

**American Samoa Community College (ASCC)**

**Division of**

**Community and Natural Resources (CNR)**

**FY 05 Annual Report of Accomplishments & Results**

**Contact Person: Dr. Daniel Aga, DPA**

**Dean & Director**

**P.O. Box 5319**

**Pago Pago, AS 96799**

**Ph#: (684) 699-5967**

**Fax#: (684) 699-5011**

**E-Mail: [d.aga@ascc.as](mailto:d.aga@ascc.as)**

## TABLE OF CONTENTS

	<b>Page</b>
I. INTRODUCTION	4
II. GOAL I: AN AGRICULTURAL SYSTEM THAT IS HIGHLY COMPETITIVE IN THE GLOBAL ECONOMY	4
OVERVIEW	4
a. KEY THEME: Diversified/Alternative Agriculture	7
b. KEY THEME: Bioterrorism	8
c. KEY THEME: Invasive Species (I)	9
d. KEY THEME: Invasive Species (II)	9
e. KEY THEME: Invasive Species (III)	9
f. KEY THEME: Home Gardening	9
g. KEY THEME: Forest Crops	9
h. KEY THEME: Apiculture	9
III. GOAL II: A SAFE & SECURE FOOD & FIBER SYSTEM	10
IV. GOAL III: A HEALTHY, WELL-NOURISHED POPULATION	10
OVERVIEW	10
a. KEY THEME: Vegetable & Fruit Production Including Pest & Weed Control & Fruit Tree Propagation (I)	11
b. KEY THEME: Vegetable & Fruit Production Including Pest & Weed Control & Fruit Tree Propagation (II)	12
c. KEY THEME: Vegetable & Fruit Production Including Pest & Weed Control & Fruit Tree Propagation (III)	12
d. KEY THEME: Proper Selection, Safe Handling, Storage, & Preparation of Nutritious Fruits & Vegetables	13
e. KEY THEME: Human Nutrition (I)	13
f. KEY THEME: Human Nutrition (II)	13
g. KEY THEME: Land Management	15
V. GOAL IV: GREATER HARMONY BETWEEN AGRICULTURE & THE ENVIRONMENT	15
OVERVIEW	16
a. KEY THEME: Plant Germplasm	16
b. KEY THEME: Tropical Agriculture	17
c. KEY THEME: Integrated Pest Management (I)	17
d. KEY THEME: Integrated Pest Management (II)	18
e. KEY THEME: Integrated Pest Management (III)	18
f. KEY THEME: Integrated Pest Management (IV)	18
g. KEY THEME: Biodiversity	19
h. KEY THEME: Water Quality (I)	20
i. KEY THEME: Water Quality (II)	20
j. KEY THEME: Agricultural Profitability	21
k. KEY THEME: Soil Erosion	21
l. KEY THEME: Biological Control	21

m. KEY THEME: Healthy Forests for the Environment (I)	22
n. KEY THEME: Healthy Forests for the Environment (II)	23
o. KEY THEME: Healthy Forests for the Environment (III)	23
VI. GOAL V: ENHANCED ECONOMIC OPPORTUNITY & QUALITY OF LIFE FOR AMERICANS	25
OVERVIEW	25
a. KEY THEME: Children, Youth & Families At Risk	26
b. KEY THEME: Childcare & Youth Development	27
c. KEY THEME: Dependent Care or Self-Help	27
VII. STAKEHOLDER INPUT PROCESS	28
a. Agriculture Extension Services	28
b. Forestry Extension Services	30
c. Families, 4-H & Nutrition Programs	31
VIII. ASCC PARTNERSHIPS	32
VIX. PROGRAM REVIEW PROCESS	34
X. EVALUATION OF THE SUCCESSFUL MULTI & JOINT ACTIVITIES	34
APPENDIX 1: ASCC CNR 2004 ALLOCATION OF RESOURCES (Financial & Human Resources Section)	

## **I. INTRODUCTION**

American Samoa is submitting a joint Research and Extension report. This report covers activities supported by Hatch and Smith Lever funds. In addition, there are programs and new projects that are joint efforts with Hatch, Smith Lever, Smith Lever 3-d, Forestry and other federal funding. The other source of funding is given under sections C Sources of Funding. Moreover, American Samoa received a Risk Management Grant award from Washington State University in 2004.

## **II. GOAL 1: AN AGRICULTURAL SYSTEM THAT IS HIGHLY COMPETITIVE IN THE GLOBAL ECONOMY**

### **OVERVIEW**

Cooperative Extension and Research have been focusing in 2005 on searching for ways to keep local farms both viable and applicable. Programs predominantly focused on but were not restricted to outreach activities such as farm visitations, village and campus workshops, and on-farm demonstrations. Special events such as arbor week, earth day, school field trips/tours, field and career days were also integrated and adopted. This multi-faceted approach was designed to insure the achievement of the goals of the proposed programs. Many farmers tend to rely heavily on the cooperative extension service to provide good quality taros, bananas, pigs and seeds, and to have current scientifically based information to assist the farming efforts. Part of the reasons why some farmers have not obtained the increased yields is due to resistance to newly introduced ideas. Despite of these challenges, many producers have learned and adopted new skills in addition to acquiring marketing knowledge through extension education.

American Samoa continued to face enormous challenges that will force people to leave farming. The problems ranged from limited land, inadequate capital, cultural pressures, and insufficient support from the local government. In addition, all of the locally grown produce is subject to high number of tropical pests and diseases due to the favorable weather conditions. Periodic cyclones and floods are major threats to agricultural developments in the territory. Cyclone Olaf devastated the territory and nearly put all farmers of Manu'a islands out of business in 2005. Cooperative Extension has increased the pressure and encouraged the farming community and policy makers to develop territorial food security and reduce reliance on imported food items.

In 2005, the Cooperative Extension Service and Agricultural Experiment Station led the programs in the following areas:

- Vegetable Production
- Agricultural Risk Management
- Swine Production/Management
- Pesticide Safety
- Farm Safety
- Marketing
- Conservation Education
- Waste Management
- Medicinal Plants
- Traditional Crop Production
- Forest Health
- Urban Community Forest
- Forest Stewardship
- Forest Legacy Program
- Agroforestry Systems
- Inter-Agency Partnership

- Greenhouse Projects
- Forest Research Projects
- Le Tausagi Environmental Education
- Integrated Pest Management

Given the previous stakeholder input recommendations and in addition to numerous challenges hampering the progress of agriculture in the territory, Cooperative Extension Service and Research used a variety of approaches to empower American Samoa’s farmers with knowledge and skills to improve competitiveness in domestic production, processing, and marketing. As a result, many proposed activities planned for 2005 have been successfully accomplished and this effort led to the following outputs.

- 24 Programs and news spots offered on KVZK-TV
- 620 Farmers visited
- 23 Educational programs (field trips/tours, career-days, fairs, etc.)
- 162 Presentations (schools, government agencies, non-government organizations)
- 8 Scientific publications
- 23 Extension publications
- 4 Educacional media material (video, DVD, etc.)
- 34 Workshops/Trainings

**a. Outputs**                      &                      **b. Outcomes**

1. Total number of farmers completing all non-formal education programs and presentations, and adopting new practice or technology on an annual basis.

A) Year	# completing non-formal Education program		# adopting practice or technology	
	Target	Actual	Target	Actual
Baseline				
2005	280	876	95	184
2006	300		100	

A. Agriculture Extension and Research presented to 876 farmers that participated in different settings in an effort to reach more people, especially the underserved population in remote areas. Additionally, 586 school children had an opportunity to attend Agriculture Extension presentations. Extension education is the base approach to provide guidance and awareness to deal with many issues. The year 2005 was very challenging for the Agriculture Extension Service in which hurricane Olaf devastated the territory, especially the islands of Manu’a. In spite of the emotional turmoil after the hurricane, agriculture extension devised and implemented a series of workshops and trainings for farmers and interested people in the villages. These workshops vary from crop and livestock production and management, pesticide and farm safety, and vegetable gardening and agricultural risk management. Through these outreach efforts, many farmers have learned new propagation methods in an effort to increase planting materials such as breadfruits, bananas and taros after the hurricane.

As a result, the adoption of newly introduced disease resistant taros and bananas was a major accomplishment after many years of resistance to new ideas. People have been interviewed and surveyed, and were supplied with the planting materials of their choice. The agents have distributed a total of 1,275 banana suckers and corms, and 4,161 taro cormels to local farmers from the extension small germplasm at the college experiment station. Strong collaborations with federal partners and other government agencies to address similar issues such as waste management and pesticide safety have been very encouraging. Last year was the first time for one group of six farmers and a couple of individual farm owners to adopt the writing of business plans for farm loans.

2. Total number of materials, including newspaper articles, fact sheets/pamphlets, and television programs produced on topics related to improving productivity and global competitiveness

A) Year	# of materials	
Baseline	Target	Actual
2005	50	58
2006	59	

B. Research and Extension used integrated means to disseminate information to the public. These methods ranged from television programs, posters and videos to extension and research publications (brochures/fact sheets, newspaper & scientific articles etc). As a result, four posters, three videos, eight scientific and twenty-three extension publications were developed and distributed to farmers and schools. In addition, research and extension were able to conduct 24 documentary programs addressing some of the farm and environmental concerns on a bi-weekly 30-minute series on KVZK-TV. The majority of these publications are now available electronically at our ADAP website: <http://www2.ctahr.hawaii.edu/adap2/>. Some of these publications have already been translated into native Samoan. We anticipate the translation of some of the materials into other languages such as Tongan, Korean and Chinese in the future.

3. Total number of organizations/groups given assistance in developing gardens

A) Year	# of groups	
Baseline	Target	Actual
2005	8	14
2006	9	

B. One of the extension's ongoing challenges as echoed by the farming community was to seek for convenient sources of better seeds. The lack of better quality seeds that grow well in tropical climates can really hamper the progress of extension and individual efforts. The ACE American Industries and the American Samoa Department of Agriculture are the only two suppliers of vegetable seeds in the territory. In spite of past recommendations to order better seeds from good sources, ACE American Industries continued to order seeds from New Zealand that grow well in temperate countries. Even the vegetables that grow well in the United States face the additional obstacles of the hot and humid climate in Samoa. The ASDOA purchases limited seeds of good quality from Asia and the US that do not even last for a month. Regardless of these limitations, Agriculture extension tried real hard to use all the available resources to develop ten community and four school vegetable gardening projects in an effort to enhance the production and consumption of fresh local vegetables. However, more undocumented community gardens including Chinese and Koreans were discovered by a combined monthly visitation of a newly established coalition of government agencies (Environmental Protection Agency, Department of Agriculture, Department of Education School Lunch Program and the American Samoa Community College Agriculture Extension Service) that constantly monitor illegal pesticide use on vegetables supplied to the school lunch program.

4. Total number of farmers receiving financial assistance

A) Year	# of financial aid recipients	
Baseline	Target	Actual
2005	12	117
2006	20	

B. The year 2005 was one of the best years for local farmers since the Farm Service Agency's Office was established in the territory three years ago. Of the 187 farmers attending the Risk Management Education workshops last year, 116 received approval notices for project funding according to FSA representative, Pona Ala. This was good news for both farmers and Agriculture Extension because inadequate capital to develop and improve farms was one of the oldest stakeholder input challenges that Agriculture Extension has been fighting for many years. Sometimes the local farmers blame the extension Service for not doing enough to convince the commercial banks to offer farm loans. However, local banks have strict policies, guidelines and documented requirements that disqualify farmers from obtaining loans. With the existence of FSA and the availability of SARE grants, the extension agents have been able to educate and provide guidance so that farmers can organize better record keeping, produce acceptable farm business plans, and write meaningful grant proposals. One farmer also received a SARE grant of \$10,000 to conduct on-farm fresh water tilapia educational research project. Due to the confidential nature of FSA loans, only the data (numbers) of fortunate and pending applications was graciously provided for this report.

**c. Territorial Assessment**

No Territorial Assessment was done recently like the 1999 Agricultural Census where a certain percentage of households was randomly selected for evaluation. However, individual programs and joint projects were assessed using a multi-faceted approach. The methods used include visitation records, interviews and surveys, workshop and training evaluations and focused group discussions. From experience, the farmers prefer more comfortable and friendly settings, usually in small groups and individual interactions to reveal the reality of problems facing the farming community today. To accomplish this process, we highly respect the educational level of farmers and consider the sensitive nature of the Samoan culture when it comes to assessment methods to be used.

**d. Financial and Human Resources**

(Please refer to Appendix 1)

**A. KEY THEME: DIVERSIFIED/ALTERNATIVE AGRICULTURE**

**a. Activity:** The manager of the CNR plant tissue culture laboratory (PTCL) initiated three taro cultivars ('Rota', 'Pasadora', 'Niue') and two local banana varieties ('Lakatan', 'Latordan') into tissue culture. The 11 new varieties of taro leaf blight resistant taro received last year from the RGC have been planted in our new greenhouse, ready for the taro evaluation program. This program was explained to American Samoa's Lt. Governor Sunia and Deputy Director of the Department of Agriculture, Peter Gurr, during a visit to our facility. The PTCL manager traveled to Suva, Fiji, to study advanced techniques in plant tissue culture at the Secretariat of the Pacific Community's Regional Germplasm Centre (RGC). We received and multiplied an additional 18 blight-resistant taro lines, plus 7 susceptible and 3 immune taro hybrids from the Centre.

**b. Impact:** The new taro lines will add variety to the diet and diversity to the genetic resistance of American Samoa's taro crop. They are also assisting research on hybrid resistance to taro leaf blight disease. The visit by Lt. Governor Sunia and Deputy Director Gurr was instrumental in overcoming a suspension of plant import permits for tissue culture plantlets. The visit to the RGC in Suva resulted in improved methods of explants initiation and tissue disinfections; it has also strengthening of our relationship. Developing new micro propagation techniques enhances the effectiveness of the PTCL, reducing labor and costs with potential benefits to agriculture and the profession.

**c. Source of Funding:** Hatch

**d. Scope of Impact:** State specific

**B. KEY THEME: BIOTERRORISM**

a. **Activity:** We certified five agriculture extension personnel at the Land Grant Facility as National Plant Diagnostic Network (NPDN) “First Detectors”. I attended the annual meeting of the Western Plant Diagnostic Network at the University of California, Davis and the NPDN annual meeting at the American Phytopathological Society in Austin, Texas. I also joined in monthly WPDN conference calls.

b. **Impact:** Weaknesses in American Samoa’s ability to detect invasive species, then eradicate or contain them are now being addressed. For example, customs and quarantine officials are understaffed, poorly trained in invasive species detection, have no laboratories or quarantine facilities, and do not utilize trained, professional assistance available on-island. First Detector training of Customs and Quarantine officers will increase their ability to recognize exotic pests and give them a clear means of responding.

c. **Source of Funding:** Hatch, NPDN

d. **Scope of Impact:** Regional

**C. KEY THEME: INVASIVE SPECIES (I)**

a. **Activity:** As part of the Forest Health program, the staff has been participating with the American Samoa Invasive Species Team (ASIST). The Team has been increasing agency awareness through invasive species detection training conducted with the AS Department of Treasury Customs Division and through curriculum development with the AS Department of Education. The only known natural strawberry guava has been mapped using GPS and is targeted for removal. A project was initiated to control falcataria in and around the Tutuila unit of the National Park of American Samoa.

b. **Impact:** These activities have generated attention onto the invasive species problem through media coverage. Public awareness of the risks of invasive and the means of dealing with them has been increased. There has also been increased cooperation among government agencies and NGOs on invasive species management.

c. **Funding:** USFS State and Private Forestry Cooperative Forest Health Protection Grant

d. **Scope:** State-specific

**D. KEY THEME: INVASIVE SPECIES (II)**

a. **Activity:** The *Flemingia macrophylla* hedgerow has been established as of May 2005 and doing quite well. The hedgerow has filled out nicely and has been cut back once.

b. **Impact:** Once fully established and mature, determination can be made whether it is in fact an invasive species for American Samoa as previously reported.

**E. KEY THEME: INVASIVE SPECIES (III)**

a. **Activity:** Fruit fly surveillance. Exotic fruit fly quarantine surveillance program consisting of 2 traps deployed at each of 10 sites on Tutuila Island to detect any exotic fruit fly species that may be



accidentally introduced to the territory. A total of 40,384 fruit flies was collected from these traps and identified during FY 2005. No exotic species were detected.

**b. Impact:** Early detection of an accidentally introduced exotic species of fruit fly could allow time to eradicate the population before it has a chance to spread and endanger fruit and vegetable production in the territory.

**F. KEY THEME: HOME GARDENING**

**a. Activity:** Four varieties of indeterminate tomatoes and four varieties of cucumbers grown 30 gallon containers where three water soluble fertilizers locally available are dissolved in 26 gallons of water to test a container hydroponic system. Neither tomatoes nor cucumbers did well. Will need to purchase hydroponic fertilizers and retry.

**b. Impacts:** The three locally available water soluble fertilizers, Schultz's Tomato Plant Food, Miracle-Gro Tomato Plant Food and Miracle-Gro General Purpose fertilizer all do not work. Will need to special order fertilizer specifically for hydroponic culture of plants.

**G. KEY THEME: FOREST CROPS**

**a. Activity:** A project was established to assess the impacts of canopy cover and vegetation management of commercially valuable trees in a forest plantation. After the site was cleared of unwanted vegetation, seedlings were planted in randomly selected locations and measured. Vegetation treatments; mowing, mulching, mowing with mulching, and no management were applied monthly. Trees were measured in March and September 2005, with a canopy assessment in March. There will be three more measurements of the trees before the study is terminated.

**b. Impact:** This project is showing clear differences in tree species in response to shading and vegetation control even prior to statistical analysis. Moreover, it is demonstrating successful establishment of difficult-to-regenerate species such as *Syzygium inophylloides* (asi toa). This information will result in a species-specific prescription for reforestation that will be useful to land owners and resource managers.

**c. Funding:** Hatch Grant

**d. Scope:** State-specific

**H. KEY THEME: APICULTURE**

**a. Activity:** Technical assistance for nuisance bee problems. Continued to provide advice to the community on dealing with nuisance bee situations such as swarms in trees or nests inside houses, schools, and other buildings.

**b. Impact:** Thousands of bees in the wall of a house or swarming in a low hanging tree branch can be both a nuisance and a danger. We now have the capacity to help the community deal with such problems safely and effectively. At the same time we can obtain new colonies for the ASCC CNR apiary, which we hope, will eventually support a beekeeping extension program for the territory.

**III. Goal 2: A SAFE AND SECURE FOOD AND FIBER SYSTEM. TO ENSURE AN ADEQUATE FOOD AND FIBER SUPPLY AND FOOD SAFETY THROUGH IMPROVED SCIENCE BASED DETECTION, SURVEILLANCE, PREVENTION, AND EDUCATION**

The programming for this goal in American Samoa is covered under the 3-d Food Safety and Quality (FSQ) initiative and EFNEP (Expanded Food and Nutrition Education Program). Since there are no formula funds used for this goal, this goal was not addressed in the plan of work, and therefore, not reported on here. At this point in time, there are no researchers having responsibilities relating to food safety and food security.

**IV. Goal 3: A HEALTHY, WELL-NOURISHED POPULATION**

**OVERVIEW**

The traditional American Samoa culture is a communal society. This means the extended family is prevalent, and people share their resources. Normally, food benefits from federal food programs and family garden produce are shared within family groups, which means most people have access to food. The traditional diet consisted of fish, pork, chicken, root crops, greens, and fruit with coconut cream for flavor. Today, animal protein and starches make up most of the diet with a lot of imported food.

The goal of the 5-Year Plan of Work is to increase the production and consumption of locally grown nutrient dense fruits and vegetables through demonstration, workshops, assisting with gardening, developing and promoting recipes, touring CNR plots and gardens, providing seeds, seedlings, tools, and fertilizers to church groups, farmers, food stamp and Women, Infants, Children (WIC) clients, schools and other youth groups.

**a. Outputs**

Similar to 2004, CNR continued to use an integrated approach to fruit and vegetable production while incorporating locally grown produce in the diet. F4HN staff conducted workshops, presentations, and demonstrations in the villages, schools, churches, government agencies, and community groups on developing and testing recipes using locally grown produce (fruits and vegetables). The eligibility of local produce in the food stamp programs encouraged local producers to increase production of fruit and vegetable crops. The F4HN personnel continued to distribute the educational handouts on the Pacific Food Guide Pyramid, new published English/Samoan recipe book, "Team" Nutrition and "Five A Day" materials to food stamp recipients, students, teachers and other clients. The CNR staff members continued to emphasize the production and the consumption of local fruits and vegetables by establishing vegetable gardening and fruit tree propagation projects. Program participants received free seeds and seedlings for start up projects and demonstrations.

**b. Outcomes**

- In 2005, 3 Nutrition agents provided nutrition education lessons to 1,430 adults and 1,906 youth. Upon program completion, 441 adults completed the 12 basic lessons and received certificate of completion
- 700 students, parents and teachers participated in gardening activities through school workshops, school vegetable gardening projects, and during the Ag in the Classroom projects.
- 500 additional people participated in gardening programs including early childhood education children and teachers
- 3,536 people completed fruit and vegetable related food, nutrition, and food safety education programs.
- 2,800 people increased their knowledge of the importance of fruit and vegetable consumption, selection and preparation, and safe handling and storage

- 80% ate one or more fruits each day
- 75% increased knowledge of the essentials of nutrition
- Distributed 3,900 educational handouts on the Pacific Food Guide Pyramid, 1,000 recipe books in English and Samoan, “Team” Nutrition and "Five A Day" materials to 335 teachers during nutrition workshops
- Increased number of new small-scale vegetable farmers providing fresh produce about once a week to the school lunch program
- The Nutrition Coalition sponsored one Health Fair, and physical activities every Saturdays to prevent obesity and overweight

**c. Impacts**

- Many food stamp clients continued to use the recipes and nutrition ideas to reduce the amount of fat in their family meals, increase the use of local foods (fruits and vegetables), and get more from their food stamp dollars
- 30% of single mothers and their children no longer eat out at fast food places after participating in nutrition programs. They are now preparing nutritious meals for their families.
- 50% of food stamp participants with diabetes now practice selecting food from the five food groups and the food guide pyramid. Participants also bake or boil foods rather than frying.
- More than 80 % of the students in Food Safety workshops continued to wash their hands more and eating more nutritious snacks and drinking more water instead of soda
- According to food recalls and verbal responses, 75% of participants eat one or more fruits each day and 75% eat two or more vegetables a day
- 35% of 1906 youth now eat a variety of foods
- 75% of homemakers showed improvement or increased knowledge of the essentials of nutrition.
- 84% of homemakers improved food behavior practices: (i.e. plan meals, compares prices, budget, etc...)
- 88% improved food safety practices: (i.e. thawing and storing foods properly)
- 30% of 1,906 youth increased knowledge of the essentials of human nutrition.
- 25% of 1,906 youth increased their ability to select low-cost, nutritious foods.
- 30% of 1,906 youth improved practices in food preparation, storage, and safety.

**d. Financial and Human Resources**

(Please refer to appendix 1)

**A. KEY THEME: VEGETABLE AND FRUIT PRODUCTION INCLUDING PEST AND WEED CONTROL AND FRUIT TREE PROPAGATION (I)**

- a. **Activity:** The Greenhouse under the management of the ASCC Forestry Program is the nucleus of propagation and multiplication for planting materials. The Greenhouse is a field laboratory, which attracted the attention of students for site visits, observations, and in depth learning. Twenty five (25) field trips from various schools and communities spent times to investigate and obtain information on the nurturing and studying behaviors of native trees, fruit trees, flower trees, medicinal trees, etc. The greenhouse was built to meet the field practices of raising plants in an enclosed system to protect them from pest and disease invasions and other harmful conditions. The greenhouse provided a work place to assist students and clients for trainings on various aspects of plant propagation, seed technology, soil preparation, plant health, maintenance, and distribution of trees to clients and associated partners. The holding capacity of the greenhouse is 10,000 seedlings at any time.

b. **Impact:** In 2005, 105 FSP clients' and 35 UCF clients visited the greenhouse and requested trees for projects. Moreover, 25 schools and 600 students visited the greenhouse for science fair projects and other interdisciplinary subjects during the celebration of arbor week in American Samoa. Similar to 2004, each visitor who entered the greenhouse was given 2 or more tree seedlings to plant at his/her home as requested. In 2005, the Forestry staff issued 3,653 seedlings to clients and visitors. The Forestry crew continued to maintain the tree projects at client' sites and school compounds. In response to requests for the Forestry Section to conduct pruning demonstrations for trees at the school compounds, Forestry agents conducted 3 pruning demonstrations for the Nu'uuli Polytech High School, Manulele Elementary, and Lupelele Stadium in Tafuna.

c. **Source of Funding:** Smith Lever and Urban Forestry Funds

d. **Scope of Impact:** Territory Specific

**B. KEY THEME: VEGETABLE AND FRUIT PRODUCTION INCLUDING PEST AND WEED CONTROL AND FRUIT TREE PROPAGATION (II)**

a. **Activity:** In 2005, about 15% of the trees in the greenhouse are fruit trees selected from fruit bearing trees of high yielding and nutritional values. The fruit trees selection included sour sop, mango, avocado, golden apple, black sapote, star apple, pickle fruit, orange, lime, jack fruit, mountain apple, *seasea*, and others. The Forestry staff used the trees for special propagation techniques such as air layering and grafting to improve their genetic potential and improve the quality of fruit vigor, and resistance to pests and diseases. Further, the Forestry personnel and student volunteers issued more than 100 fruit trees of assorted kinds to FSP clients, and others who requested fruit trees for their backyards or in their plantations.

b. **Impact:** As a result of the EFNEP nutrition education program and 4-H gardening workshops, more than 50 program participants requested fruit trees from the greenhouse. Similar to 2004, EFNEP agents prepared local fruit drinks using local fruits and served the fruit drink to more than 500 youth participants. Additionally, more than 70% of the participants indicated that they would make their own nutritious fruit drink at home using local fruits.

c. **Source of Funding:** Smith Lever and Other Federal Funds

d. **Scope of Impact:** Territory Specific

**C. KEY THEME: VEGETABLE AND FRUIT PRODUCTION INCLUDING PEST AND WEED CONTROL AND FRUIT TREE PROPAGATION (III)**

a. **Activity:** In 2005, the F4HN program and Agriculture Extension Service continued to collaborate in conducting vegetable gardening workshops and assisting the Early Childhood Education (E.C.E) program with establishing vegetable gardens for their respective schools. Workshop topics included information on seedbed preparation, plant propagation, irrigation, pest and disease control, fertilization, harvesting, and nutritional information on the various vegetable varieties that grow well in American Samoa. Emphasis was placed on fostering better eating habits among the American Samoan population especially the young people.

b. **Impact:** The Agriculture Extension Service staff members conducted vegetable gardening workshops for over 199 Early Childhood Education teachers. In addition, 107 parents attended the workshops. As a result of the vegetable gardening workshops, four (4) Early Childhood Education

centers, one elementary school, and 10 parents started vegetable gardens. Moreover, the schools continued to work with the Extension office to incorporate the garden projects into the curriculum especially the learning activities. Similar to 2004, the ECE administrators highlighted the gardening projects as one of their most successful activities in a special television program. The participants displayed the harvested produce from their gardens during the "Thanksgiving Day Harvest Festival" for their teachers, parents, public, and fellow students. Many parents and participants used the produce to prepare nutritious meals for their families.

c. **Source of Funding:** Smith-Lever

d. **Scope of Activity:** State-specific

**D. KEY THEME: PROPER SELECTION, SAFE HANDLING, STORAGE, AND PREPARATION OF NUTRITIOUS FRUITS AND VEGETABLES**

a. **Activity:** The EFNEP at the Food Stamp Program continued to be popular nutrition program. The EFNEP agents continued to conduct nutrition programs during the first five working days of each month at the Food Stamp Center. Nutrition Agents continue to provide educational services to the clients through lessons, songs, games, fact-sheet handouts, recipes, and cooking demonstrations containing local ingredients from each of the five food groups.

As in 2004, emphasis is placed on eating more fruits and vegetables reducing fat and salt consumption and eating a variety of food. Educational handouts on the Pacific Food Guide Pyramid, recipes, "Team" Nutrition and "Five A Day" materials were given to food stamp recipients, students, teachers and other clients. Furthermore, workshops and demonstrations about safe food handling, storage and preparation were part of the training program for childcare providers, WIC participants, and food stamp clients. Demonstrations were given to school age children on the correct way to wash the hands to prevent food borne illness.

**b. Impact**

- Of the 1906 youths that participated in food safety education, 70% knew that unsafe food should be thrown away
- 79% reported that they wash between their fingers. 49% wash under their nails, and 83% use soap
- Evaluation findings from a workshop for food handlers indicated:  
70% increased their understanding of how to help others prevent food-borne illness
- 82% increase awareness of personal and others' food safety practices.

An average of 800 Food Stamp clients attended the FY2005 nutrition classes held during the first week of each month. Similar to 2004, many clients continued to use the recipes and nutrition ideas to reduce the amount of fat in their family meals, increase the use of local foods (fruits and vegetables), and get more from their food stamp dollars. A verbal survey showed that 68% of participants were using the recipes to reduce the fat in their meals. About 60 % of the students have started eating more nutritious snacks and drinking more water instead of soda.

The F4HN staff distributed approximately 3,900 educational handouts on the Pacific Food Guide Pyramid, recipes, "Team" Nutrition and "Five A Day" materials to food stamp recipients, students, teachers, and clients. In addition, some food safety fact sheets, translated posters of healthy food and hand washing posters were also distributed. The F4HN staff also distributed the four-fold brochure on the four steps of food safety to all villages of American Samoa. The LBJ Tropical Medical Center continued to report that fewer cases of food borne illnesses visited the hospital.

An average of 800 food stamp recipients per month completed the fruits and vegetables, related food, nutrition, and food safety education programs. Moreover, Women, Infants, and Children (WIC) clients also completed information and activity lessons related to food safety for infants and children and the “Five A Day” Nutrition program.

About 3,200 participants from 40 schools learned the correct hand washing techniques along with “Five a Day” Nutrition lessons. According to food recalls and verbal responses, 70% of participants eat one or more fruits each day and 65% eat two or more vegetables each day.

- c. **Source of Funding:** Smith Lever
- d. **Scope of Impact:** Territory Specific

**E. KEY THEME: HUMAN NUTRITION (I)**

- a. **Activity:** F4HN personnel continued to partner with the University of Hawaii in implementing the “Healthy Lifestyle in the Pacific”, a PAC TRAC program aimed at preventing overweight and obesity in children. A project entitled “Nutrition Assessments in Children Living in the Pacific Islands: A Capacity Building Approach,” was initiated in 2004 by the UH Nutrition Department, with support from the CDC. A survey of 424 children between the ages of 1 and 10 years of age was conducted to provide baseline data in order to determine the prevalence of obesity and related blood parameters and their association with other health indicators.
- b. **Impact:** F4HN personnel shared the data from the survey with more than 50 village mayors (pulenu’us) and 300 community participants during village workshops. The data was also shared to the community through the television evening news program and a newspaper article. The results of the data showed that the BMI for age percentiles for 2-10 year old children are: 28% are overweight, 14% are at risk of overweight and 58% are normal weight.

Village mayors and community participants stated that the data is alarming and they are committed to spread the information to family members and take action themselves to reduce obesity. Programs are set in schools and villages for HLPI project to continue presentations in 2006. Community participants echoed the need to promote community awareness of obesity and overweight. Workshop participants supported the schools and village groups exercise programs as an alternative to reduce the numbers of children that are in the borderline of being obesity and overweight.

- c. **Source of Funding:** Hatch
- d. **Scope of Impact:** State Specific

**F. Key theme: HUMAN NUTRITION (II)**

- a. **Activity:** Completed nutrition survey of students in grades 7 to 12.
- b. **Impact:** During the last quarter of 2005 we analyzed data collected on 380 schoolchildren to assess their health. We prepared a paper for publication and submitted it to the International Journal of Pediatric Obesity. The abstract is as follows: *Rates of overweight and obesity in urbanized Samoan populations are among the highest in the world. We documented rates of overweight and obesity in a sample of 380 American Samoan adolescents aged 11 to 18. Through anthropometric measurements, blood testing, and questionnaires assessing physical activity level and food preference and frequency, we found a 32% rate of overweight and a 34% rate of obesity according to sex- and age-specific*

*International Obesity Task Force body mass index cutoffs. Obese adolescents had significantly higher levels of total cholesterol, engaged in less physical activity, and ate more frequently than normal weight youngsters. Excess carbohydrate consumption, particularly of sugar, may be the most significant factor contributing to weight gain in adolescents.* We are also preparing a PowerPoint slide show to take to the classrooms of participating schools, and for presenting to various government and private organizations that are concerned with our rising rate of obesity.

- c. **Source of Funding:** Hatch
- d. **Scope of Impact:** State specific

**G. KEY THEME: LAND MANAGEMENT**

- a. **Activity:** The reforestation project continued with unwanted vegetation and other debris, such as pipe and concrete has been cleared on approximately half of the site. Over 200 trees have been planted with approximately 90% establishment. Tree seedlings have required vegetation management every three to six weeks to reduce mortality. The planting of desirable tree seedlings, vegetation management and site preparation will continue.
- b. **Impact:** This project is having several impacts. First, the forest, with it attendant wildlife and watershed values is being restored to an otherwise unproductive piece of land. Second, it can be used as a demonstration site for potential forest restoration activities. Finally, it has served as an educational site and post-secondary school students, with three American Samoa Community College classes having conducted laboratory activities there.
- c. **Funding:** USFS State and Private Forestry Forest Stewardship and Forest Land Enhancement Grants
- d. **Scope of Impact:** State-specific

**V. GOAL 4: GREATER HARMONY BETWEEN AGRICULTURE AND THE ENVIRONMENT. ENHANCE THE QUALITY OF THE ENVIRONMENT THROUGH BETTER UNDERSTANDING OF AND BUILDING ON AGRICULTURE'S AND FORESTRY'S COMPLEX LINKS WITH SOIL, WATER, AIR, AND BIOTIC RESOURCES.**

Comment [MSOffice1]:  
Comment [MSOffice2]:

**OVERVIEW**

American Samoa comprises seven oceanic islands with tropical rainforests and fringing coral reefs. Fragile ecosystems, limited landmass and resources, plus isolation from outside sources of input make harmony between agriculture and the environment of utmost importance.

As the only land grant institution south of the equator, ASCC occupies a unique position in the USDA CSREES family. It successfully maximizes its modest resources by developing partnerships with other on-island federal agencies and with local government agencies. ASCC's leadership role in initiating such partnerships is recognized and appreciated by policy makers and the public. One prime example of such inter-governmental agency cooperation is the Interagency Piggery Management Council. Under the leadership of the ASCC CES, the following agencies coordinate efforts to reduce the amount of effluent discharged by piggeries into streams: NRCS, ASEPA, Coastal Management Program (CMP), and ASDOA. Their efforts served as a catalyst in implementing and expanding existing programs.

Biological control has long been the cornerstone of integrated pest management (IPM) in American Samoa. When new crop pests arrive on the archipelago, usually through the action of commerce, they initially cause severe damage. Natural enemies and abiotic factors may help reduce their populations. The success of natural enemies in American Samoa is due, in part, to traditional farming methods, such as intercropping and agroforestry. The limited use of expensive imported pesticides by subsistence farmers and the proximity of plantations to virgin rainforest, where alternative hosts and suitable habitats for natural enemies, also contribute to the success of IPM. Sometimes, though, additional biological control agents are needed.

Outputs and outcomes of projects undertaken at the ASCC are directed towards impacts that help ensure that ecosystems achieve a sustainable balance of agricultural activities and biodiversity. To accomplish this, the AES, CES, Forestry Service, and their partners focus on protecting, sustaining, and enhancing soil and water resources--goals that are in accord with those of our stakeholders. As long as this spirit of intra-governmental agency cooperation continues to enjoy administrative support, ASCC's impact on the community and on the environment will contribute towards a healthier, more self-sufficient lifestyle for all.

The Cooperative Extension Service and Agriculture Experiment Station have collaborated on the following efforts in order to disperse their research efforts to the public:

- a. One 10-minute video on mosquito control, aired on local TV.
- b. One article in a refereed journal.
- c. Two marketing and producers' directories.
- d. Two research-led production workshops on banana and taro.

**a. Financial and Human Resources**

(Please refer to appendix 1)

**A. KEY THEME: PLANT GERMPLASM**

- a. Activity:** Preserving native plants *in-vitro* and introducing new Germplasm are hedges against environmental disaster, such as the 1993 taro leaf blight epidemic that destroyed most Samoan taro cultivars. The PTCL manager accessioned 73 local and introduced taro and banana cultivars into the Germplasm collection. The goals of the PTCL were presented to students, farmers, and the general public through school tours newspaper articles, TV, and on-station seminars. We distribute three new black leaf streak resistant banana hybrids to the farmers of American Samoa for evaluation of cultural characteristics and palatability.
- b. Impact:** Increasing the genetic diversity of American Samoa's major crops, taro and banana, will increase food security in a territory overly dependent on imported products. The impact of crop loss due to interference with the island's normal supply lines (e.g. hurricanes) or by disease may be reduced by preservation and multiplication of *in-vitro* plant material. Informing American Samoans of the only tissue culture laboratory in the territory is a first step in promoting its value and increasing its effectiveness. Community outreach introduces students and farmers to science-based agriculture, as well as programs offered by ASCC Community and Natural Resources.
- c. Source of Funding:** Hatch
- d. Scope of Impact:** State specific

**B. KEY THEME: TROPICAL AGRICULTURE**

- a. Activity.** In the search to identify varieties of green peppers that are Bacterial Wilt resistant is ongoing. None have been identified to date. Heading Chinese cabbage varieties are being screened for adaptability



here in the hot humid tropics. Screening for bacterial and Fusarium wilt resistant varieties of tomatoes and spinach bred for culture in the tropics will continue. Impacts. One variety of heading Chinese cabbage (napa cabbage) has been identified that show promise, as have the three varieties of spinach screened. The search for tomato varieties that perform well locally has not identified suitable varieties.

**C. KEY THEME: INTEGRATED PEST MANAGEMENT (I)**

- a. **Activity:** I completed 55 laboratory bioassays that evaluated pathogen biology and environmental effects on the incidence and severity of taro leaf blight disease (TLB). These effects include: leaf and plant age, leaf surface pretreatment, air temperature, inoculum concentration, wounding, attached vs. detached leaves, swimming vs. encysted spore inoculum, and isolate and host variability. We purchased and erected an 18' x 30' greenhouse to accommodate tissue culture plantlets for the taro evaluation program. We imported 35 new TLB-resistant taro hybrids from the Regional Germplasm Centre in Suva, Fiji, and have completed bioassays of the first five. The first farmer-based taro evaluations were planned for December 2005.
- b. **Impact:** The taro evaluation program has strengthened our relationship with the Secretariat of the Pacific Community (SPC) and their Regional Germplasm Centre (RGC). We have access to new disease-resistant taro and banana hybrids that will increase the local genetic variability of these two important crops and reduce pesticide use. Farmers are contacting CNR, asking to participate in the program. Questions on the ecology of TLB are being answered and will help further experimentation and disease management. The taro evaluation program and other CNR programs are establishing CNR as a leader in bringing science to American Samoa.
- c. **Source of Funding:** Hatch
- d. **Scope of Impact:** State specific

**D. KEY THEME: INTEGRATED PEST MANAGEMENT (II)**

- a. **Activity:** The divisions of entomology and plant pathology founded the CNR Plant Clinic in 2000. In 2005, 27 plant diseases and disorders were formally reported by plant pathology alone. Several of these diseases were caused by important soilborne pathogens: bacterial wilt, bacterial crown rot, and *Phytophthora* root rot. Bacterial wilt was confirmed through the Pacific Islands Distance Diagnostic and Recommendation System (PIDDRS), housed at the University of Hawaii at Manoa. *Phytophthora* root rot was confirmed in our plant pathology laboratory. I collaborated with the SPC's Plant Protection and Quarantine branch on a publication of taro pests in the Pacific and the entomology laboratory identified an orchid weevil and directed publication of an SPC 'Pest Alert' brochure. I attended the annual meeting of the American Phytopathological Society in Austin, Texas.
- b. **Impact:** The small number of samples submitted to the Plant Clinic may reflect an absence of new, threatening arthropods and diseases on-island, a reluctance of farmers to come to the clinic, or an ignorance of our existence. We are known in the American and South Pacific, however, and continue our efforts to detect and manage new diseases, insects, and weed pests. Three brochures were added to the Land Grant's webpage (ADAP, University of Hawaii): black leaf streak disease, wood rot fungi, and *Phytophthora palmivora*. An article entitled, "Plant-parasitic Nematodes of Banana in American Samoa" was published in *Nematropica*.
- c. **Source of Funding:** Hatch
- d. **Scope of Impact:** State specific

**E. KEY THEME: INTEGRATED PEST MANAGEMENT (III)**

- a. **Activity:** Three researchers from the Philippines, Hawaii, and American Samoa attended a 7-day vermiculture orientation at Ohio State University hosted by Clive Edwards and Norman Arancon. We toured greenhouses, fields, and laboratories on the main campus in Columbus and at the up-state field research station. Brent Sipes (University of Hawaii at Manoa) and I discussed the feasibility of promoting vermiculture in the Pacific islands. This collaboration resulted in a proposal to USDA Sustainable Agriculture Research and Education (SARE) entitled, "Vermicomposting— A Sustainable Choice for the American Pacific". I collected and identified local annelids as possible decomposers for local vermicomposting efforts. Most were endogeic (living within the soil), however, as opposed to the litter-dwelling epigeic species most suited to vermicomposting.
- b. **Impact:** Vermicomposting can reduce the massive amounts of organic waste being generated by Pacific islanders. The humic product has a demonstrated ability to inhibit foliar and soilborne pathogens including parasitic nematodes, a serious, chronic problem on many crops. Vermicomposting could also be an environmental disaster. These aggressive, exotic worms that degrade surface litter could out-compete established species and deplete the already scarce layer of soil organic matter in these poor tropical soils. The proposed workshop on the feasibility of vermicomposting in the American Pacific will challenge existing hypotheses and point the way for future debate.
- c. **Source of Funding:** USDA Foreign Agricultural Service, SARE (proposed)
- d. **Scope of Impact:** Regional

**F. KEY THEME: INTEGRATED PEST MANAGEMENT (IV)**

- a. **Activity:** Improving effectiveness and reducing dangers from pesticide use in vegetables. Conducted two field trials testing U.S. Environmental Protection Agency approved, reduced-risk insecticides as alternatives to broad-spectrum, more toxic products for control of aphids in cucumbers. One relatively new product, pymetrozine, appears to be a highly effective and economical alternative for environmentally sound aphid control in cucumbers. Another product, an insecticidal soap, was not effective.
- b. **Impact:** Aphids can be a serious pest of cucumbers in American Samoa, especially on younger plants. To control them, farmers often turn to pesticides, which may be ineffective, may damage the environment, or may harm beneficial insects. Scientifically testing alternative, reduced-risk products under local conditions, and comparing their efficacy and cost to the products that are currently being used, will allow our extension division to confidently recommend products to farmers that are effective, economical, and environmentally responsible.
- c. **Activity:** Mosquito source reduction. Conducted breeding site surveys to determine important sources of filariasis- and dengue-carrying mosquitoes in four villages in the Western District of Tutuila. A total of 11,338 adult mosquitoes was reared and identified from pupae collected from over 5,000 containers sampled in Afao, Amanave, Asili, and Se'etaga Villages. The most abundant disease-carrying mosquito found was *Aedes polynesiensis*, which vectors both filariasis and dengue. The dengue vector *Aedes aegypti* was also found in all 4 villages, but at much lower numbers. The most important breeding sites for the disease-carrying species of mosquitoes were found to be buckets, tires, linoleum flooring, discarded toilets and refrigerators, drums, abandoned boats, and metal cookware in which rainwater accumulated. Other water-holding containers, like soda cans, beer bottles, and chips bags were not important breeding sites.

**d. Impact:** Filariasis and dengue remain a danger to the people of American Samoa. Both are spread only by certain species of mosquitoes and can be prevented by controlling those mosquitoes. Research elsewhere has shown that the most effective means to control these species of mosquitoes is to eliminate the places where they breed—containers holding stagnant water. This research, combined with our results from 2004, allows us to inform the community about which kinds of containers are posing a threat to our health by serving as breeding sites for filariasis and dengue vectors in the villages. Communities can then target their efforts on eliminating these sources of disease.

**c. Activity:** Mosquito trapping. The entomology lab hosted a graduate student from the London School of Hygiene and Tropical Medicine who conducted research evaluating 4 different trap designs for their efficacy as monitoring and assessment tools for the disease-carrying mosquitoes of American Samoa. The results showed two designs, which combine, visual and odor cues to be most effective. Several other standard mosquito traps, which work well in the United States and elsewhere, were ineffective. The most effective (and newest) trap design was also tested extensively in the villages of Afao, Amanave, Asili, and Se'etaga, where it captured a total of almost 9,000 females of the most important vector species, *Aedes polynesiensis*. The trap worked well under village conditions, but more research is needed to calibrate trapping procedures in light of the spatial and temporal variations in trap catches seen in the villages.

**d. Impact:** Traps designed to attract feeding mosquitoes can be an efficient tool to assess relative densities and feeding activity of disease-carrying mosquitoes and estimate the potential of those mosquito populations to transmit dengue and filariasis. They can serve as surveillance tools to monitor mosquito populations over time or tools to assess effectiveness of control programs. They also hold great promise as research tools to help us develop a better understanding of mosquito biology in the villages which in turn can lead to better control.

**c. Activity:** Mosquito control workshops. The results of our mosquito research were presented to the public at three workshops on mosquito control: two for the villages of Afao and Seetaga, and one for the nursing students of ASCC.

**d. Impact:** Over 60 individuals learned about mosquito biology and control at the three workshops. These included community members, community leaders, and nursing students who are assisting with the filariasis elimination program in the community.

**c. Activity:** Mosquito control videos. We continued to provide DVD and VHS copies of the video public service announcements on mosquito control and filariasis elimination, which we produced in 2003 and 2004 to support the Department of Health and ASCC's filariasis elimination programs. In addition, we produced a new 5-minute mosquito control video that has aired as a public service spot on the local government TV station and a new private station in the territory.

**d. Impact:** Airing the mosquito control PSA's as part of the filariasis elimination campaign helps make the public aware of the importance of mosquito control in addition to the need to take the filariasis medicine every year. Almost every family in American Samoa has a television set, and almost every television set is being watched for many hours each day. Experience has shown that the free TV spots on the government station are often the most cost-effective way to bring important information to the attention of almost every person in the territory.

## **G. KEY THEME: BIODIVERSITY**

**a. Activity:** I continued documenting the plant parasitic microorganisms of American Samoa. With FY2005's additions, database records currently include: 1) 265 algae; 2) 463 bacteria, fungi and viruses; and 3) 290 wood rot fungi. Our herbarium houses 140 mounted specimens of plant diseases, 168 herbarium

sheets of parasitic and non-parasitic algae, 26 lichens, 95 dried mushroom species and 206 dried wood rot fungi. Most of these organisms are also represented as digital images, semi-permanent microscope slide mounts, or both. A collection of plant-parasitic nematodes is preserved in formalin.

b. **Impact:** The ability to access our databases of known plant pathogens in American Samoa has increased the efficiency of the plant diagnostic program, as has cross-referencing diseased plants and plant pathogens with herbarium specimens. The biennially updated List of Plant Diseases in American Samoa has advertised our program and several researchers and plant pathologists, including two from the Secretariat of the Pacific Community, have made inquiries to: [http://www2.ctahr.hawaii.edu/adap2/ascc\\_landgrant/technical\\_papers.htm](http://www2.ctahr.hawaii.edu/adap2/ascc_landgrant/technical_papers.htm)

c. **Source of Funding:** Hatch

d. **Scope of Impact:** State specific

## H. KEY THEME: WATER QUALITY

a. **Activity:** Completed stream fauna survey.

b. **Impact:** During 2005, we collected snails, crustaceans, and fishes five streams that have a village at their mouth and five streams that have no village or sign of human activity along them. This information is currently being analyzed to determine if any patterns emerge between the two types of streams in order to use the fauna assemblage to assess water quality. This should furnish us and other agencies with an easy-to-use tool for monitoring stream conditions without the need for a water-testing laboratory.

c. **Source of Funding:** Hatch.

d. **Scope of Impact:** State specific.

a. **Activity:** Prepared four stream fauna posters.

b. **Impact:** These posters, plus at least two others still under production, will be freely distributed to territorial elementary schools and high schools in order to educate children on the importance of streams. We are also preparing a PowerPoint slide show about stream animals. We will take this show to schools, at the request of teachers, to present this information to students and to answer questions they might have. Believing that students will value things that they understand, we hope to make this generation of schoolchildren more environmentally conscience and responsible.

c. **Source of Funding:** Hatch and Section 406 Water Quality.

d. **Scope of Impact:** State specific.

## I. KEY THEME: WATER QUALITY (II)

a. **Activity:** In 2005, the Forestry personnel continued with the Adopt-a-Watershed program. The Adopt-a-Watershed program is a leadership program in environmental education for curriculum development. Adopt-a Watershed Curriculum Program used watersheds, streams or water catchments areas as field laboratories for students and teachers to study and learn many scientific aspects of water, trees and soils. The curriculum can be integrated in teaching other subjects aside from science. The American Samoa Forestry Program continued its partnership with 12 elementary schools and teachers of grades 7 & 8 in

conducting presentations and field visits at the watersheds in Nu'uuli (Tau'ese stream) and behind ASCC-CNR Land Grant Station.

b. **Impact:** The 12 teachers and 200 students who attended four presentations and four field-visits received better understanding of the watershed concept and its application to their lives in the island. At the end of each visit students and teachers took a tree home to plant in remembrance of the field visit. Fifteen percent of interested students who participated and involved, returned to research more information for their science fair projects.

#### J. KEY THEME: AGRICULTURE PROFITABILITY

a. **Activity** Twice a month, the farmers market and various retail stores are surveyed to determine the selling price per pound of locally produced and imported commodities.

b. **Impact.** Using this information, when the AS Department of Agriculture and the ASDOE School Food Services (former School Lunch Program) met to establish prices for the local produce that would be purchased, the prices for several commodities were increased based on the survey information.

c. **Source of Funding:** Urban & Community Forestry

d. **Scope of Impact:** State Specific

#### I. Key Theme: SOIL EROSION

a. **Activity.** Five contour hedgerows were established during this fiscal year: *Vetiveria zizanioides* (October 2004); *Abelmoschus manihot* (November 2004); *Flemengia macrophylla* (May 2005), *Gliricidia sepium* (May 2005) and *Heychium coronarium* (July 2005). The hedgerows have been allowed to grow and fill out and have been periodically cutback with the exception of *H. coronarium*, which is of low stature that it does not require periodic cutting back Both *F. macrophylla*, and *H. coronarium* are on the American Samoa Invasive Species listing. Vegetable variety trials have been conducted in the alleys between the hedgerows.

b. **Impact:** It was hoped that the spaces between the hedgerow plants would fill out, but it seems that that may not happen. This has happened only with *V. zizanioides*, with all others having significant amount of spaces between the plants, thus reducing the hedgerow's abilities to filter the soil from the runoff. Tests will be conducted to determine how well the hedgerows filters the runoff in FY 2006

#### J. Key theme: BIOLOGICAL CONTROL

a. **Activity:** Protecting Manu'a breadfruits. Traveled to Ta'u, Ofu, and Olosega Islands to survey populations of Seychelles scale insect. This scale insect has become a serious pest of breadfruit and other plants in the Manu'a Islands since its accidental introduction there in the 1990s. In 1999, ASCC CNR released a predatory beetle from Australia to control the scales on Ofu Island. Surveys conducted in the year after its introduction found that the beetle had spread throughout Ofu and Olosega and reduced populations of Seychelles scales by 96% and 99% of their previous densities, respectively. The 2004 survey found continued suppression, with densities on Ofu and Olosega remaining at less than 1% of the densities seen before the beetles' introduction. So the biological control project has been remarkably successful on Ofu and Olosega. On Ta'u Island, however, scale densities have increased. (Predator beetles were never introduced to Ta'u Island in the earlier project.) We have therefore initiated a rearing program for *Rodolia pumila*, a host-specific biological control agent for the Seychelles scale that is already present on Tutuila Island.

**b. Impact:** The decline of the Seychelles scale and the dramatic improvement in the health of the breadfruits and other scale host plants on Ofu and Olosega resulting from the introduction of the predatory beetle has now been sustained for over four years. No harmful effects have been noted, and both the Seychelles scales and the predatory beetles are now scarce on these two islands. Equally dramatic has been the continuing increase in the Seychelles scale population on Ta'u Island, where the predatory beetles were never released. We will use the data from our surveys to support a proposal to introduce predatory beetles to Ta'u Island to suppress the Seychelles scales there. This project aims to make the predatory beetles available to the people of Ta'u to help prevent future outbreaks of Seychelles scale there.

**a. Activity:** Research on beneficial insects to control scale, mealy bug, and aphid pests. Authoritative identifications of several of our lady beetles were obtained from Dr. R. Booth of the British Museum of Natural History. We confirmed occurrence of *Cryptolaemus montrouzieri*, *Rodolia limbata*, *Chilocorus nigrita*, *Pseudoscymnus anomalus*, *Telsimia nitida*, and *Nephaspis dispar*, all of which are known as important biological control agents in American Samoa and elsewhere. We also found several species apparently not previously known from American Samoa: *Nephus boninensis*, *Diomus notescens*, another *Diomus* sp., and *Scymnus nubilus*. All these species of lady beetles appear to be beneficial as predators helping to control pest insects.

**b. Impact:** We now possess an authoritatively identified reference collection of the most common species of beneficial lady beetles occurring in American Samoa. This collection will serve as a critical resource in planning future biological control efforts and facilitating further research on how to use these beetles to help control pests attacking our important crops.

**a. Activity:** Beneficial insects to control coconut pests. Completed survey of natural enemies of coconut hispine beetle (*Brontispa longissima*) and obtained authoritative identifications of two tiny beneficial wasps that help to control the coconut hispine beetle, an important pest of coconuts in American Samoa. Dr. John Noyes of the British Museum of Natural History identified the two wasps collected in our surveys as *Tetrastichus brontispae* and *Asecodes hispinarum*. The former was introduced to help control the coconut hispine beetles, but is relatively uncommon now. The latter is quite common in the territory, but had apparently not previously been reported from American Samoa. It also occurs in Western Samoa and Papua New Guinea. Coconut hispine beetle was accidentally introduced to American Samoa in the early 1970s. Since that time several efforts have been made to introduce parasitic wasps to help control these beetles. We have observed that coconuts continue to be damaged by high populations of hispine beetle, so we undertook this survey to determine the status of the introduced wasps—first to see whether or not they have established populations on the island, and then to assess their relative abundance.

**b. Impact:** Knowledge of the current status and efficacy of these biological control agents is essential to planning future efforts to improve management of this important coconut pest. The parasitoid specimens have been added to the reference collection facilitating future research on finding ways to increase these species' ability to help control the coconut hispine beetle.

## **K. KEY THEME: HEALTHY FORESTS FOR THE ENVIRONMENT (I)**

**a. Activity:** The devastating forces of Cyclone Olaf in early 2005 caused tremendous destruction on agricultural crops, trees, and the forests in the islands of Manu'a. Approximately 90% of the rainforests were damaged in pockets at mountain ridges, and slopes, on ground level depending on the wind directions and velocity. In addition, about 90% of homes and other belongings were destroyed. The FEMA was helping out with monetary assistance for housing reconstruction, and tools for the clean up of the trees and debris throughout the entire islands. The director of CNR authorized and sent staff representatives to conduct the assessment of agriculture and forestry damages, first in Tau Island and

later on in Ofu and Olosega. Based on the results of the assessment a combined team of extension and forestry staff returned to Manu'a Islands with materials and supplies for the recovery assistance. The recovery assistance had distributed about 3000 crop materials and 6000 tree seedlings to village people for food supply and forest restoration. The CNR staff worked in partnership with FEMA workers to speed up the general clean up of fallen trees at the client's plantations, homes as well as replanting of trees and crops. This activity took three weeks to complete clearing and clean up.

- b. **Impact:** The Forestry Program offered an immediate response after the cyclone Olaf to all clients in cleaning and clearing of trees been blown down as well as re-staking of trees and crops that had the potential to survive. A seed collection of trees that were available at the time of the clean up was made and the seeds were sent to the greenhouse for seed processing and propagation. There were 350 forestry clients provided with assistance to their properties and plantations. These forestry clients had been issued with trees to plant at their field lots, in replacement of the fallen and the destructive trees. More seeds were collected for rearing at the greenhouse to meet the demand for planting materials.

c. **Source of funding:** UCF/FSP

d. **Scope of Impact:** State Specific

#### L. **KEY THEME: HEALTHY FORESTS FOR THE ENVIRONMENT (II)**

- a. **Activity:** The 2005 Arbor Week Celebration was held on November 14-18, 2005. The theme was "Saving Ottoville Rainforest is preserving our Heritage and Samoan Pride". This theme was to provide the highest respect, for protection and conservation of the forests, trees, and vegetation of Islands. This year's celebration marked Ottoville Rainforest as the Forest Legacy project for American Samoa. The Arbor Week celebration is an annual event spearheaded by Forestry Section and its associated allies from other agencies of the government. The purpose of Arbor celebration is to educate students in schools and people in the community about the importance of maintaining our forests as a healthy home for wildlife and people. Tree presentations and tree planting in schools grounds and villages were the main activities of the week. Twenty-five (25) schools were invited to participate and involve with arbor week activities.

- b. **Impact:** Out of 25 elementary/high schools invited, 600 students and 34 teachers, 120 guests, and 20 parents attended our closing ceremony on the last day of the festivity. The 25 schools displayed art works, drawings, paintings, and poetries. The 25 schools also presented skits, songs, and comedies (*faleaitu*) based on the theme of the Arbor Week 2005. The schools were also given prizes and certificates for participation as well as the songs, skits, displays in addition to the overall maintenance of their tree projects at school sites. At the end of the ceremony each student was given a tree to plant at home in recognizing the arbor week. About 1200 trees were issued to participants on the final day.

c. **Source of funding:** UCF/FSP

d. **Scope of Impact:** State Specific

#### M. **KEY THEME: HEALTHY FORESTS FOR THE ENVIRONMENT (III)**

- a. **Activity:** In 2005, the forestry greenhouse at CNR Land Grant Station continued to serve as a focal point of site visits by schools, clients, and the public. The students and teachers had shown great interest in studying and learning various aspects of greenhouse establishment, technology, management as well plant propagation and multiplication. Similarly, the forest stewardship clients and agricultural farmers

made frequent visits to obtain information on planting materials or technical assistance to help improve their farm production. The greenhouse project attracted many clients who are interested in finding out more about new plant species, benefits of trees on land management practices. Having realized the great interest among our clients the forestry program planned to de-centralize the greenhouse concept into various locations in American Samoa.

- b. **Impact:** In September 2005 the Forestry Program employed two Manu'a citizens to manage the activities of the greenhouse, and provide services to schools and communities. At the same time Forestry staff constructed a building next to the greenhouse for storage of tools and supplies as well as for an office space. The project has been planned to complete in May 2006 when time and money are available for completion. The public is invited to visit the greenhouse for plant materials and to seek advices for forestry and agricultural developments. The same with teachers and students to use the greenhouse for field classes and to experiment science projects under investigation. Most of the residents of Manu'a had complimented of having the Greenhouse in their Islands for easy access to advisories and supply of planting materials, as well as assisting educational programs.
- c. Forestry TV Show – This bi-weekly 30-minute program hosted by Forestry staff discussed natural resources management, forestry, forestry related and cultural issues. The program highlighted Urban and Community Forestry Projects such as planting native species in public parks and increasing arboriculture capacity with public parks and county street crews to improve urban tree pruning and maintenance.
- d. Impacts- The television show is an exciting public show that transmitted much useful information on various aspects of the Forests, Trees, and Natural Resources. The Forestry Office received many compliments from the community residents regarding programs recorded and aired through KVZKTV station.
- e. Happy Trail- The Happy Trail is located at the back of the Community and Natural Resources Office, currently restored and re-structured by the forestry crew. The trail is approximately one mile long and it is intended to attract students and other people to explore the beauty of the forest, trees and the diversity of other natural resources.
- f. Impacts- The Forestry staff developed a brochure to identify the important projects and the description of the trail. The forestry crewmembers are responsible to give tours of the trail when requested. During the Samoan Language Conference in June 2005, more than 500 people walked the Happy Trail. The people who walked the trail praised the trail for it will serve as a natural resource for the community to relate Samoan words, proverbial expressions, and cultural traditions that originated from the forests.

<b>VI. Goal 5: ENHANCED ECONOMIC OPPORTUNITY AND QUALITY OF LIFE FOR AMERICANS</b>
--

**OVERVIEW**

There are many economic and social challenges that face Samoan families. One that seems to underlie almost every issue is the confrontation of two very different cultures. As American Samoa becomes more and more westernized, families are forced to reconcile their traditional culture of respect for elders and communal living with the often directly opposite western value of individualism. There is a need to help ease the transition for the youth and assist them with valuing their Samoan Culture. Another challenge is the changing population as it affects the inhabitable land and family values. With about 18% unemployment, ever-increasing cost of living, almost 61% with incomes at or below the U.S. poverty level, and more than 50% of average



spending going to food and housing, the people need enhanced economic opportunity to maintain and increase their quality of life.

**a. Outputs**

To address this goal during FY 2005, the F4HN Section continued to offer programs in the following areas: Entrepreneurship and Home based businesses, Youth at Risk issues, Samoan Culture and Arts/Crafts, Clothing Construction, Farm Safety, *Elei* Fabric Art Printing, Self-care for Mental Health Clients and Youth Development Issues. In 2005, the Samoan Culture aspect continued to be a vital component in program development and delivery in all areas.

1. To help ease the difficulties created during social transition, the F4HN staff members have increased the number of workshops on Samoan Culture Awareness. Pilot projects were successful in FY2001 so have continued during 2002, 2003, 2004 and 2005. These included Samoan oratory, cultural arts and crafts, nature art, and *siapo* (tapa) making.
2. To increase social stability, the F4HN staff members continued to update and adapt the Childcare Provider training and Parenting Education programs to fit the unique social conditions in American Samoa. The technical advisor for the Day Care Centers collaborated with F4HN staff in developing the curriculum and also served as the instructor for village workshops on parenting issues.

**b. Outcomes**

- a. 75% of the parenting workshops' participants adopted one or more principles, behaviors, or practices within six months after completion of one or more workshop sessions
- b. Over 600 youth, teachers, and parents participated in Culture Awareness programs
- c. 70% of program participants planned to use the acquired knowledge and developed skills in sustaining and preserving their culture
- d. Seven F4HN Agents continued to spend more than 100 hours each with over 900 youth in the elementary schools in conducting the reading literacy programs
- e. Eight (8) students enrolled in the 3 credit hour parenting course taught by the Family and Consumer Sciences program
- f. 65 participants from five Day Care Centers completed the sewing program
- g. 290 community participants enrolled and completed the sewing program
- h. Each participant learned how to make his/her own clothes using the tape measure, patterns, sewing machines and other equipment.

**c. Impacts**

- 75% of the Youth participants changed attitudes towards the Samoan culture and have developed a sense of pride in their identity as Samoans and appreciate the cultural uniqueness and diversity
- Twelve teachers added more hands-on service learning opportunities for their Samoan History classes
- Continued collaboration among government agencies and non-government organizations sustained Youth program activities
- 70% of the childcare providers have requested additional training from the F4HN Program Manager
- All 16 participants of the sewing program from one village group completed 3 or more outfits at the completion of the sewing program
- The Mental Health workers continued to report that the clients used their knowledge and skills learned from the program to assist their families with meal preparations and home decorations.
- More than 50% of the sewing program participants continue to sew they're own and their children's clothes.
- 30% of the students learned how to sew their own shorts

- As a result of the sewing program, 12 mothers bought their own sewing machines
- In 2005, 10 female program participants started their own sewing and *elei* (fabric) small businesses
- 50 homemakers reported making money from their small businesses in selling *elei*-printing fabrics and outfits developed as a result of sewing program
- All 8 participants of the 3 credit hour parenting course taught by the Family and Consumer Sciences program used at least 10 of the principles, behaviors, and practices as they worked with their children and siblings

**d. Financial and Human Resources**

Please refer to appendix 1

**A. KEY THEME: CHILDREN, YOUTH & FAMILIES AT RISK**

a. **Activity:** 4-H Cross Culture Awareness Project ---The 4-H program continued this project in 2005 given the many requests from the schools (both public and private). The purpose of the project is to promote Samoan traditional costumes, art, crafts, language, music, culture, sports and agricultural practices. The emphasis on cultural identity and appreciation of culture uniqueness continued during the workshops. Similar to 2004, workshop topics included: Samoan Music, dance, oratory, legends and myths, *siapo* (tapa making) *elei* (fabric printing), carving and respectful language and behavior.

Reading Readiness Project -- The purpose of this project was to instill in young children a love and interest for reading. The project staff designed activities to build self-confidence and equip children with behavioral skills needed for the successful completion of this activity. Puppets were used to get the children interested in the stories.

b. **Impact:**

More than 1,200 youth participated in 30 cultural workshops and activities. Additionally, more than 75% percent of the participants now positive attitudes towards the Samoan culture and have developed a sense of pride in their identity as Samoans and appreciate the cultural uniqueness and diversity.

A 4-H member commented, “The cultural workshop has helped me understand more on my culture. The importance of how to make my own designs through the use of traditional art. Understanding what was used in the olden days for shelter and clothing was also exciting for me.”

More than 900 school age children participated in more than 40 in-school reading and enrichment programs using the “Read to Me Samoa” approach and Samoan reading materials along with English materials. More parents are spending quality time reading to their children.

A teacher commented, “she really appreciated the help from the 4-H agents especially the workshops provided during X-Mas in making crafts and X-Mas cards. Arts and Crafts workshop helped the teachers think creatively and apply fun activity in delivering the information to students.

During fiscal year 2005, 2642 youth enrolled in 4-H Youth programs. More than 500 4-H members showcased their projects during the Annual Summer program. More than 85% of 4-H members acquired knowledge in one or more program areas and developed at least one-life skills.

c. **Source of Funding:** Smith Lever and Other Federal Funds

d. **Scope of Impact:** Territory Specific

## B. KEY THEME: CHILDCARE & YOUTH DEVELOPMENT

a. **Activity:** In 2005, the F4HN staff continued to provide the three-month workshop for the 45 Child Day Care centers providers in American Samoa. The workshop topics included the ages and stages of child development, nutrition and food safety, budgeting, setting up learning centers, arts and crafts, behavior management, power of play, and storytelling. The F4HN program partnered with the Department of Human and Social Services in conducting the workshops. The F4HN Acting Program Manager served as the instructor for the workshops with assistance from staff members. Youth Development issues have been included in the Parenting Education course offered at ASCC by the Program Manager. The F4HN program staff also conducted Parenting Education workshops in the villages.

b. **Impact:** Forty-two childcare providers completed the three-month workshop in FY2005. Thirty-six Day Care Providers completed twelve basic nutrition and food safety lessons and received certificates from F4-HN program.

As reported in 2004, the 42 childcare providers acquired knowledge and developed skills in disciplining the children without hitting them, organizing and setting up learning centers. The F4HN program continued to receive additional training workshops requests from the centers.

Twenty-five (25) parents reported that they used at least 10 of the parenting principles, behaviors, or practices as they worked with their own children. Parenting workshops are being planned for the villages, Faith Community, and for DOE Teachers as a result of stakeholder input.

c. **Source of Funding:** Smith Lever and Other Federal Funds

d. **Scope of Impact:** Territory Specific

## C. KEY THEME: DEPENDENT CARE OR SELF-HELP

a. **Activity:** In 2005, the Mental Health Program continues to be an on-going project for the F4HN and the Mental Health Services. The F4HN program continued to work with mental health clients in different varieties of hands-on learning activities. Forty (40) clients of the Mental Health program participated in nutrition education and cooking demonstrations during FY2005. The Mental Health Program clients visited CNR every Wednesday for their weekly program activities. The clients participated in nutrition lessons, games, songs, recipe tasting, clothing care, sewing, and cultural arts and crafts activities. Program clients also assisted in preparing and serving delicious and nutritious meals!

b. **Impact:** Ten mental health clients showed improvements on hands on learning activities on such as making crafts and arts. Similar to 2004, all participants sold picture frames, fans, and other art forms and crafts to staff members.

As reported in 2004, the F4-HN staff members continued to value and appreciate their work in caring and teaching the clients. Staff members reported that working with the clients inspired them to evaluate their own lives and develop a sense of contributing to the community by helping the program clients.

The Mental Health workers continue to report that clients are helping their families with meal preparations. The clients also developed a sense of pride and self-esteem as reflected in their

accomplishments. Family members reported to the F4HN staff members the positive changes and improvements in clients' behavior and practices.

Mental Health staff reported, "Most of the clients worked together in making crafts and selling their art work to the public as a fund raising activity. Also, the clients baked cookies and muffins for fund raising.

- c. **Source of Funding:** Smith Lever and Other Federal Funds
- d. **Scope of Impact:** Territory Specific

## VII. STAKEHOLDER INPUT PROCESS

### The following is a summary of the stakeholder inputs:

#### A. Agriculture Extension Section (AES)

Participants' inputs were very crucial in the success of the 2005 plan of work. However, more constructive comments, suggestions, and recommendations continued to accumulate to help design and develop the next plan of work. The process of obtaining stakeholder input was based on past experience taking into consideration the cultural sensitivity issue and the level of farmers' educational background. From experience, the combination of the various stakeholder input gathering information methods was very effective in different settings in an effort to obtain a wide range of recommendations reflecting the real needs of the farming community. These methods included focus groups, surveys, interviews, formal committee discussions, group meetings and workshop evaluations. Agriculture Extension took advantage of every opportunity to garner stakeholder input to improve future programs.

The AES staff collected stakeholder inputs from 1,738 clients during the following sessions:

- Pesticide Applicator Safety & Farm Safety Training: Fifty four (68) participants attended and provided the following priorities:
  - Have Land Grant Program recommend safety clothing and gears to local pesticide importers so farmers can order the safety clothing and gear
  - Have Land Grant work with EPA Office to ban all farms who use illegal pesticides to spray vegetables that they sell to the school lunch program, roadside stalls, and local stores
  - Have Land Grant Pesticide Education Program negotiate with the Department of Agriculture (pesticide importer) to subsidize the cost of farm chemicals
  - Include CPR and First Aid in future pesticide education
  - Agricultural Risk Management Education: Two hundred and seventy two (272) farmers and interested people attended the various workshops held in different villages including the remote Manu'a islands. The following responses have been collected.
    - Have Risk Management Agent translate the English training materials into Tongan language to increase awareness
    - Need to emphasize more value-added agricultural products in future educational programs
    - Continue to find more grants for farmers even though Extension is doing a good job on teaching financial record keeping and business plans
    - A participant commented, "Please don't stop the training this year but continue with your training because we need more help on the "business plan", especially the cash flow, financial statement etc."
- Island-wide Farmers' Meeting with School Lunch Program, Department of Agriculture, Environmental Protection Agency and American Samoa Community College Extension Service:

Fifty three farmers (53) and ten (10) government representatives participated in this forum. Here are the farmers' recommendations:

- Increase the price of every produce intended to be bought by the School Lunch Program because we, farmers have experienced the high cost of production and the rapid increase in fuel prices
  - Penalize those farmers who intentionally harvested and sold their good looking vegetables with high toxicity levels of insecticides as evident by lab-test samples sent by ASEPA to Hawaii Department of Agriculture
  - Avoid favoritism when selecting the farmers to supply monthly quarters (Note: Ag. Extension has nothing to do with this process but the point was well taken)
  - Advise DOE and DOA to thoroughly check all produce before weighing because some of us farmers do hide poor quality produce in the bottom of cartons and baskets. (Note: Marketing guide for local produce was developed by Larry Hirata, Ag Economist of Land Grant and endorsed by the School Lunch Program Manager for farmer use)
- Vegetable Gardening Workshop with Homemakers: 17 members attended the workshop conducted by the agents. The following suggestions were obtained from this focus group discussion:
    - Need some seeds from you, the Land Grant program to start vegetable garden
    - Request your assistance by borrowing your rotor-tiller
    - Need your expertise to help us with pest problems in Pava'ia'i village
- Vegetable Gardening Workshops with Early Childhood Education Teachers and Parents: 361 teachers and 105 parent attended different workshops came up with following input.
    - Please, don't get mad when we cancel our fieldtrips in a short notice
    - Would be better for us to let you know the time and day to have a school vegetable garden, otherwise security is the major concern
    - Don't close your gate when we request children's field trips. Your station is a learning lab for our kids
    - Have Land Grant look for grants and funds to buy security fence to protect school projects because the Department of Education doesn't have the money for this purpose
    - Would be nice if you also look for grants or any funding sources to build small green houses for interested schools
- Selection of project farmers to work with Research and Extension to try out new resistant taros and bananas: 17 farmers were involved in this presentation and discussions in which they suggested the following recommendations.
    - The new disease resistant bananas are no good in terms of texture and taste when boiled or ripened. You, Land Grant better look for ways to cheaply produce the "Williams variety".
    - Land Grant needs to mass-produce the local taro varieties (i.e. Talo Niue, Manu'a, Faelele), they should be immune to leaf plight by now. We're tired of growing and eating the Palau taro.
    - Hopefully, your newly introduced taro cultivars won't become future invasive species even though we're committed to test them in our backyards
- Individual Farm Visitations by the agents: 464 out of 620 farmers being visited responded to all kinds of needs. However, following are some of the most popular input.
    - Obtain more good pigs (boars) to expand the pig-breeding program in the villages. Your pigs are the best pigs in the territory

- Need for Land Grant to obtain and sell quality seeds to farmers. You provided good seeds in the past
  - Request Land Grant to seek more capital to improve existing farms
  - Need to explore a taro breeding program to seek a better variety to suit the Samoan taste. The present varieties don't satisfy our taste
  - Value-added and off-island markets could be a possibility for us, farmers
  - Why don't you increase the multiplication of your existing taros and bananas because we need more than what you have in the station
  - Extension has the skills and you need to extend the grafting to fruit trees (breadfruit trees, lemons, mangoes etc) beside hibiscus
  - Research other ways to obtain fuel (methane gas) from swine waste as other development countries are currently enjoying
- Office Visitations by the farmers: Of the 309 farmers served in the Extension Office, 57 have been served on the telephone. Their documented requests reveal the following needs.
    - The need to obtain more taro and banana planting materials
    - Obtain better vegetable seeds for farmers
    - Acquire better pigs to improve village pigs
  - School Field Trips and Tours of the station projects: 586 school children have been served by Agriculture Extension during field trips and tours of the station. No input was collected due to ages, however, their parents and teachers contributed to this process
  - Soil and Water Conservation Group, FSA & NRCS Meetings: 16 member committee continued to advise Land Grant to work closely with NRCS and Rural Community and Development on resolving issues such as:
    - Waste management
    - Water quality
    - Conservation practices
    - Farm loans
  - Samoan Affairs & Traditional Leaders Project forum: 46 traditional leaders were involved in a couple of project presentations. Here are some of their comments.
    - The mayors and traditional leaders should be made aware of any programs to be conducted in the villages. The village people can support your programs if the mayors are aware of them
    - Improved crops like taro and bananas should be given to Samoan Affairs (traditional leaders) first to test before distributing to the farming community. Rejection is also done here before those planting materials even go out to the farmers

Because of the diverse nature of the events and group settings, no single method could fit in all situations to obtain the maximum input. However, an instrument (beside other friendly methods) is now being carefully developed in order to better solicit stakeholder input to improve future programs.

## **B. Forestry Extension Section (FES)**

In 2005, the Forestry Extension Section (FES) personnel continued to solicit stakeholders' inputs from 1,500 participants through survey questionnaires during forestry task force and council meetings, schools presentations, village meetings, forestry inventory, teachers' workshops, conferences, arbor week celebration, *Le Tausagi* (environmental group) summer camps, greenhouse tours, Parent-Teacher-Association meetings, school visits, science fairs, field days, greenhouse projects, student internship, and individual consultations. Of

the 1,500 stakeholders, 95% are Samoan and 5% represent other ethnic groups. One hundred (100) participants in the stakeholders' input process are physically and mentally challenged individuals. Four hundred (400) stakeholders are non-traditional clients who randomly participated in the programs because of interest and accessibility. The survey outcomes indicated the following priorities for FES to address:

- Need to continue organizing more greenhouse tours to meet the demand from schools and the public
- Need to provide more information on Agriculture, Forestry, and Natural Resources through television and other media programs
- Need to provide more trainings and demonstrations on tree management and pruning practices
- Need to provide more information on forestry and environmental sciences to the schools
- More schools and clients requested the establishment of greenhouses in schools and clients' sites
- Need to provide more fruit tree planting materials for interested clients
- Need to propagate more trees for coastal stabilization projects in Tutuila and Manu'a
- Need to propagate more native medicinal plants for traditional healing practices
- Need to offer more work study program opportunities for high schools and youth programs
- Need to make available more shade and beautification trees for landscaping and erosion control
- Need to make available more nitrogen fixing trees for soil fertility and soil erosion control
- Increase propagation and multiplication of all native tree species particularly endangered and extinct species
- Need to make available more *ava* (*Piper methysticum*) planting materials to support production and provide products for cultural ceremonies
- Need to promote agroforestry practices to properly manage slope cultivations and soil conservation
- FES personnel to continue serving as resource people on forestry, wet lands, water sheds, coastal protection, agroforestry, agriculture, and natural resource management topics
- Need to recruit and enroll more students at the ASCC-CNR's Forestry and Natural Resources associate degree program

In response to the stakeholders' inputs, the FES personnel continued to offer additional greenhouse tour hours to meet the needs of local schools and the public. Similar to 2004, more personnel are involved in providing information on forestry and environmental sciences during tours and school presentations. The FES continued to allocate more time and personnel on collecting seeds and planting materials and the actual plant propagation meet clients' needs. Moreover, the forestry program continued to partner with villages in developing coastal stabilization projects. The FES continued to maintain the medicinal garden plot and made specimens available to local *taulasea* (Samoan healers) for preparing traditional medicines. More FES staff members attended both local and off-island training opportunities on forestry and related subjects.

The FES program continued to maintain the agro-forestry and wetland demonstration sites for clients' observation and field visits. In 2005, six 6 students and one teacher from Nu'uuli Poly Tech High School participated in the forestry work-study program. Further, one vocational rehabilitation program client was hired on a six months greenhouse training program. The FES program continued to address issues indicated in the stakeholders' inputs in partnership with government agencies, villages, churches, schools, sport clubs, environmental groups and interested individuals. The forestry program personnel continued to moderate the biweekly television program to inform the community about the programs and services provided by FES and CNR.

### **C. Families, 4-H & Nutrition Section (F4HNS)**

Similar to 2004, the F4HN Section staff collected stakeholders' inputs from 1,500 clients through surveys, evaluation forms, and focus group sessions during schools and villages workshops, presentations, volunteers leaders' meetings, church and village group sessions, Food Stamps training and exercise sessions, students, field trips and group visits to the F4HN offices. Of the 1,500 clients who participated in the stakeholder input sessions, 900 are adults and 600 are youth participants. The F4HN staff members tried to include more clients

and other community members who never participated in this effort before. The results of the surveys and focused group sessions provided the following program priorities for F4HN Section to address:

- Need to continue EFNEP school presentations for students and teachers
- Continue with nutrition lessons and exercise programs for students, teachers, and community residents in overcoming obesity
- Continue with workshops for students, teachers, and the public on healthy lifestyle programs
- Need to strengthen 4-H youth development programs in the villages
- Continue “Sewing for kids” after school programs
- Need to continue programs in the following areas:
  - Drugs and alcohol abuse & other youth at risk issues
  - Nutrition
  - Obesity
  - Food Safety
  - Entrepreneurship
  - Job Readiness
  - Samoan culture and language (oratory) preservation
  - Samoan cultural and indigenous arts
  - Vegetable gardening
  - Native tree species
  - Environmental Sciences (Indoor Air Quality)
  - Parenting
- Need to conduct Family and Consumer Sciences and EFNEP programs for working mothers after hours and during the weekends
- Continue collaborative efforts with other government and non-government organizations in implementing F4HN programs
- Need to do more F4HN programs in the Manu’a islands
- Continue with after-school enrichment programs for youth

In responding to some of the stakeholders’ inputs, the F4HN program has partnered with the University of Guam and other Pacific institutions in submitting an application for the “Children, Youth, and Families at Risk” (CYFAR) grant. Moreover, the F4HN program staff members are working on an Obesity grant to be submitted in June 2006. The F4HN program also secured four new sewing machines for the sewing program for youth and adults. The F4HN program staff has initiated plans for addressing the needs of the people of the Manu’a islands.

The F4HN program continued to collaborate with the University of Hawaii on the Healthy Living in Pacific Islands (HLPI) project to address obesity, hypertension, diabetes, heart disease, stroke and other lifestyle diseases. The Pac Trac program will be utilized to analyze children’s behavior, what they consume each day, and physical activities. The F4HN program will continue to collaborate with other agencies and non-government organizations to improve clientele recruitment and services to the people of American Samoa. F4HN Section continued to adjust its programs to meet the community needs as identified in stakeholders’ inputs reports.

### **VIII. ASCC Partnerships**

In 2005, the ASCC Division of Community & Natural Resources staff members continued to serve in councils and committees of external organizations. Inputs generated through these interactions with collaborating agencies and organizations are used in to improve program planning and implementation. The following government and non-government stakeholder organizations have regular opportunities to provide input:

- American Samoa Community College (ASCC) Board of Higher Education
- Community & Natural Resources (CNR) Advisory Council
  - ⇒ Urban and Community Forestry Advisory Council



- ⇒ Forest Stewardship Advisory Council
- ⇒ Conservation Education Council
- ⇒ ASCC Small Business Development Center
- ⇒ ASCC Department of Samoan & Pacific Studies
- ⇒ American Samoa Small Business Development Network
- Interagency Piggery Management Council
- American Samoa Soil & Water Conservation District
- Natural Resources Conservation Service (USDA-NRCS)
- American Samoa Resource Conservation and Development Council
- U.S National Park Service
- Department of Commerce (DOC)
  - ⇒ Coastal Zone Management Program
  - ⇒ Fagatele Bay Marine Sanctuary
  - ⇒ Office of Tourism
- Department of Agriculture (DOA)
- Public Health Department (PH)
- Department of Marine & Wildlife Resources (DMWR)
- Governor's Office
  - ⇒ American Samoa Historic Preservation Office American Samoa Historic Preservation Office
  - ⇒ Office of Protection & Advocacy for Disabled
  - ⇒ American Samoa Environmental Protection Agency (ASEPA)
  - ⇒ Office of Samoan Affairs (OSA)
- Department Parks & Recreation
- Territorial Administration on Aging (TAOA)
- Department of Port Administration
- Territorial Emergency Management Coordinating Office (TEMCO)
- Department of Public Works
- American Samoa Power Authority
- Office of Public Information
- Samoa News and Samoa Post
- Private and Public Schools
- Faith based Organizations (youths, women, men)
- Village Councils
- Village men and or women's groups
- Le Tausagi Environmental Group
- Boys and Girls Scouts of America
- 4H school & village clubs
  - Women's Business Center
  - Diabetic Association
  - Humane Society
  - Taputimu Farmers' Cooperative
  - American Samoa Farmer's Cooperative
  - American Samoa Vegetable Farmer's Federation
  - Tongan Community
  - American Samoa Nutrition Coalition
  - American Samoa Coalition for Teen Pregnancy Prevention
  - Star Kist Samoa
  - Samoa Packing

- Private business community

#### **Other Accomplishments:**

##### **Publications**

Peer-reviewed

D.E. Hanson, J.D. Nichols, and O.C. Steele. 2005. Methods of Propagation for Some Important Samoan Timber Tree Species. *Journal of Tropical Forest Science* 18:121-126

D.E. Hanson. 2004. ASSIST: Development of the American Samoa Selected Invasive Species Taskforce. *Weed Technology* 18:1334-1337.

Technical Reports

D.E. Hanson, J.D. Nichols, and O.C. Steele. 2005. Journal of Tropical Forest Science Methods of Propagation for Some Important Samoan Timber Tree Species. American Samoa Technical Report No. 43.

[http://www2.ctahr.hawaii.edu/adap2/ascc\\_landgrant/Dr\\_Brooks\\_TechRepNo43.pdf](http://www2.ctahr.hawaii.edu/adap2/ascc_landgrant/Dr_Brooks_TechRepNo43.pdf)

##### **Instruction**

Forestry and Agroforestry – Spring & Fall '05 (6 and 3 students, respectively)

Natural Resources – Spring '05 (4 students)

Polynesian Culture and Natural Resources – Spring '05 (5 Students)

Environmental Service Learning Exchange – Summer '05 (4 Students)

#### **e. Financial and Human Resources**

(Please refer to appendix 1)

#### **VIX. PROGRAM REVIEW PROCESS**

No changes have been made in the programs review process. The guidelines as outlined in the 2005-2006 Plan of Work Update are being followed.

#### **X. EVALUATION OF THE SUCCESSFUL MULTI AND JOINT ACTIVITIES**

The multi-state and integrated research and extension requirements do not apply to the formula funds received by American Samoa. American Samoa, the only Land Grant Institution south of the equator, is somewhat isolated. The University of Hawaii is the closest Land Grant Institution and is approximately 2,500 miles away. However, ASCC does participate in joint projects with partners in the American Pacific through Agricultural Development in the American Pacific (ADAP) projects, multistate research projects, and research coordinating committees. The work supported by Hatch and Smith Lever funds included multidisciplinary and joint research and extension projects. The following questions are addressed focusing on multidisciplinary and joint research and extension.

Did the planned programs address the critical issues of strategic importance including those identified by the stakeholders? Where feasible, the stakeholder-input process is included in the programs and projects. Some of the issues that continue to be identified by the stakeholders are already being addresses while others are outside the scope of our mission.

Did the planned programs address the needs of the under-served and under-represented populations of the Territory? The population of American Samoa is 88% Samoan with 58% of the population living below

the poverty level. A large majority of the population consists of second language English speakers. The programs and projects have been designed with these demographic facts in mind. The extension agents are bilingual (English and Samoan). Almost all of the extension programs are conducted in Samoan with a few in English with Samoan translation. Printed materials are Samoan/English, as is television programming. Researchers visiting clients make use of translators when necessary. All persons requesting programs, information, technical assistance from research and extension receive assistance.

Did the planned programs describe the expected outcomes and impacts? The programs did achieve the expected outcomes. The programs/projects were designed to meet the needs of the people of American Samoa and for the most part were on target.

Did the planned programs result in improved effectiveness and/or efficiency? There is increased communication between research and extension and among disciplines. This is resulting in more joint programs/projects and better utilization of expertise of the staff, which allows for better service to the community. The program managers are also revising program delivery for better utilization of staff time and more effective programming.