

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Global Food Security and Hunger

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
123	Management and Sustainability of Forest Resources	5%		5%	
124	Urban Forestry	5%		5%	
125	Agroforestry	5%		5%	
133	Pollution Prevention and Mitigation	5%		5%	
202	Plant Genetic Resources	10%		15%	
205	Plant Management Systems	10%		10%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%		5%	
212	Pathogens and Nematodes Affecting Plants	5%		5%	
215	Biological Control of Pests Affecting Plants	5%		5%	
306	Environmental Stress in Animals	5%		5%	
307	Animal Management Systems	10%		10%	
315	Animal Welfare/Well-Being and Protection	5%		5%	
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%		5%	
903	Communication, Education, and Information Delivery	10%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	7.0	0.0	4.0	0.0

Actual Paid Professional	2.0	0.0	0.7	0.0
Actual Volunteer	0.0	0.0	0.0	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
61124	0	25186	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
61124	0	25186	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.
 Laboratory bioassay for foliar plant diseases.
 List of plant-parasitic nematodes on taro, their distribution and management.
 Vegetable variety evaluation demonstrations and workshops.
 Budding, grafting and air layering workshops for citrus and other fruit trees.
 Collection of fruit trees planting materials (seeds and seedlings) from American Samoa and Independent Samoa.
 Order seeds of improved fruit tree varieties
 Nutrient analysis of fruits (banana variety - soa'a) and other crops and food
 Pig project to reduce inbreeding of farmers' animal operations - buying/selling or trading of stock, boar services, artificial insemination (work with U.H. in re-starting this program).
 Tissue culture of traditional staples and increasing genetic diversity to improve crop security.
 Plant clinic diagnoses and recommendations
 Pest surveys
 Testing of reduce-risk pesticides
 Biological control studies of important pests
 Technical assistance with nuisance bee problems and assessment of apiculture
 Pesticides Safety Training
 Farm Safety Training
 Farm visitations and demonstrations
 Tilapia breeding program
 Evaluation of native freshwater fish and crustaceans for intensive aquaculture
 Feeds lab development
 Teach ASCC courses, MSC 200: Introduction to Aquaculture and MSC 220: Introduction to Fisheries Management
 Technical assistance with disease and nutrition issues for aquaculture farmers
 Technical assistance with aquaponics and integrated pig-tilapia aquaculture
 Technical assistance with grant writing
 Technical advising for local Samoa Family Sunfish Cooperative, Inc.

2013 25

Output #2

Output Measure

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

Year	Actual
2013	7137

Output #3

Output Measure

- Number of plant clinic diagnoses and recommendations made to assist clients.

Year	Actual
2013	24

Output #4

Output Measure

- Number of vegetable variety demonstrations completed.

Year	Actual
2013	15

Output #5

Output Measure

- Number of new fruit tree varieties introduced.

Year	Actual
2013	0

Output #6

Output Measure

- Number of fruit tree propagation workshops.

Year	Actual
2013	0

Output #7

Output Measure

- Number of pigs and piglets sold/traded.

Year	Actual
2013	25

Output #8

Output Measure

- Number of pesticide efficacy tests completed.

Year	Actual
2013	4

Output #9

Output Measure

- Number of Pesticide Applicators' Training workshops conducted.

Year	Actual
2013	4

Output #10

Output Measure

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

Year	Actual
2013	0

Output #11

Output Measure

- Number of Tilapia released from breeding program.

Year	Actual
2013	50

Output #12

Output Measure

- Number of tilapia feed trials completed.

Year	Actual
2013	1

Output #13

Output Measure

- Number of vegetable gardening workshops conducted.

Year	Actual
2013	2

Output #14

Output Measure

- Number of vegetable gardens established.

Year	Actual
2013	15

Output #15

Output Measure

- Pounds of Tilapia feed produced at ASCC feeds lab.

Year	Actual
2013	7247

Output #16

Output Measure

- Number of plant disease causal agents identified.

Year	Actual
2013	12

Output #17

Output Measure

- Number of nutrient-dense traditional crop varieties disseminated

Year	Actual
2013	0

Output #18

Output Measure

- Number of trainings in taro breeding

Year	Actual
2013	0

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 clients targeting problems according to recommendations on plant clinic form.
3	Number of farmers/clients 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 farmers integrating their piggeries with tilapia culture.
12	Number of local crops nutrient analysis completed.
13	Number of people eating more vegetables as a result of the vegetable gardening project
14	Number of nutrient analysis conducted for local crops and food

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

Year	Actual
2013	238

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The taro leaf blight of the 1990s and the black leaf streak disease of bananas negatively impacted the production of taro and banana in American Samoa.

What has been done

The Agriculture Extension, Researchers, and Tissue Culture specialist continues to multiply the best taste varieties of traditional staples for American Samoa.

Results

In FY 2013, the Agriculture Extension distributed 7,137 improved taro setts and banana planting materials to 238 farmers. With the continued multiplication and distribution of improved varieties, farmers and producers now have a great diversity of disease-resistant products.

4. Associated Knowledge Areas

KA Code	Knowledge Area
202	Plant Genetic Resources
205	Plant Management Systems
212	Pathogens and Nematodes Affecting Plants
601	Economics of Agricultural Production and Farm Management

Outcome #2

1. Outcome Measures

Number of clients 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

Year	Actual
2013	12

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

As is the case for many isolated islands, American Samoa's natural and agricultural ecosystems are highly vulnerable to disruption by accidentally introduced exotic arthropods, and the likelihood of such introductions increases with increased movement of passengers and goods to the territory. Agriculture quarantine inspections and pest surveillance surveys can stop pests before they enter the territory or before they have an opportunity to spread and become established. Accurate identification is the crucial first step for effectively managing existing pests and responding to invasions by exotic pests.

What has been done

ASCC-CNR works with the territory's Department of Agriculture to assist with plant quarantine pest interceptions and to conduct detection surveys for exotic invasive pests. The fruit fly quarantine surveillance program continued this year, and detection surveys for citrus greening disease and exotic invasive ants were completed. The ASCC-CNR Plant Clinic continued to provide pest and disease diagnostic services to extension agents, farmers, and the general public. As a member of the USDA's National Plant Diagnostic Network, the ASCC-CNR Plant Clinic has access to regional and national-level diagnostics expertise when required.

Results

No exotic fruit fly species were found among the 35,448 fruit flies captured and identified in the quarantine surveillance program this fiscal year. Additional localized supplementary trapping was done immediately after unconfirmed sighting of an exotic fly, but no non-natives were found. Since the arrival and establishment of Asian citrus psyllid in 2011, it has been important to maintain surveillance against the disease it vectors, citrus greening. Fortunately our 2013 survey again found no citrus greening. A total of 46 high risk areas were sampled for exotic invasive ants, and one new exotic species was found. A delimitation survey for the latter suggested

eradication may be feasible. One mealybug pest new to the territory was also detected, but was already too widespread to attempt eradication. The ASCC-CNR Plant Clinic continued to provide assistance to CNR extension agents, the department of agriculture, farmers, and others through plant pest and disease diagnosis and management recommendations.

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
215	Biological Control of Pests Affecting Plants

Outcome #3

1. Outcome Measures

Number of farmers/clients growing improved vegetable cultivars.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	130

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Farmers continued to farm vegetable varieties that are beneficial to them in terms of providing food and to generate an income for the family.

What has been done

ASCC-CNR outreach programs continued to provide seeds/seedlings to the community, like schools and 4-H clubs, for vegetable gardening. The agents also conducted follow-up visits to farmers, schools, and producers. The Extension continued to sell seeds of improved vegetable varieties at an affordable price to the public to encourage vegetable farming.

Results

The Agriculture Extension program sold 1141 vegetable seeds to 130 farmers. The Agriculture Extension were able to identified improved cultivars that perform well in the tropics and are

disease resistance.

4. Associated Knowledge Areas

KA Code	Knowledge Area
202	Plant Genetic Resources
205	Plant Management Systems
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

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
202	Plant Genetic Resources
205	Plant Management Systems
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

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	52

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There is still a need to address the pig waste management system, and a need to introduce biodiversity in the local pig gene pool for inbreeding perspective and homeland security as well.

What has been done

The ASCC-CNR continued to use the ASEPA funded piggery to demonstrate the four recommended waste management systems to farmers, students, and the general public. The CNR Agriculture Extension agents also worked together with Partners in conducting outreach workshops for piggery compliance.

Results

The ASCC-CNR piggery serves as a demonstration site for farmers, students, public and visitors from off-island. The CNR Agriculture programs agents worked with 52 farmers to reduce inbreeding and provide recommendation in upgrading 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	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

American Samoa's farmers manage their traditional and non traditional cropping systems under environmental conditions and pest combinations that are unique. Pest control solutions that work elsewhere in the U.S. or its territories may or may not work for American Samoa's farmers. It is important to test technologies that offer effective, environmentally sound pest control to ensure that they work for American Samoa's farmers.

What has been done

This activity was restarted in 2013, and a single field trial targeting taro pests was completed. Analysis and follow-up trials are planned.

Results

This activity was restarted in 2013, and a single field trial targeting taro pests was completed. Analysis and follow-up trials are planned.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes 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 Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	51

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The continued usage of illegal pesticides in the territory is still an issue, and how it arrived in the territory are still questionable. Another issue is the proper way of handling pesticides before, during and after usage.

What has been done

During FY 2013, ASCC-CNR conducted 4 Pesticide Applicator Safety workshops.

Results

In FY 2013, 51 participants were trained and certified. The EPA Pesticide officer was present to certify the participants. The certification allowed the participants to buy pesticides from the Department of Agriculture. Due to the training, farmers and users are more aware of Integrated Pest Management strategies and biological control programs.

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
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5

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. This limits maximum farm yields and profits.

What has been done

The introduction of Genetically Improved Farmed Tilapia (GIFT) with formulated fish feed to the local farmers.

Results

GIFT grows faster and spawns earlier. The farmers are using this new breed of tilapia, and new farmers are encouraged to do the same.

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
604	Marketing and Distribution Practices

Outcome #9

1. Outcome Measures

Number of farmers upgrading their farms to aquaponics.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Food Security is an issue in American Samoa with 95% of the food supplies are imported. Upgrading farms to aquaponics are unlikely because of the limited land and the high-costs.

What has been done

One workshop was conducted to highlight the benefits and practice of aquaponics. About 70% of the participants improved their knowledge of aquaponics, including assembly, fish care, and marketability of products.

Results

The two farmers are still collecting materials and resources needed in running their aquaponic system.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

Outcome #10

1. Outcome Measures

Number of farmers making their own tilapia feeds.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The main issue is the high cost and availability of commercial feeds for the farmers.

What has been done

The Center for Sustainable Integrated Agriculture and Aquaculture (CSIAA) continues to maintain equipment for the production of fish feeds that is available to local fish farmers - no charge.

Results

Farmers continued to make use of feeds facilities to produce feed for the farm. In 2013, the CSIAA produced 7247 pounds of tilapia feeds.

4. Associated Knowledge Areas

KA Code	Knowledge Area
306	Environmental Stress in Animals
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
604	Marketing and Distribution Practices

Outcome #11

1. Outcome Measures

Number of farmers integrating their piggeries with tilapia culture.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There is still a need to address the pig waste management system, and a need to introduce biodiversity in the local pig gene pool for inbreeding perspective and homeland security as well.

What has been done

The program staff is assisted the farmer to integrating the 80-pig system with tilapia ponds. The EPA approved designed system uses the piggery wastewater to fertilize tilapia ponds.

Results

The farm manager has improved his skills in managing the wastewater from the piggery to ensure water quality remains optimal for the fish ponds.

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 #12

1. Outcome Measures

Number of local crops nutrient analysis completed.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
202	Plant Genetic Resources
205	Plant Management Systems
604	Marketing and Distribution Practices

Outcome #13

1. Outcome Measures

Number of people eating more vegetables as a result of the vegetable gardening project

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	150

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Obesity, overweight, poor nutrition, unhealthy lifestyle, and food safety issues continued to be major problem for both adults and youth in American Samoa. The need for more vegetables gardens and for the people to eat healthier and more vegetables is a must.

What has been done

The CNR Agriculture Extension program had conducted 2 workshops on Vegetable Gardening and established 15 Vegetable gardens. The program also sold 1141 pkts of seeds to 130 farmers at an affordable price.

Results

The program established 15 vegetable gardens for the 15 different clients.

4. Associated Knowledge Areas

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

Outcome #14

1. Outcome Measures

Number of nutrient analysis conducted for local crops and food

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
125	Agroforestry
202	Plant Genetic Resources
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants
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
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Other (Lack of staff; procurement proc)

Brief Explanation

Delay in processing requests to hire replacement for lost staff limited program capacity. ASCC business office continued to impede attempts to use Hatch and Smith-Lever grant funds to procure supplies and equipment for this and other planned programs.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Based on the evaluation, feedback form, and focus groups- the planned program is doing a fair job in promoting out in the public. There's a need to do more outreach for the planned programs. Fruit trees propagation workshops ia also doing a fair job, but it needs more new varities. The stakeholders agreed that the program is doing an excellent job in improving varities of traditional crops, Vegetable gardening workshops and demonstration, and the Pesticide Safety Education Program. Also doing a good job with the Progressive Agriculture Safety Days and the Piggery Waste management workshops.

Key Items of Evaluation