

**V(A). Planned Program (Summary)**

**Program # 2**

**1. Name of the Planned Program**

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

**V(B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		5%	
124	Urban Forestry	0%		2%	
125	Agroforestry	0%		2%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		6%	
202	Plant Genetic Resources	5%		7%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	2%		7%	
204	Plant Product Quality and Utility (Preharvest)	6%		7%	
205	Plant Management Systems	20%		18%	
206	Basic Plant Biology	0%		10%	
211	Insects, Mites, and Other Arthropods Affecting Plants	15%		5%	
212	Pathogens and Nematodes Affecting Plants	15%		7%	
213	Weeds Affecting Plants	8%		3%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	2%		0%	
215	Biological Control of Pests Affecting Plants	2%		1%	
216	Integrated Pest Management Systems	10%		6%	
502	New and Improved Food Products	0%		4%	
511	New and Improved Non-Food Products and Processes	0%		4%	
601	Economics of Agricultural Production and Farm Management	3%		1%	
604	Marketing and Distribution Practices	2%		5%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

**1. Actual amount of professional FTE/SYs expended this Program**

<b>Extension</b>	<b>Research</b>
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<b>Year: 2010</b>	<b>1862</b>	<b>1890</b>	<b>1862</b>	<b>1890</b>
	20.0	0.0	13.0	0.0
Plan				
Actual	16.0	0.0	8.7	0.0

**2. Actual dollars expended in this Program (includes Carryover Funds from previous years)**

<b>Extension</b>		<b>Research</b>	
<b>Smith-Lever 3b &amp; 3c</b>	<b>1890 Extension</b>	<b>Hatch</b>	<b>Evans-Allen</b>
221500	0	228316	0
<b>1862 Matching</b>	<b>1890 Matching</b>	<b>1862 Matching</b>	<b>1890 Matching</b>
1399112	0	1968137	0
<b>1862 All Other</b>	<b>1890 All Other</b>	<b>1862 All Other</b>	<b>1890 All Other</b>
190166	0	88282	0

**V(D). Planned Program (Activity)**

**1. Brief description of the Activity**

A fundamental responsibility of the College of Tropical Agriculture and Human Resources is promotion of crop production in the State. Since most food consumed in Hawaii is imported, an important goal is to encourage import replacement through increased commercial as well as backyard and urban agricultural production. Likewise, promotion of diversified cropping helps to diversify the state's economy in the wake of sugarcane and pineapple plantation closures over the past several decades. Linkages with programs in other states and island territories assist CTAHR in these efforts.

On the island of Molokai, a major initiative this year was to provide opportunity for mono-crop farmers to diversify the crops they produce and for new and for beginning farmers to increase their knowledge and skills in crop production and farm business management. Mono crop farmers in the project are successfully producing alternative crops along with their primary crop; and new and beginning farmers are developing their production and business plans. For example, Whole Foods Markets and other mainland distributors have increased their demand for organic papaya and Moloka'i papaya farmers have the opportunity to increase the value of their fruits by changing from conventional to organic farming methods. More than .6 million pounds of certified organic papayas were exported to mainland markets last year.

Another major focus of activities was in the continued development of an umbrella organization to unite the flower and nursery industries under one statewide organization. This new organization, named the Hawaii Floriculture and Nursery Association (HFNA), was being formed in order to: 1) enhance its members' business success through enactment of laws to advance the common business interests of its members, 2) to encourage and promote the betterment of conditions that will create and sustain an economically viable flower and plant industry, and 3) to promote the export of Hawaii flowers and plants. This organization would help to ensure the growth of the floriculture and nursery industries in Hawaii by increasing professionalism and by competing more effectively in the world market. The statewide umbrella organization will represent more than a dozen ornamental associations. The present structure of multiple organizations duplicates efforts in marketing, educational programs, and minimizes the effectiveness of

establishing strong governmental relations.

Urban horticulture clientele and Master Gardener volunteers statewide increased awareness of resources available to home gardeners through CTAHR, including fruit fly suppression, general plant pest and disease control, plant propagation, nutrient management and environmentally sound gardening. Statewide Master Gardener programs expanded with over 100 new volunteers trained and assisting CTAHR in disseminating research-based information to the public through help-lines in all four counties, information booths at public events and peer-to-peer education within the community.

## 2. Brief description of the target audience

The target audience for this program area is mainly the diversified farming community, especially those growing commercial or home garden crops. Main commercial crop industries served by CTAHR include floriculture and nursery, tropical fruit trees and nuts, vegetables, melons, herbs, and root or tuber crops. Many of these crops are tropical not commonly grown in the mainland US, so that research and extension outreach is very important to Hawaii producers. There is also a resurgence of interest in home and school gardening which is supported by CTAHR programs.

### V(E). Planned Program (Outputs)

#### 1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Plan</b>	14500	10000	1000	100
<b>Actual</b>	15362	135293	1003	160

#### 2. Number of Patent Applications Submitted (Standard Research Output)

##### Patent Applications Submitted

Year: 2010  
 Plan: 4  
 Actual: 0

##### Patents listed

#### 3. Publications (Standard General Output Measure)

##### Number of Peer Reviewed Publications

2010	Extension	Research	Total
<b>Plan</b>	15	32	
<b>Actual</b>	8	21	29

### V(F). State Defined Outputs

#### Output Target

**Output #1**

**Output Measure**

- Number of workshops, research/field day demonstrations conducted

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	70	267

**Output #2**

**Output Measure**

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

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	80	46

**Output #3**

**Output Measure**

- Presentations at international and national meetings

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	20	20

**Output #4**

**Output Measure**

- Number of diagnostic samples analyzed  
Not reporting on this Output for this Annual Report

**Output #5**

**Output Measure**

- Number of grant proposals submitted.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	45	56

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

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

## **Outcome #1**

### **1. Outcome Measures**

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

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	400	21548

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Increased awareness of environmentally responsible agricultural and landscape management is the first step toward better decision making and improved practices.

#### **What has been done**

Workshops, field days, demonstrations, presentations, websites and publications have been completed on a variety of topics that will help agricultural and home garden producers understand how to make the State more sustainable.

#### **Results**

Hawaii will be more sustainable and the agricultural producers will be more competitive.

## **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships
124	Urban Forestry
125	Agroforestry
201	Plant Genome, Genetics, and Genetic Mechanisms
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems

206	Basic Plant Biology
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

## **Outcome #2**

### **1. Outcome Measures**

Number of people who adopt one or more recommended practices

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	250	2691

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Moving from understanding of improved practice to actual adoption is obviously important to realizing the environmental, social and economic benefits associated with the improved practices.

#### **What has been done**

Developing improved practices (such as pest control, improved crop varieties, soil management, etc.) is done by research faculty, either in on-station or on-farm experiments. Adoption usually requires repeated instruction and follow up by extension educators, which is often done in conjunction with commodity associations. Also CTAHRS's Master Gardener programs involves repeated and in depth outreach to the general gardening public. This is done through fairs, phone hotlines and direct instruction of the public by the Master Gardener volunteers.

#### **Results**

Commercial crop and home garden production will be more productive and sustainable.

#### 4. Associated Knowledge Areas

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships
124	Urban Forestry
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
502	New and Improved Food Products
511	New and Improved Non-Food Products and Processes
601	Economics of Agricultural Production and Farm Management

#### Outcome #3

##### 1. Outcome Measures

Total dollar value of grants and contracts obtained.

##### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	4600000	4356091

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Funds are needed to undertake research and extension activities to assist producers.

**What has been done**

Grant funds have been received.

**Results**

Increased extramural funding has allowed CTAHR faculty and staff to conduct needed research and associated extension outreach activities.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships
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
216	Integrated Pest Management Systems

**V(H). Planned Program (External Factors)**

**External factors which affected outcomes**

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

**Brief Explanation**

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

**V(I). Planned Program (Evaluation Studies and Data Collection)**

### **1. Evaluation Studies Planned**

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

### **Evaluation Results**

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

### **Key Items of Evaluation**

None