V(A). Planned Program (Summary)

Program # 5

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
133	Pollution Prevention and Mitigation	5%		5%	
202	Plant Genetic Resources	5%		10%	
205	Plant Management Systems	10%		15%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%		12%	
212	Pathogens and Nematodes Affecting Plants	5%		10%	
215	Biological Control of Pests Affecting Plants	5%		7%	
306	Environmental Stress in Animals	5%		1%	
307	Animal Management Systems	10%		5%	
315	Animal Welfare/Well-Being and Protection	5%		5%	
401	Structures, Facilities, and General Purpose Farm Supplies	5%		15%	
601	Economics of Agricultural Production and Farm Management	5%		5%	
604	Marketing and Distribution Practices	5%		5%	
903	Communication, Education, and Information Delivery	30%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	7.0	0.0	4.0	0.0
Actual Paid Professional	4.0	0.0	1.1	0.0
Actual Volunteer	2.0	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**
49194	0	46271	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
49194	0	16271	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

Plant clinic diagnoses and recommendations
Pest surveys
Testing of reduced-risk pesticides
Biological control studies of important pests
Technical assistance with nuisance bee problems and assessment of apiculture
Evaluation, multiplication, and distribution of improved taro, banana, sweet potato, and vegetable varieties;
Budding, grafting and air layering workshops, and production and distribution of fruit trees;
Reduce inbreeding of farmers' animal operations, and Swine Waste
Management Systems demonstrations;
Tissue culture of traditional staples and increasing genetic diversity to improve crop security;
Pest surveys and clinic diagnoses and recommendations;
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 maintenance and feed production;
Technical assistance with disease and nutrition issues for aquaculture farmers;
Technical advising for local Samoa Family Sunfish Cooperative, Inc

Community and Natural Resources Aquaculture Program staff improved the tilapia breeding program at the American Samoa Community College by assisting to bring an improved tilapia breed from Apia, Samoa to American Samoa. The Genetically Improved Farmed Tilapia (GIFT) grows faster and bigger than the inbred strains currently found in American Samoa. This fish is currently being distributed as fast as possible to farmers around Tutuila Island and is the focus of the breeding program at ASCC.

Plans to evaluate native freshwater fish and crustaceans for intensive aquaculture resulted one trials on GIFT tilapia. A collaborative project with a local farmer showed that GIFT tilapia can reach a market size of 220 grams in 4 months. An improvement on the existing strains that take up to 8 months to reach the same size.

The feeds laboratory at ASCC was used by two farmers to produce complete diets for tilapia. Equipment at the laboratory include electronic scales, a mixer, grinder, hammer mill, and drying oven. Our program was able to secure an agreement with StarKist tuna cannery to receive tuna meal at no cost, indefinitely. This arrangement, coupled with our providing free vitamins and minerals reduces the price of a 50 pound bag of feed from $25 to as low as $12, depending on the other ingredients used.

No work was done on the Manu'a High School Aquaponics Project in 2012.

Staff at CNR worked with the Clarion Tradewinds Hotel to reduce the incidences and outcomes of diseases on their Koi fish. Water quality is now greatly improved and reports of fish mortalities have ceased.

We continued to support aquaponics farmers with seed selection, water quality, feeds production, harvesting schedules and sales. We also continued to work with Duke Purcell on his integrated pig-tilapia system to improve water quality and pond productivity.

We assisted the Samoan Family Sunfish Cooperative in receiving IRS 5019(c)(3) tax exempt status and preparing a grant application to the Department of Interior Technical Assistance Program. This was done in partnership with Congressman Faleomavaega and his staff.

The Center for Sustainable Integrated Agriculture and Aquaculture at ASCC houses freshwater and saltwater aquaria. These were used in conjunction with aquaculture and aquaponics demonstration systems at the center to host school tour groups.

2. Brief description of the target audience

Small and resource-limited farmers, commercial farmers, aquaculture farmers, forestry clients, hobby farmers, gardeners, general public, school students, government agencies, Extension agents, businesses, 4-H members, homemakers, church youth and other non-government organizations, village residents, and community group members

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1765	100000	1090	5000

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research projects completed.

Year	Actual
2012	0

Output #2

Output Measure

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

Year	Actual
2012	25

Output #3

Output Measure

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

Year	Actual
2012	6033

Output #4

Output Measure

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

Year	Actual
2012	13

Output #5

Output Measure

- Number of vegetable variety demonstrations completed.

Year	Actual
2012	9

Output #6

Output Measure

- Number of new fruit tree varieties introduced.

Year	Actual
2012	3

Output #7

Output Measure

- Number of fruit tree propagation workshops.

Year	Actual
2012	6

Output #8

Output Measure

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

Year	Actual
2012	34

Output #9

Output Measure

- Number of local crops prepared and sent to offisland laboratory for nutrient analysis.

Year	Actual
2012	0

Output #10

Output Measure

- Number of pesticide efficacy tests completed.

Year	Actual
2012	5

Output #11

Output Measure

- Number of Pesticide Applicators' Training workshops conducted.

Year	Actual

2012	5

Output #12

Output Measure

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

Year	Actual
2012	0

Output #13

Output Measure

- Number of video production.

Year	Actual
2012	1

Output #14

Output Measure

- Number of Tilapia released from breeding program.

Year	Actual
2012	50

Output #15

Output Measure

- Number of candidate species culture trials completed.

Year	Actual
2012	1

Output #16

Output Measure

- Number of tilapia feed trials completed.

Year	Actual
2012	1

Output #17

Output Measure

- Number of vetiver grass (Chrysopogon zizanioides), slips planted at nursery for distribution to farmers/clients.

Year	Actual
2012	0

Output #18

Output Measure

- Number of collaborative projects with other government agencies.

Year	Actual
2012	18

Output #19

Output Measure

- Number of vegetable gardening workshops conducted.

Year	Actual
2012	9

Output #20

Output Measure

- Number of vegetable gardens established.

Year	Actual
2012	579

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/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 farmers/stakeholders involved with collaborative projects.
13	Number of farmers/clients planting vetiver grass (Chrysopogon zizanioides), for soil conservation.
14	Number of local crops nutrient analysis completed.
15	Number of agroforestry projects established.

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
2012	251

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 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.

What has been done
Agriculture Extension staff, in collaboration with the Plant Tissue Culture Specialist continued to multiply the best tasting varieties of traditional staples for American Samoa. These improved varieties were multiplied and distributed to the farming community and the public.

Results
In FY 2012, the Agriculture Extension staff distributed 6,033 improved taro setts and banana planting materials from more than 25 cultivars of disease resistant taros and bananas to 251 farmers.Hence, 251 farmers are growing improved varieties of taro, bananas, and sweet potatoes.

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 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

Year	Actual
2012	9

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 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. A survey to detect three major pathogens of coconut palms was launched after unusual symptoms were observed on some of the trees. ASCC-CNR worked with the US Geological Survey and US Fish and Wildlife Service to conduct an insect survey of remote Rose Atoll and worked with the local Department of Marine and Wildlife Resources to conduct an insect survey of equally remote Swains Island. 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 26,139 fruit flies captured and identified in the quarantine surveillance program this fiscal year. 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 2012 survey again found no citrus greening. A total of 39 high risk areas were sampled for exotic invasive ants, and no new exotic species were found. The 39 symptomatic coconut trees that were tested for coconut cadang-cadang viroid, coconut foliar decay virus, and palm lethal yellows phytoplasma were negative for all three pathogens. Efforts are continuing to identify the cause of the symptoms. ASCC-CNR worked with the Department of Agriculture?s quarantine division in 2011 to document the threat posed by invertebrate animals and weed seeds entering the territory on imported fresh Christmas trees. Implementation of the resulting recommendations produced a 98% reduction in the numbers of exotic invertebrate animals and seeds found on the trees in 2012. Results of the Rose and Swains Island insect surveys will provide a baseline for future monitoring of pest presence and abundance on those islands. 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
2012	570

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In 2012, farmers continued to grow improved vegetable varieties that are beneficial to them 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. ASCC-CNR continued to order seeds of improved vegetable varieties, tried them on our local tropical environment, and sell them to the farming community. Extension sold 2294 packages (10gramms each) to 222 farmers at break-even price to encourage them to grow more vegetables.
Extension staff completed 9 vegetable variety trials.

Results
Extension staff identified improved vegetable cultivars that perform well in the tropics and are disease resistant. 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. 570 farmers cultivated improved vegetable cultivars.

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
2012	47

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
There is a great need in American Samoa to increase consumption of fruits to address the many non-communicable diseases such 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 tree planting-materials available to families to plant in the back yard and farm 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. The new "Fruits for Life" greenhouse was used 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.

Results
CNR started using the new "Fruits for Life" greenhouse to multiply the fruit-tree planting-materials. Agriculture Extension continued to work with EFNEP and 4-H to conduct the "Fruits for Life" program to increase the consumption of vegetables and fruits in order to address the poor nutrition problem and lifestyle diseases. Extension conducted 7 fruit tree propagation workshops, and 47 farmers planted improved budded/grafted or air-layered fruit trees in their back yards.

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
2012	41

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
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 staff continued to use the ASEPA funded piggery to demonstrate the four (4) recommended waste management systems to farmers, students, and the general public.

Results
The renovated piggery now serves as a demonstration site for the pig farming community. Once the farmers? piggeries gain compliance of the local laws, the intent is to work with them to upgrade their stock and 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, the piggery council, and other government agencies with piggery compliance workshops (outreach) in Tutuila and Manu'a islands. 41 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	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
American Samoa's farmers manage their traditional and nontraditional 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 2012 but had to be suspended again due to loss of key personnel.

Results
This activity could not be completed in 2012 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 Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	75

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Continued uses of unsafe and illegal pesticides are documented in American Samoa. Also people who imported and use non-EPA registered pesticides were cited by ASEPA.

What has been done
During FY 2012, ASCC-CNR conducted 5 Pesticide Applicator Safety workshops that enrolled 75 participants. The EPA Pesticide Officer was present to certify the participants.

Results
In FY 2012, 75 participants were trained and certified. Now, more people 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.

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
2012	2

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
CNR staff facilitated the transport of 45 Genetically Improved Farmed Tilapia (GIFT) from Apia, Samoa in April 2012 by Mr. Duke Purcell. These fish were stocked in a pond on Mr. Purcell?s tilapia farm and fed a high-quality, locally-produced, tilapia diet.

Results
Mr. Purcell has demonstrated the improved breeding and growth rates of the GIFT tilapia over previous genetic stocks in American Samoa. He has turned his initial 45 fish into more than 5,000 in less than one year. He was able to distribute GIFT tilapia to the Center for Sustainable Integrated Agriculture and Aquaculture at the American Samoa Community College and another local aquaponics farmer. All new farmers will begin their farms using this new breed of tilapia and old farmers will be encouraged to replace their older stocks with GIFT.

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 Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	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
One workshop and two public presentations were conducted highlighting the benefits and practice of aquaponics. A total of 99 people improved their understanding of aquaponics, including assembly, fish care, and marketability of aquaponics products.

Results
Two people are currently working on collecting materials and other resources for building their own aquaponics systems. They are expected to have completed their systems by the end of 2013.

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
2012	2

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 continues to maintain equipment for the production of fish feeds that is available to local fish farmers for free use. A one year trial was concluded in August 2012 to test the impact of using StarKist Samoa fish meal in tilapia feeds on the production yield at one local tilapia farm. One other farmer continued to make use of the feeds facilities to produce feeds for her fish.

Results
Mr. Duke Purcell used tilapia feeds made using StarKist Samoa fish meal for one year on his farm. His farm production increased 3-fold over the previous year. A total of 5630.41 pounds of feeds were produced at the Center for Sustainable Integrated Agriculture and Aquaculture in 2012, up from 1,688 pounds in 2011. StarKist Samoa has offered to provide free fish meal indefinitely for use in local fish feeds production.

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The American Samoa Environmental Protection Agency began a significant campaign to bring non-compliant piggeries within the territory into compliance. Many piggeries were shut down due to close proximity to rivers and streams and poor management of piggery wastewater.

What has been done
We worked to assist one farmer to integrate his 80-pig system with tilapia ponds in 2011. The system design was approved by the local EPA. Most of our 2012 work was spent assisting the farmer in fine tuning the use of piggery wastewater to fertilize tilapia ponds

Results
No new farmers integrated their piggeries with aquaculture in 2012. However, Duke Purcell?s farm manager has improved his skills at managing the waste water from the piggery to ensure water quality remains optimal in each of the five fish ponds. Excess pigs are planned to be transferred to a separate piggery to reduce the amount of waste water going to 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 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	Actual
2012	381

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.Taro leaf

blight and black leaf streak disease of bananas negatively impacted the staple food production in American Samoa. Pig waste management in piggeries became a problem from a homeland security perspective. The territory?s environment and its agricultural production is always threaten by the introduction of exotic invasive species.

What has been done

In 2012, more than 20 local, federal, regional government agencies and non-government organizations partnered in program planning, development, implementation, and evaluation of more than 18 collaborative projects. Agriculture Extension staff continued to work collaboratively with the territory?s department of agriculture and CNR?s Plant tissue Culture specialist in multiplying and distributing the best tasting varieties of traditional staples to the farming community. We have worked hand in hand with the local EPA and USDA-FSA staff in addressing the pig waste management problem in the territory through outreach and trainings. Extension collaborated with our Research staff, the territory?s department of agriculture, and USDA?s National Plant Diagnostic Network in pest and disease identification and management. We partner with ASEPA in conducting the pesticide safety education program.

Results

381 farmers and stakeholders participated in planning, development, implementation, and evaluation of more than 18 collaborative projects involving more than 20 local, federal, regional government agencies and non-government organizations partners. Planting materials of disease resistant/improved varieties of traditional staples were distributed to 251 farmers. 41 pig-farmers upgraded their piggeries through collaborative effort with ASEPA and USDA-FSA. 14 farmers were able to diagnose and manage pests and diseases through collaborative work with Agriculture Extension, CNR Entomologist, local department of agriculture, and the USDA?s National Plant Diagnostic Network. 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
315	Animal Welfare/Well-Being and Protection
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #13

1. Outcome Measures

Number of farmers/clients planting vetiver grass (Chrysopogon zizanioides), for soil conservation.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Population pressure and land clearance for agriculture and economic development in the mountainous areas of the limited land area (76 square miles)of American Samoa are major threats and challenges to the forests and natural resources.
Forty two percent (42%) of American Samoa?s 76 square miles has a slope of more than 45%. Soil erosion is highly visible in many of these sites.

What has been done
Agriculture Extension staff are no longer multiplying and distributing the vetiver grass to farmers for soil conservation purposes. NRCS, Forestry, and other farmers are now distributing the vertiver planting materials to interested individuals.

Results
No work on vetiver grass was done in 2012 for other agencies and farmers are providing the service.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #14

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Obesity and overweight, poor nutrition, lack of exercise, and food safety issues continued to be major health problems for both adults and youth in American Samoa.The need to conduct nutrient analysis on locally grown crops was recognized.

What has been done
Extension Program staff established two plots of the specialized banana variety(soa'a) for the purpose of conducting nutrient analysis when the fruits are ready. Unfortunately, the scientist and advisor on this project was diagnosed with cancer and finally passed away.

Results
No nutrient analysis was conducted on the soa'a bananas.

4. Associated Knowledge Areas

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

Outcome #15

1. Outcome Measures

Number of agroforestry projects established.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Population pressure and land clearance for agriculture and economic development in the mountainous areas of the limited land area (76 square miles)of American Samoa are major threats and challenges to the forests and natural resources.
Forty two percent (42%) of American Samoa?s 76 square miles has a slope of more than 45%. Soil erosion is highly visible in many of these sites.

What has been done
Agriculture Extension program collaborated with the Forestry program in offering 35 conservation and climate change workshops for 1513 participants. Moreover, forestry staff propagated 1035 plants for climate change projects.

Results
Established one agroforestry project at Leone village. The mixed cropping system (crops & trees)at the site not only provided food for the family (food security) but also control soil erosion. Moreover, the landowner and staff controlled all the invasive tree species and replanted with 30 recommended native tree species at the one-acre site. The landowner appreciated the support from the CNR program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
601	Economics of Agricultural Production and Farm Management

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 (Staff recruitment, procurement problems, Staff recruitment, procurement problems, Lack of staff; procureme proc)

Brief Explanation

Loss of staff limited program capacity. ASCC business office continued to impede CNR's attempts to use Hatch and Smith-Lever grant funds to procure supplies and equipment for this and all other planned programs.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

At the conclusion of the 12 workshops we conducted, and also from 4 focus group discussions, we summarized our clients/stakeholders' input (2,154 participants) as follows:-

Issues:-

1. Improved varieties (Traditional crops) - we are doing an excellent job
2. Vegetable gardening workshops/demonstrations - we are doing an excellent job
3. Pesticide Safety Education program - we are doing an excellent job
4. Progressive Agriculture Safety Days - we are doing a very good job
5. Piggery waste management workshops - we are doing a good job
6. Farm visitations - we are doing a fair job (we need to be out in the community more often, thus, we need more professional staff (agents)).

Fruit trees propagation workshops - we are doing a fair job (we need to import new varieties)

Key Items of Evaluation