

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

**Program # 1**

**1. Name of the Planned Program**

Small Farms

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

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
133	Pollution Prevention and Mitigation	5%		5%	
202	Plant Genetic Resources	10%		10%	
205	Plant Management Systems	25%		20%	
211	Insects, Mites, and Other Arthropods Affecting Plants	10%		12%	
212	Pathogens and Nematodes Affecting Plants	5%		10%	
215	Biological Control of Pests Affecting Plants	5%		7%	
307	Animal Management Systems	10%		7%	
315	Animal Welfare/Well-Being and Protection	5%		7%	
401	Structures, Facilities, and General Purpose Farm Supplies	5%		5%	
601	Economics of Agricultural Production and Farm Management	5%		5%	
604	Marketing and Distribution Practices	5%		7%	
903	Communication, Education, and Information Delivery	10%		5%	
	<b>Total</b>	100%		100%	

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

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

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	6.0	0.0	4.0	0.0
Actual	5.8	0.0	4.5	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
181592	0	137048	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
181592	0	137048	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

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

### 1. Brief description of the Activity

Multiplication, evaluation and distribution of improved taro and banana varieties.  
 List of plant-parasitic nematodes on taro, their distribution and management.  
 Vegetable variety evaluation demonstrations  
 Budding, grafting and air layering workshops for citrus and other fruit trees  
 Pig project to reduce inbreeding of farmers' animal operations - buying/selling or trading of stock, boar services, artificial insemination.  
 Tissue culture of traditional staples and increasing genetic diversity to improve crop security.  
 Plant clinic diagnoses and recommendations  
 Pest surveys  
 Testing of reduced-risk pesticides  
 Biological control studies of economically important pests  
 Technical assistance with nuisance bee problems and assessment of apiculture  
  
 Pesticides Safety Training  
 Farm Safety Training  
 Farm visitations and demonstrations  
 Waste Management Systems demonstrations  
 Tilapia breeding program  
 Evaluation of native freshwater fish and crustaceans for intensive aquaculture  
 Feeds lab maintenance  
 Manu'a High School aquaponics course  
 Technical assistance with disease and nutrition issues for aquaculture farmers  
 Technical assistance with aquaponics and integrated pig-tilapia aquaculture

### 2. Brief description of the target audience

Small and resource-limited farmers and ranchers, commercial farmers, aquaculture farmers, forestry clients, hobby farmers, general public, schools, and all 4-H youth and other community group members.

**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>	1100	6500	700	3000
<b>Actual</b>	1500	45000	6000	20000

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

**Patent Applications Submitted**

Year: 2010

Plan: 0

Actual: 0

**Patents listed**

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

**Number of Peer Reviewed Publications**

2010	Extension	Research	Total
<b>Plan</b>	0	1	
<b>Actual</b>	0	0	0

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Number of research projects completed

Year	Target	Actual
2010	1	1

**Output #2**

**Output Measure**

- Number of cultivars of disease resistant taro, banana, and improved varieties of sweet potato multiplied and released,

Year	Target	Actual
2010	30	23

**Output #3**

**Output Measure**

- Number of improved taro setts, banana suckers/bits, and/or sweet potato slips disseminated

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	4000	4914

**Output #4**

**Output Measure**

- Number of plant clinic diagnoses and recommendations made to assist farmers

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	30	6

**Output #5**

**Output Measure**

- Number of vegetable variety demonstrations completed

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	5	5

**Output #6**

**Output Measure**

- Number of new fruit tree varieties introduced

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	3	3

**Output #7**

**Output Measure**

- Number of fruit tree propagation workshops

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	3	6

**Output #8**

**Output Measure**

- Number of pigs sold/traded and piglets born from AI

<b>Year</b>	<b>Target</b>	<b>Actual</b>
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2010 30 19

**Output #9**

**Output Measure**

- Number of directories published

Year	Target	Actual
2010	0	0

**Output #10**

**Output Measure**

- NUmber of pesticide efficacy tests conducted

Year	Target	Actual
2010	1	0

**Output #11**

**Output Measure**

- Number of Pesticide Applicator's Training workshops conducted

Year	Target	Actual
2010	6	4

**Output #12**

**Output Measure**

- Number of biological control species introduced or augmented to control local pests.

Year	Target	Actual
2010	1	0

**Output #13**

**Output Measure**

- Number of video production

Year	Target	Actual
2010	1	1

**Output #14**

**Output Measure**

- Number of Tilapia released from breeding program

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	50	0

**Output #15**

**Output Measure**

- Number of candidate species culture trials completed

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	1	0

**Output #16**

**Output Measure**

- Number of tilapia feed trials completed

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	1	2

**Output #17**

**Output Measure**

- Number of semesters that MSC 200 was taught

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	2	2

**Output #18**

**Output Measure**

- Number of collaborative projects with other government agencies

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	10	23

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

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

O. No.	OUTCOME NAME
1	Number of farmers growing improved varieties of taro, bananas and sweet potatoes
2	Number of farmers targeting problems according to recommendations on plant clinic form
3	Number of farmers growing improved vegetable cultivars
4	Number of people growing improved budded/grafted or airlayered fruit trees in their back yards.
5	Number of pig farmers upgrading their stock
6	Number of reduced risk pesticides recommended for use.
7	Number of pesticide applicators trained and certified
8	Number of farmers growing improved genetic stocks of tilapia
9	Number of farmers upgrading their farms to aquaponics
10	Number of farmers making their own tilapia feeds
11	Number of students enrolled in MSC 200
12	Number of students enrolled in Manu'a High School Aquaponics course
13	Number of farmers integrating their piggeries with tilapia culture
14	Number of farmers/stakeholders involved with collaborative projects

## **Outcome #1**

### **1. Outcome Measures**

Number of farmers growing improved varieties of taro, bananas and sweet potatoes

### **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	100	342

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

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

As reported in 2008 and 2009, the taro leaf blight of the 1990s and black leaf streak disease of bananas negatively impacted taro and banana production in American Samoa. With the continued multiplication and distribution of improved (disease resistant) varieties, taro and banana producers now have greater diversity of disease-resistant varieties to choose from and to address the food security issue (food supply).

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

Agriculture Extension staff, in collaboration with Research staff continued to conduct more Taro Taste Tests to identify the best tasting varieties for American Samoa. These improved (disease resistant and acceptable taste) taro and banana varieties were multiplied and distributed to the farming community and the public.

#### **Results**

In FY 2010, the Agriculture Extension staff distributed 4,914 improved taro setts and banana planting materials from more than 20 cultivars of disease resistant taros and bananas to 342 farmers.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
202	Plant Genetic Resources
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants

215	Biological Control of Pests Affecting Plants
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

## **Outcome #2**

### **1. Outcome Measures**

Number of farmers targeting problems according to recommendations on plant clinic form

### **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	20	6

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

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

In 2010, experienced farmers and extension agents continued to identify common pest problems and provide recommendations. Assistance from ASCC-CNR Entomologist is provided for less common pests or pests that are new to the area. The Entomologist also contacted counterparts in Hawaii, Pacific Region, and mainland USA for confirmation and additional recommendations.

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

Similar to 2009, ASCC-CNR staff continued to assist agricultural producers and vegetable farmers utilizing the ASCC CNR plant clinic, USDA's National Plant Diagnostics Network (NPDN), the associated Pacific Islands Distance Diagnostics and Recommendation System, and local expertise. Continued quarantine surveillance trapping program for exotic fruit flies in collaboration with the American Samoa Department of Agriculture.

#### **Results**

A total of 34,270 fruit flies were trapped and identified during the year. Fortunately no exotic invasive species were detected. The plant clinic made 6 diagnoses and recommendations to help community members deal appropriately with various pest problems. A detailed assessment verified that the biological control project to control Seychelles scale insects affecting breadfruits and other trees on Ta'u Island had succeeded after introductions of the predatory lady beetle *Rodolia pumila*.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
215	Biological Control of Pests Affecting Plants

### **Outcome #3**

#### **1. Outcome Measures**

Number of farmers growing improved vegetable cultivars

#### **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	100	316

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

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

In 2010, farmers continued to grow improved vegetable varieties that are beneficial to farmers and consumers in terms of buying safer and cheaper seeds and generating additional revenues for the family. Also, consumers benefit in terms of reducing costs and meeting nutritional needs of the family and community members.

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

Agriculture Extension staff continued to provide small quantities of different vegetable seeds/seedlings to homemakers, schools, and 4-H clubs interested in growing their own vegetables. Also, staff conducted visitations to provide follow up assistance to back-yard farmers, commercial vegetable growers, and school and church vegetable projects. Moreover, Extension sold 1,125 packages (10gramms each) of different vegetable seeds of good quality to 175 farmers at break-even price to encourage people to grow more vegetables. ASCC-CNR continued to order improved seeds of vegetable varieties and sell the seeds to the farmers and interested members of the community. Extension staff completed 5 vegetable variety trials.

### **Results**

Extension staff identified improved vegetable cultivars that perform well in the tropics and are disease resistant. Similar to 2008 and 2009, the success of the improved cultivars in the farming community is evident by the increase in the number of seed purchases, demand to order more seeds to cover the shortage of the seed supply, increase in production and human consumption, and vegetable sales. 316 farmers cultivated improved vegetable cultivars.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
202	Plant Genetic Resources
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
215	Biological Control of Pests Affecting Plants
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

#### Outcome #4

##### 1. Outcome Measures

Number of people growing improved budded/grafted or airlayered fruit trees in their back yards.

##### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

##### 3a. Outcome Type:

Change in Condition Outcome Measure

##### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	0	36

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

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

As reported in 2008 and 2009, there is a great need to increase consumption of fruits to address the many non-communicable diseases such as diabetes, hypertension, heart disease, obesity, and others. Parents continued to be concerned to ensure that their children have enough fresh fruits to eat. Making fruit trees available to families to plant in the back yard and land is critical in addressing the above-mentioned challenges.

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

Agriculture Extension staff continued to multiply and distribute the recommended fruit tree varieties to the farmers, homemakers, and interested residents. CNR staff started the construction of a new greenhouse to accommodate the multiplication of fruit-tree planting-materials, and to serve as a teaching/learning lab for ASCC Agriculture students and farmers on the different methods of asexual propagation to increase the availability of diverse varieties of fruits for the people of American Samoa. Agriculture Extension continued to work EFNEP and 4-H to conduct the "Fruit of Life" program to increase the consumption of vegetables and fruits in order to address the poor nutrition problem and lifestyle diseases.

#### **Results**

CNR staff started construction of a new greenhouse to accommodate the multiplication of fruit-tree planting-materials, and to serve as a teaching/learning lab for ASCC Agriculture students and farmers on the different methods of asexual propagation. Agriculture Extension continued to work with EFNEP and 4-H to conduct the "Fruit of Life" program to increase the consumption of vegetables and fruits in order to address the poor nutrition problem and lifestyle diseases. Introduced 3 new fruit tree varieties and conducted 6 fruit tree propagation workshops. 36 farmers propagated improved budded/grafted or air-layered fruit trees in their back yards.

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
202	Plant Genetic Resources
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
215	Biological Control of Pests Affecting Plants
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

#### **Outcome #5**

##### **1. Outcome Measures**

Number of pig farmers upgrading their stock

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

- 1862 Extension
- 1862 Research

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

Change in Condition Outcome Measure

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

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

5

21

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

Similar to 2009, pig farmers are concerned because of inbreeding of their stock which has manifested itself in lower production due to increased mortality and overall slower growth. There is a continued need to introduce biodiversity in the local pig gene pool, not only from an inbreeding perspective but a homeland security one as well. Also there is a great need to address the pig waste management problem.

#### What has been done

CNR Extension continued to collaborate with ASEPA, DOC, DOA, NRCS, and other agencies in developing waste management systems demonstrations and educational programs. Completed the ASEPA funded CNR piggery to demonstrate the recommended waste management systems.

#### Results

ASEPA funded the renovation of the CNR piggery to demonstrate the three recommended waste management systems. The renovated piggery now serves as a demonstration for the pig farming community regarding their options should they want to keep their piggeries operational. Once these piggeries gain compliance of the local laws, the intent is to work with the farmers to upgrade their stock to reduce inbreeding by making available boar service and trading/selling to them some of our own improved stock. Extension staff also assisted ASEPA and FSA staff, piggery council members, and other government agencies with piggery compliance workshops (outreach) in Tutuila and Manu'a islands. 21 pig farmers upgraded their stock.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management

### Outcome #6

#### 1. Outcome Measures

Number of reduced risk pesticides recommended for use.

#### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

#### 3a. Outcome Type:

Change in Condition Outcome Measure

### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	1	0

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

As reported in 2008 and 2009, American Samoa's environment, cropping systems, and pest problems are unique in many respects. Pest control solutions that work elsewhere may be ineffective or inappropriate in the territory. Agriculture extension agents must help provide proven pest control recommendations that are environmentally sound and safe for applicators and consumers.

#### What has been done

This activity could not be completed in 2010 due to lack of personnel

#### Results

This activity could not be completed in 2010 due to lack of personnel

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants

### Outcome #7

#### 1. Outcome Measures

Number of pesticide applicators trained and certified

#### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

#### 3a. Outcome Type:

Change in Action Outcome Measure

#### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	90	61

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

Similar to 2008 and 2009, impacts of unsafe and illegal use of pesticides to humans and environment are documented. Also people who imported and use non-EPA registered pesticides were cited by ASEPA.

#### What has been done

During FY 2010, ASCC-CNR Pesticide Instructor conducted 4 Pesticide Applicator Safety workshops that enrolled 61 participants. Another Extension staff member was on hand to observe with the hope that he takes over the training in the absence of the current Pesticide Instructor. The EPA Pesticide Officer was also present to certify the participants. The Farm Safety Agent and Extension staff conducted 3 Progressive Agriculture Safety Days in selected Elementary Schools in addition to one (1) Community Safety workshop conducted on-campus. Extension Agents reached 627 students and community residents through the Farm Safety program.

#### Results

In FY 2010, 61 participants were trained and certified. Similar to 2008 and 2009, more people now understand the importance of handling pesticides in a safe manner and are aware of how to use these chemicals safely. Many residents are now aware of Integrated Pest Management strategies and successful biological control programs. As a result, some farmers have dramatically reduced the use of pesticides, while others are no longer using pesticides. Importation of illegal (non-EPA registered) pesticides cases are reduced.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management

### Outcome #8

#### 1. Outcome Measures

Number of farmers growing improved genetic stocks of tilapia

#### 2. Associated Institution Types

- 1862 Extension

#### 3a. Outcome Type:

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	3	0

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

**Issue (Who cares and Why)**

Tilapia introductions in American Samoa have been few and far between. Inbreeding of existing stocks has been known to reduce growth rates and maximum sizes.

**What has been done**

The Center for Sustainable Integrated Agriculture and Aquaculture is in the process of being expanded to accommodate more tanks in which to conduct a breeding program to provide farmers with improved fish stocks. Tanks have been constructed and plastic liners, plumbing, pumps were purchased in preparation for tank installation.

**Results**

The expansion of the center is not yet complete and distribution of improved genetic stocks of tilapia has not begun. For this reason we report 0 farmers growing improved genetic stocks of tilapia. The center is expected to be completed by fall 2011 after which a breeding program will begin to provide farmers with these improved fish stocks.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection
601	Economics of Agricultural Production and Farm Management

**Outcome #9**

**1. Outcome Measures**

Number of farmers upgrading their farms to aquaponics

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
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2010                      1                      0

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

**Issue (Who cares and Why)**

There is little, available, arable land in American Samoa. Much of the available land is comprised of poor soils that are not suitable for gardening. With the current loss of jobs and economic recession, people are looking for ways to improve their food security.

**What has been done**

An aquaponics system was constructed during fall 2010 at the Center for Sustainable Integrated Agriculture and Aquaculture. Presentations were made to the local Samoan Family Sunfish Cooperative, Inc. on aquaculture methods and potential.

**Results**

None of the existing farmers have converted their tilapia farms into aquaponics farms.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
205	Plant Management Systems

**Outcome #10**

**1. Outcome Measures**

Number of farmers making their own tilapia feeds

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	2	1

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

**Issue (Who cares and Why)**

Feed availability and quality are poor in American Samoa. Imported feeds are expensive and their shipping is difficult to arrange to provide a consistent supply. Locally-produced feeds are an option as are feeds for other animals, such as pigs.

**What has been done**

The Center for Sustainable Integrated Agriculture and Aquaculture was expanded in 2010 to include two industrial strength meat grinders and a hammer mill. This equipment will greatly improve the feed production speed as well as produce higher quality fish feeds. A study in partnership with the Oceanic Institute in Hawaii is underway to identify local food and food byproducts that are suitable for fish feeds.

**Results**

Samples of breadfruit, bananas, cassava, laupele, banana leaves and stalks, fishmeal, oil, and flour have and will be sent to Hawaii for nutritional analysis. This will lead to a manual with recipes and instructions for production of feeds using local ingredients. Negotiation with StarKist has also been underway and may result in a stable supply of fishmeal for use in feeds production.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection
401	Structures, Facilities, and General Purpose Farm Supplies
601	Economics of Agricultural Production and Farm Management

**Outcome #11**

**1. Outcome Measures**

Number of students enrolled in MSC 200

**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	15	15

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

**Issue (Who cares and Why)**

Marine Science students at the American Samoa Community College require a well rounded treatment of marine science topics, including aquaculture. These students require training for work at local marine and natural resource agencies. MSC 200 Introduction to Aquaculture is one of those classes.

**What has been done**

The MSC 200 course was taught during spring and fall 2010 semesters.

**Results**

A total of fifteen students enrolled in MSC 200 during the spring and fall 2010 semesters.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
903	Communication, Education, and Information Delivery

**Outcome #12**

**1. Outcome Measures**

Number of students enrolled in Manu'a High School Aquaponics course

**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	10	0

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

**Issue (Who cares and Why)**

Students in the Manu'a islands in American Samoa have poor access to science curriculum and laboratory supplies and equipment.

**What has been done**

An aquaponics system was built in 2007 for Manu'a High School. Preparations were made in 2009 to conduct a special aquaponics course at the school in 2010. However the September 29, 2009 tsunami caused unsurmountable difficulty in preparing for the 2010 course.

**Results**

The special aquaponics course at Manu'a High School was not offered in 2010 resulting in 0 students enrolled.

**4. Associated Knowledge Areas**

**KA Code**    **Knowledge Area**  
903            Communication, Education, and Information Delivery

**Outcome #13**

**1. Outcome Measures**

Number of farmers integrating their piggeries with tilapia culture

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	1	1

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

**Issue (Who cares and Why)**

The American Samoa Environmental Protection Agency has identified local piggeries as sources of harmful bacteria and other pollution in streams, rivers, and nearshore reef environments. Their response has been to shut down piggeries that are noncompliant with their regulations.

**What has been done**

In partnership with the American Samoa Environmental Protection Agency and the United States Department of Agriculture Natural Resources Conservation Service, one farmer who raised both pigs and tilapia independent of each other modified his farm to integrate the two animals. The Aquaculture Program assisted in designed the integrated farm.

**Results**

Six new ponds are being constructed at this farm for tilapia culture. A valve and solids separator were installed to divert liquid pig waste to the new tilapia ponds to fertilize algae to become food for tilapia. This is a solution to piggery runoff and waste management issues.

**4. Associated Knowledge Areas**

**KA Code**    **Knowledge Area**  
133            Pollution Prevention and Mitigation  
307            Animal Management Systems

- 315 Animal Welfare/Well-Being and Protection
- 601 Economics of Agricultural Production and Farm Management

**Outcome #14**

**1. Outcome Measures**

Number of farmers/stakeholders involved with collaborative projects

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	500	2037

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

**Issue (Who cares and Why)**

The limited availability of financial and specialized human resources are major challenges in program planning, development, implementation, and evaluation in American Samoa.

**What has been done**

In 2010, more than 35 local, federal, regional government agencies and non-government organizations partnered in program planning, development, implementation, and evaluation of more than 23 collaborative projects.

**Results**

More than 2037 farmers and stakeholders participated in planning, development, implementation, and evaluation of more than 23 collaborative projects involving more than 35 local, federal, regional government agencies and non-government organizations partners. The partnerships resulted in many accomplishments as reported in the outputs and outcomes sections.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
202	Plant Genetic Resources
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants

212	Pathogens and Nematodes Affecting Plants
215	Biological Control of Pests Affecting Plants
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices
903	Communication, Education, and Information Delivery

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

##### **External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Competing Public priorities
- Competing Programmatic Challenges
- Other (Staff recruitment)

##### **Brief Explanation**

The impacts of the September 29, 2009 earthquake and tsunami delayed and/or cancelled program activities.

Loss of staff reduced program capacity.

Delay in staff recruitment process.

Entomology technician promoted to another position in the department.

In the process of recruiting for: Plant Pathologist, Forestry Researcher, Animal Specialist, Fruit Tree Specialist, Marketing Specialist, Entomology Assistant and Technician, and field and support staff.

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

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

- After Only (post program)
- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)

##### **Evaluation Results**

##### **Key Items of Evaluation**