%		5%	
605	Natural Resource and Environmental Economics	0%		10%	
607	Consumer Economics	15%		3%	
608	Community Resource Planning and Development	5%		5%	
	Total	100%		100%	

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

1. Situation and priorities

Agricultural enterprises in most states have been undergoing continuous consolidation, with scores of small farms merging into larger, mono-crop corporations. With the closing or downsizing of most large sugar and pineapple operations in Hawai'i, this state is moving in the opposite direction, toward increasing numbers of small, entrepreneurial operations that produce a diversity of crops and agri-products. Many startups experience difficulty with obtaining financing, adopting sound business practices, marketing products and services, coping with regulations, and optimizing growth opportunities.

Opportunities exist for replacing imports of produce to local supermarket chains, hotels, restaurants, local cruise lines; however, because of the small size of most local farms, many of them are not able to meet the continuous supply requirements. Although farmers are notoriously independent, collaboration among farmers by locale or crops or other criteria 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 be frozen, processed to be made into ready-to-eat products, dried, canned, preserved, and made into a multitude of products. Many entrepreneurs in Hawai'i have demonstrated this through programs such as the "Mountain Apple Brand" developed by a local supermarket chain that features local produce, and locally made value added products. This very successful program demonstrates that there is interest and profit in small scale entrepreneurship. CTAHR is providing and needs to continue to provide assistance and expertise in developing new products, processes, and new markets.

CTAHR needs to help entrepreneurs, in agriculture and in other businesses such as apparel-textile and family support, overcome these types of difficulties. By disseminating and assisting in the implementation of existing or new knowledge and practices, CTAHR has the opportunity to assume a leadership role in incubating new businesses and helping existing businesses improve their operations, create new opportunities, and become more successful. In assuming this role, CTAHR will strengthen both Hawai'i's economy and communities.

2. Scope of the Program

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

- New value added products are developed using locally produced crops and livestock.
- Current products and processes are improved using knowledge and expertise in CTAHR for existing and expanded markets
- Local producers and manufacturers become more efficient, more profitable, and more competitive with the technical and business management assistance and training received from CTAHR.

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
2009	1.3	0.0	5.7	0.0
2010	1.5	0.0	6.2	0.0
2011	1.5	0.0	6.2	0.0
2012	1.5	0.0	6.2	0.0
2013	1.5	0.0	6.2	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

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Identify and develop new value added products from locally grown crops and livestock.

Assist and provide the latest technology to local entrepreneurs in the development of new value added products.

Provide consulting service to individual farmers, processors, packers, and industry groups with developing new markets, developing new marketing strategies, writing successful business/marketing plans to expand their business.

Assist data collection and provide scientific data to facilitate the introduction of transgenic papaya into Japanese market.

Conduct portfolio and industry analyses to identify bottlenecks for industry expansion.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Group Discussion ● Workshop ● One-on-One Intervention ● Education Class 	<ul style="list-style-type: none"> ● Newsletters ● Web sites

3. Description of targeted audience

As intended by the Land Grant perspective, CTAHR's "targeted" clients for this program in teaching are the undergraduate and graduate students in agriculture 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 Agriculture, Business, Economic Development and Tourism, and Land and Natural Resources). Clients for extension agents are farmers, small business owners, food manufacturers, commodity producers and their organizations (such as individual grower associations, 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 product development and marketing.

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	80	75	0	0
2010	80	75	0	0
2011	80	100	0	0
2012	80	100	0	0
2013	80	100	0	0

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

Expected Patent Applications

2009 :0 2010 :0 2011 : 1 2012 : 0 2013 : 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	2	1	3
2010	3	1	4
2011	3	1	4
2012	4	1	5
2013	4	1	5

V(H). State Defined Outputs

1. Output Target

- Develop new food and other products of added value.

2009 :1 2010 :1 2011 :1 2012 :1 2013 :1

- Presentations at international and national meetings.

2009 :5 2010 :5 2011 :5 2012 :5 2013 :5

- Grant proposals submitted.

2009 :10 2010 :10 2011 :10 2012 :10 2013 :10

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of people who increase their knowledge or complete non-formal education programs on economic or enterprise development
2	Number of new businesses started and number of existing businesses maintaining or expanding operations resulting from economic development programs
3	Total dollar value of grants and contracts obtained

Outcome #1

1. Outcome Target

Number of people who increase their knowledge or complete non-formal education programs on economic or enterprise development

2. Outcome Type : Change in Knowledge Outcome Measure

2009 :30 2010 : 35 2011 : 40 2012 :40 2013 : 40

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 604 - Marketing and Distribution Practices
- 607 - Consumer Economics
- 608 - Community Resource Planning and Development

Outcome #2

1. Outcome Target

Number of new businesses started and number of existing businesses maintaining or expanding operations resulting from economic development programs

2. Outcome Type : Change in Action Outcome Measure

2009 :3 2010 : 3 2011 : 3 2012 :3 2013 : 3

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 502 - New and Improved Food Products
- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation

Outcome #3

1. Outcome Target

Total dollar value of grants and contracts obtained

2. Outcome Type : Change in Action Outcome Measure

2009 :66000 2010 : 70000 2011 : 80000 2012 :80000 2013 : 80000

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 604 - Marketing and Distribution Practices
- 607 - Consumer Economics
- 608 - Community Resource Planning and Development

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

- Raw products are available to make into value added products or to develop export markets.
- The “Hawai’i” mystique can be used as an advantage in marketing Hawai’i’s 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.
- Affordable transportation will be available.

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

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Description

{NO DATA ENTERED}

2. Data Collection Methods

- Portfolio Reviews
- Observation

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program #7

1. Name of the Planned Program

4. Invasive Species Education and Management

2. Brief summary about Planned Program

Pests threaten the quality of agricultural products and the health of farming businesses and the surrounding natural and urban ecosystems. Through basic and applied research, host-pathogen interactions can be identified, epidemiological and economic impacts of diseases and other pests can be projected, and control measures can be developed and validated. Through education and extension, producers and practitioners can better understand the threats posed by pests and implement effective means to control those threats. 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 the expensive niche crops that we produce in Hawai'i thereby destroying the limited economic opportunities of Hawai'i's growers. Plant pathologists and entomologists identify new pests that continually invade our state and destroy our high value crops and gardens. 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. Our faculty has developed the use of hot water treatment for controlling many insect pests. This simple non-toxic method is aiding the fruit and flower export industries of Hawai'i. Similarly, plant selection and breeding for pest and disease control are important contributions of the college, 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 Hawaii. Also, two unique papaya cultivars, 'Rainbow' and 'SunUp' have been developed by CTAHR faculty that are resistant to the devastating papaya ring spot virus. These new cultivars have been genetically engineered and contain part of the viral coat protein. This is a totally new and unique method to produce papaya cultivars resistant to this severe viral disease and according to producers, the new cultivars have saved the papaya industry on the Big Island.

More recently, State of Hawai'i has changed the focus to increasing the quarantine and inspection efforts of products entering the State. However, many of the already introduced invaders have to be dealt with, eradicated, or at the minimum contained to where they are currently found. Established species will need to be dealt with by long term, low-environmental impact methods. 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 : Mature (More than five years)

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

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

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

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
211	Insects, Mites, and Other Arthropods Affecting Plants	25%		25%	
212	Pathogens and Nematodes Affecting Plants	25%		50%	
213	Weeds Affecting Plants	25%		5%	
215	Biological Control of Pests Affecting Plants	25%		20%	
	Total	100%		100%	

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

1. Situation and priorities

Hawaii's physical isolation has created unique ecosystems, flora, and fauna coupled with its year round favorable growing conditions have made Hawaii extremely susceptible to invasion by undesirable plants, arthropods, vertebrates, microorganisms, and other invasive species. Invasive species have been described as "the single greatest threat to Hawaii's economy and natural environment and to the health and lifestyle of Hawaii's people". Invasive species already cause millions of dollars in crop losses, the extinction of native species, and the destruction of native forests. Many more pests such as the red imported fire ant, sand and biting flies, the brown tree snake, and many more could seriously affect Hawaii's natural resources, agriculture, tourist industry, 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 little problem, enough of them cause sufficient problems that cause a significant impact in Hawaii. 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, and nettle caterpillar. 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

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

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 Hawaii 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.

Mitigation of damage caused to agricultural and natural ecosystems by invasive weeds,

More effective 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.

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
2009	1.0	0.0	8.3	0.0
2010	1.0	0.0	8.3	0.0
2011	1.0	0.0	8.3	0.0
2012	1.0	0.0	8.3	0.0
2013	1.0	0.0	8.3	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
<ul style="list-style-type: none"> ● Workshop ● Education Class ● One-on-One Intervention ● Demonstrations ● Group Discussion 	<ul style="list-style-type: none"> ● TV Media Programs ● Web sites ● Newsletters

3. Description of targeted audience

As intended by the Land Grant perspective, CTAHR's "targeted" clients for this program in teaching are the undergraduate and graduate students in agriculture 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 Agriculture, Health, and Land and Natural Resources, and the USDA Natural Resources Conservation Service, NRCS). 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 methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	80	700	300	300
2010	90	800	350	350
2011	100	900	400	400
2012	110	900	400	400
2013	110	900	400	400

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

Expected Patent Applications

2009 :0 2010 :0 2011 : 1 2012 :0 2013 :0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	10	5	0
2010	10	5	0
2011	10	5	0
2012	10	5	0
2013	10	5	0

V(H). State Defined Outputs

1. Output Target

- Number of workshops, field days, demonstrations held

2009 :2 2010 :3 2011 : 3 2012 :3 2013 :3

- Number of grant proposals submitted

2009 :10 2010 :10 2011 : 10 2012 :10 2013 :10

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

2009 :30 2010 : 35 2011 : 35 2012 :35 2013 : 35

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 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

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 Action Outcome Measure

2009 :8 2010 : 8 2011 : 8 2012 :8 2013 : 8

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 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

Outcome #3

1. Outcome Target

Total dollar value of grants and contracts obtained.

2. Outcome Type : Change in Action Outcome Measure

2009 :300000 2010 : 315000 2011 : 325000 2012 :330000 2013 : 340000

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 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

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Intentional introductions of invasive species

Lack of funding/grant proposals don't come through.

Other agencies and partners are 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)
- During (during program)

Description

{NO DATA ENTERED}

2. Data Collection Methods

- {NO DATA ENTERED}

Description

{NO DATA ENTERED}