

AMERICAN SAMOA COMMUNITY COLLEGE (ASCC)

DIVISION OF

COMMUNITY AND NATURAL RESOURCES (CNR)

FY 2006

ANNUAL REPORT OF ACCOMPLISHMENTS & RESULTS

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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 2005.

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

In FY 2006, Cooperative Extension and Research continued to focus 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 2006, the Cooperative Extension Service and Agricultural Experiment Station led the programs in the following areas:

1. Vegetable Production
2. Agricultural Risk Management
3. Swine Production/Management
4. Pesticide Safety
5. Farm Safety
6. Marketing
7. Conservation Education
8. Waste Management
9. Medicinal Plants
10. Traditional Crop Production
11. Forest Health
12. Urban Community Forest
13. Forest Stewardship
14. Forest Legacy Program
15. Agro forestry Systems
16. Inter-Agency Partnership
17. Greenhouse Projects

- 18. Forest Research Projects
- 19. Le Tausagi Environmental Education
- 20. Integrated Pest Management
- 21. Pesticide Safety
- 22. Indoor Air Quality
- 23. Sewing Program
- 24. Food Safety
- 25. Nutrition
- 26. Healthy Living in the Pacific
- 27. Youth Development Program
- 28. Improved Taro varieties
- 29. Banana disease resistant varieties

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 2006 have been successfully accomplished and this effort led to the following outputs.

- 16 TV programs (biweekly, 30 minute program) on KVZK TV
- More than 40 Programs and news spots offered on KVZK TV and Malama TV
- 1,076 Farmers visited
- More than 50 Educational programs (field trips/tours, career-days, fairs, etc.)
- More than 200 Presentations (schools, government agencies, non-government organizations)
- About 30 Extension publications
- Ah out 10 Educacional media material (video, DVD, etc.)
- More than 50 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	1246	100	511

A. Agriculture Extension and Research presented to more than 1,200 farmers that participated in different settings in an effort to reach more people, especially the underserved population in remote areas. Additionally, more than 1,500 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 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.

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 547 disease resistant banana varieties suckers and 6,119 improved taro varieties planting materials 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.

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	75

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

A) Year	# of groups	
Baseline	Target	Actual
2005	8	14
2006	9	155

4. Total number of farmers receiving financial assistance

A) Year	# of financial aid recipients	
Baseline	Target	Actual
2005	12	117
2006	20	337

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.

Financial and Human Resources

(Please refer to Appendix 1)

Agricultural Extension

At the end of FY 2006, in a territorial wide effort, American Samoa Environmental Protection Agency (ASEPA) visited all the piggeries on Tutuila, Aunu'u and the Manu'a Islands to identify each and every piggery, to take inventory of the total number of pigs, to assess if the piggeries were in compliance with the laws of American Samoa and to educate the piggery owners of these local laws and the disease Leptospirosis.

The piggery at Land Grant was visited and the subsequent report issued by ASEPA listed ours as being deficient in its waste management disposal of the piggery waste. The septic is overflowing and is ineffective. Since the issuance of the report, our effort has been to downsize the piggery, i.e. reduce the number of pigs to reduce the amount of animal waste that needs to be disposed of. The use of water to wash out the stall

has been minimized dramatically. Instead, the solid waste is being shoveled out and is being combined with organic matter to make compost.

ASEPA is recommending three methods for dealing with piggery waste. 1) A Lance Ihaka double solid waste separator system coupled with a septic tank and a drain field to handle the excess water with nutrients. The solid waste is used to make compost. 2) A dry litter system, which uses no water for cleaning the pigpens but uses dry litter – leaves, chipped or shredded organic matter. 3) A portable pigpen that can be periodically moved. Agriculture Extension is in the process of renovating the ASCC piggery and establishing demonstrations of the three approved waste management systems to serve as a model for the pig farming community. When this is completed, the focus will be turned to genetic improvement of the territorial piggery stock through artificial insemination, with boar services and selling and trading stock.

A working group of concerned individuals from ASEPA, American Samoa Public Health (ASPH), USDA Natural Resources Conservation Service (NRCS), American Samoa Department of Agriculture (ASDOA) and ASCC - CNR was created to develop a proposal to seek funds for a comprehensive animal health survey for pigs, dogs and rats and to develop public awareness brochures. Two public awareness brochures were developed and disseminated in conjunction with the piggery survey. The animal health survey to determine which of the three groups serves as the biggest reservoir of the *Leptospira* organism, has been placed on the back burner due to the lack of involvement and commitment from ASDOA, (which should have been the lead agency in spearheading this animal health survey).

The vegetable gardening project continued with workshops in the community and also to schools. In a multidisciplinary effort, agriculture extension is encouraging homemakers to grow vegetables in their backyard in an effort to address the obesity issue. With fresh vegetables available from their own gardens in the backyard, the consumption of vegetables would increase. With a better diet, it is hoped that diet related diseases could be addressed. Work with the ECE centers on Tutuila and the ECE programs in the Manu'a Islands has been implemented to encourage even preschool children to take an interest in growing plants. The largest group interested in starting their own vegetable garden projects is the Church of Latter Day Saints. Other organized groups will be encouraged to begin their own vegetable gardens in addition to interested individuals. Vegetable variety seeds and seedlings are being provided to gardening participants.

The vegetable variety trials funded by the ADAP Better Crops for the Pacific Islands are being continued by agriculture extension. Vegetable variety trials to date include one three-variety spinach trial, two won bok cabbage trials, and two sweet pepper trials. Trials of tomatoes, won bok cabbage, sweet peppers and spinach will continue until varieties that bacterial wilt and soft rot resistant and are suitable to the hot, humid, wet climate of American Samoa are identified.

The fruit tree improvement project including the removal of species that have not performed well with replacement trees being sought including dwarf citrus is on hold indefinitely until an agent can be hired to take responsibility. Agriculture extension has been conducting workshops and trainings to improve the staff skills where it applies to asexual propagation methods of budding, grafting and mar cottage (air layering). The skill level of several agents has increased. Agriculture extension is planning to upgrade the fruit tree orchard in the upcoming year. Plans are also being made to introduce new stock including various avocados, rambutan, and dwarf citrus to name a few. Workshops featuring these new varieties will be conducted. It is hoped that more of these fruit trees be disseminated into the community.

Agriculture Extension conducted taste test of leaf streak resistant bananas and taro leaf blight resistant taro and have selected the best tasting varieties. As a service to the farming community, planting materials of these improved varieties of bananas and taro are made available to farmers upon request.

Agriculture extension continues to work with contour hedgerows (vegetative barriers). In this fiscal year, the 5 species hedgerow was discontinued. Four of the vegetative planting materials (*Gliricidia*, *Hibiscus*, *Flemingia* and *Hedychium*) were removed and two additional vetiver grass (*Vetiveria zizanioides*) hedgerows were installed. Vetiver grass reduces soil erosion the most effectively of the 5 above-mentioned species even in 10" rainfall in 24-hour conditions. Agriculture extension works with USDA- NRCS and individual farmers in providing planting materials and assisting farmers install these hedgerows.

The underserved populations of the Manu'a Islands were organized into focus group sessions to obtain information on how the ASCC CNR program could better serve them. In total, 6 facilitation sessions were held where the agriculture extension staff was also trained on how to conduct these sessions. The results of the inputs from our underserved population in the Manu'a Islands are included in the section of stakeholder inputs. These inputs will serve as a guide on how extension serves the remote Manu'a Islands.

Programs that are funded separately including the farm safety program, the pesticide applicator training program and the risk management program will be briefly reported here.

The farm safety completed two Progressive Agriculture Safety Days (PASD). The first PASD on Tutuila Island brought together more than 100 children aged from 8 – 13, and more than 30 adults. The second one included sixty-eight (68) students, aged 8 – 13, in addition to 12 teachers at the Olosega Elementary School. In the facilitation sessions held in Manu'a, there was a concern that programs that are conducted on Tutuila, the main island, be also conducted in Manu'a as well. As a result of this concern, two safety days are being planned for Faleasao and Fitiuta Elementary Schools in FY 2007. Plans of taking the 4-H summer program to the outer islands are being developed.

The Risk Management program funded by Washington State University Risk Management Education Center, organized a workshop with USDA Farm Service Agency and Women's Business Center to bring information to farmers. During the first year of funding, the program, through village workshops, reached over 400 farmers. In the second year of funding that began in July 2006, a simplified Farm Record Keeping Book was finalized for use in American Samoa. The form, developed by FSA in Hawaii has been translated into Samoan and Tongan for use here. It is hoped that with this new record-keeping book written in their own language, the Samoan and Tongan farmers here will be less intimidated and will be able to learn quickly how to fill out the record book so that they may qualify for federal farm loans.

Agriculture Extension maintained its commitment to retain the partnership with ASEPA and ASDOA to address pesticide safety in the territory. Pesticide applicator training continues to be offered once every quarter.

Activities:

⇒ Extension Outreach

- 319 farmers were visited to provide assistance on Improved farming methods as well as Pests and Diseases control
- Ag reached 18 new farmers. Extension agents this year
- 174 farmers visited the Agriculture Extension office to ask for assistance on pests and disease control and to obtain planting materials of new disease resistant Bananas and improved Taro varieties
- Ag. Extension staff assisted 6 Youth groups and 3 ECE schools establish new vegetable gardens
- Ag. Extension staff continued to assist the Tafuna Correctional Facility with their vegetable gardens
- 6,119 planting materials of improved Taro varieties were distributed to the farmers

- 547 planting materials of disease-resistant Banana varieties were distributed to the farmers
- 4 new Taro varieties (after being tested and recommended by Research) are being planted and multiplied (on-station) by Ag. Extension crew

⇒ **Education Outreach**

- 56 people participated and got certified in the Pesticide Applicators' Safety Training conducted by ASEPA and CNR Ag. Extension personnel
- 417 people participated in the 5 Agriculture Risk Management workshops conducted by the Ag. Extension agents
- 23 people participated in the 3 Fruit trees Propagation workshops conducted by the Ag. Extension staff
- 108 students participated in the Progressive Agriculture Safety Day in Tutuila (CNR) while 78 students participated at Olosega Elementary school in Manua Islands
- Ag. Extension agents conducted 5 Vegetable gardening workshops in Early Childhood Education (ECE) centers where 43 parents and 26 teachers attended
- Agriculture Extension Services (CNR) partnered with Farm Services Agency (FSA) during their outreach programs (14 farmers attended)
- Ag. Extension staff assisted in the Facilitation sessions (Stakeholder Inputs) conducted in the Manua Islands where 35 people participated in Olosega village; 21 participated in Ofu village;
- Recorded a 2-minute Pesticide Safety awareness footing (CD).
- Conducted 4 Farm Safety workshops in collaboration with Le Tausagi environmental organization (Non-governmental organization)
- Assisted aquaculture farmers
- Conducted TV programs on:- Handling Pesticide safely
Vegetable gardening
Fruit trees propagation
Progressive Agriculture Safety Days
Agriculture Risk Management
Improved Taro varieties
Banana disease resistant varieties

⇒ **Staff Development**

- Farm Safety training in Kentucky attended by Farm Safety Agent
- RC &D conference in Hilo, Hawaii attended by CNR representative to RC&D Council
- USDA-CSREES Grant Writing Workshop attended by Agriculture Extension Program Manager
- Pacific Agriculture Extension Summit in Tonga attended by Agriculture Extension Program Manager
- Ag. Extension staff attended "Extension Methods" workshop
- Ag. Extension staff attended "Forestry Workshop"
- Ag. Extension staff attended "Movie making" workshop
- Staff participated in "First Detector" training
- Extension staff gave presentations to other extension staff on projects in their area of expertise
- Western Region Pesticide Meeting attended by Private Applicator trainer
- Farm Safety Annual Meeting attended by Farm Safety Agent

- Inland Aquaculture Development & Management Training in Thailand attended by Agriculture Extension Agent and one local Tilapia farmer
- ADAP – funded training on “Avian Flu ”attended by two agriculture extension staff
- Agriculture Extension staff learned how to conduct facilitation sessions to obtain stake holder inputs

Key Theme: Agricultural Profitability

Activity: With the of won bok cabbage variety trials yielding good results, ACE American Industries (the only local business that sells agriculture inputs) has been approached to stock and sell the best of these varieties

Impacts: Farmers who grow these recommended varieties will be able to increase production and improve their agricultural profitability.

Activity: Agriculture extension disseminates over 6,500 suckers of leaf streak resistant bananas and sets of leaf blight resistant taro to farmers.

Impacts: Because of the resistance to disease, farmers don't have to spray to control the diseases, thereby reducing their expenses and increasing their profits.

Key Theme: Emerging Infectious Diseases

Activity: Agriculture extension organized a Leptospirosis working group which includes NRCS, ASEPA, ASPH, and ASDOA to seek funding to conduct an extensive animal health survey of pigs, dogs and rats and began an educational campaign on Leptospirosis. Two brochures were developed and used in a public awareness campaign conducted in conjunction with the ASEPA Piggery Survey. The animal health survey has been put on hold indefinitely.

Impacts: Farmers are more aware of how the disease is caused, how it spreads, its symptoms, but more importantly, what they can do to prevent their family from getting the disease.

Key Theme: Home Gardening

Activity: Workshops with schools, ECE's, LDS women's, youth groups and community organizations have been conducted with demonstrations of setting up gardens. In total, 155 people attended these workshops. In addition, home gardeners were able to obtain from agriculture extension small packets of vegetable varieties that have performed well in trials. The staff members also were able to take home left over trial seedlings to assist us in determining varieties adaptability.

Impacts: Farmers are able to grow the varieties that produce well thereby increasing production and income. Back yard gardeners were able to obtain in small quantities of seed for vegetable varieties that have performed well in the climate of American Samoa. Back yard gardeners are encouraged with the productivity and yield and continue to grow vegetables.

Key Theme: Risk Management

Activity: The effort has been to work with farmers to complete business plans and the FSA Farm Record Keeping Book. Three hundred and thirty-seven (337) farmers enrolled in workshops at the village level. Group sessions and individual one-to-one sessions were conducted to encourage participants to develop business plans; complete sections of business plan, and keep better records. Using the Farm Service Agency Farm Record Keeping Book, farmers were encouraged to begin keeping records to begin the process for qualifying for farm loans. Late in the fiscal year, FSA developed a simplified record-keeping book for use in American Samoa.

Impacts: Twenty farmers (20) completed business plans while 100 others were able to develop written strategies to address issues important to their operations. An additional 100 participants were able to improve their financial record-keeping skills.

Key Theme: Forestry Highlights

The accomplishments for the reporting period of October 01, 2005-September 2006 are the outcomes of cooperative involvement and participation among staff members and partners with support from the CNR administration.

- ⇒ Provided support for the Forestry Program in Manu'a Islands through employment of two Forestry agents to provide technical assistance in forestry education and conduct extension services for the community. The agents are also responsible for managing the greenhouse in Manu'a
- ⇒ Two Forestry agents (Simon & Logona) assisted with the Forest Inventory Assessment of Ponapei in the Federated States of Micronesia from January 28 until March 16, 2006. The two foresters received training and gained experience for the seven weeks they provided the required assistance for the US Forest Service National Inventory for Pacific Islands. The two foresters completed 48 plots of 120ft long by 24ft radius. Both foresters have been requested by FIA to participate for the next Inventory Assessment
- ⇒ Continued with The John Kneubuhl Memorial Botanical Garden at Taputimu. Added two new plots and planted with different native species. Continued maintenance and clearing of the area for new planting
- ⇒ Developed a partnership with the Reef Bar and Grill Restaurant to beautify and advertise special variety of trees, such as native trees, and ornamentals. Planted approximately 100 color crotons, 10 palms, 4 seasea, 4 *ifilele* at the restaurant site as requested by the owner
- ⇒ Provided training opportunities for five (5) five senior students from Nu'uuli Polytech High School. The students learned the following areas of greenhouse management:
 - Safety precaution of working in the greenhouse, the use of equipments, tools, and handling of planting materials
 - Understanding the greenhouse purposes and its impacts
 - Transplanting of seedlings and multiplication
 - Propagation of seeds, seedlings, saplings, and cuttings
 - Grafting fruit trees (citrus)
 - Familiarizing with soil components

Soil preparation, sterilization and mixing

Seed preparation and processing

Developing a weekly plan of work to guide the activities

Students maintained a daily report of accomplishments

Worked with the Entomology Researcher on surveying and mapping of the erythrina wasp invasion on the islands of Tutuila and Aunu'u and to determine an eradication approach or control method. Few infested trees were removed and burned and replaced with native trees of Samoa

Collaborated with the Entomology Researcher to control aphid infestations with Fetau (*Callyophyllum inophyllum*) and poumuli (*Secruega flexiosa*) seedlings

Continued with seed collections, greenhouse activities, school visits, and forestry client's technical assistance

Distributed trees and seedlings to schools and forestry clients

Prepared and submitted Federal grant applications for review by the Forest Stewardship Program (FSP), Urban Community Forestry (UCF), Forest Health Protection (FHP) Conservation Education (CE) Forest Health Protection Prevention and Suppression (FHPPS)

Continued collaborative work with The American Samoa Women Business Center in providing technical assistance for their model Garden plot at Vaitogi. The project plot included varieties of different species of plants for artifacts, food crops, and medicinal plants. The project is intended to showcase the natural resources for weaving and manufacturing tapa (*siapo*) cloths and other handicrafts

Forestry staff members (Misa, Malele, Noel, Tammy) attended the Spatial Assessment Project workshop and PIC meeting in Guam

Katie Friday from the US Forest Service conducted the program review/assessment of the Forestry Program in American Samoa on January 23-27, 2006. The last review was done seven years ago

Offered field demonstration sessions on plant propagation methods such grafting, air layering, budding, cuttings, and other asexual methods to four forestry crew members and five work study students from Nu'uuli Polytech High School

Twelve (12) US university students in collaboration with the US Peace Corps Agency office in Apia, Western Samoa visited the forestry greenhouse, medicinal plot, and Happy Trail. Forestry staff members conducted presentations on various forestry and forestry related topics

Key Theme: Forest Stewardship Program

A newly revised Forest Stewardship National Standards and Guidelines was introduced at the end of 2005. This new revised standards and guidelines are slowly inserted into the system and will be followed up with more trainings, and monitoring instruments. In addition, a special training on spatial analysis project (SAP) was held in February 2006 for the Pacific Island Stewardship Program Coordinators during the PIC meeting held in Guam February 2006. The FSP Council meeting was held on April 13, 2006 to inform the members about the changes and update on the status of projects in the

program. A forestry program hosted a short course on the preparation and implementation of the proposed changes in the management plans on August 21-24, 2006. The FSP program continued to serve the private landowners with technical advice, assisting with management skills, and providing trees to plant at the project site as planned.

Key Theme: Forestry Field Crew

The Forestry crew collected seeds/seedlings/cuttings of tree species for the implementation of projects and meeting the needs of the community. There are 3 methods of seed collection: 1) collecting of seeds on trees; 2) collecting of seeds on ground; 3) collecting of seedlings of all species. The seed collection team has identified four prominent sites to harvest seeds of native species for propagation and multiplication in the greenhouse. The team continued to collect data and information on seed collection, as well as tree flowering, identification of invasive species, pests and diseases of trees, and seeding of trees throughout the year. This data and information will be used to prepare a greenhouse manual for the program. At present, there are four Tree Stand Improvement projects, under the direction of the Forestry Stewardship Program Coordinator. The Forestry crew continued to provide technical assistance to landowners. The following Tree Stand Improvement (TSI) projects included Tilani Aumavae of Pava'ia'i (1/8 acre), Tauilili Pemerika of Kokoland Tafuna (1/2 acre), Faga Sunia of Vaitogi (1/8acre), and Imo Tiapula of Lau'i (5 acres).

Key Theme: Urban Community Forestry and Conservation Education

The Urban Community Forestry and Conservation Education Program worked cooperatively to promote awareness for schools, summer camps, summer institutes, and continued with tree plantings. In 2006, the above programs conducted two council meetings. The two meetings were called to solicit public support for Ottoville Rainforest Preserve Project under Forestry Legacy. The effort of the program administration was prioritized to the preparation and application of six forestry grants from the US Forest Service. The six forestry grants have been successfully granted for the implementation of projects for fiscal year 2006, beginning in July 01, 2006 towards June 31, 2007. In addition the forestry administration also applied for another grant from Natural Resource Conservation Service on a project of Conservation Innovation Grant in which a grant was awarded to American Samoa Community College for agro-forestry research/demonstration projects. Effort was also placed on the final preparation of materials and supplies for construction of the storage facility in Manu'a. The forestry program released 220 trees to schools and village projects. The other major effort by the management was the push for local support for the Forest Legacy Program at Ottoville Rainforest Preserve. Few local individuals, the President of the Senate Lolo Moliga, and the Pacific Island Committee for Forestry wrote letters of support to the US Congress committee members for their consideration and the approval. The Forestry Program also partnered with ASCC Samoan language course (SAM-151) in utilizing forestry project sites, trees, and other natural resources to conduct practices and laboratory activities for students enrolled in the SAM 151 course. The Forestry Program Manager facilitated the class lectures, presentations, and field trips for practical experience.

In 2006, the forestry program continued to work with *Le Tausagi* Environmental Group to conduct lessons and presentations to church youths, schools, and other community groups. The Forestry Program also partnered with the Department of Marine and Wildlife Resources (DMWLR), and Department of Commerce in establishing a habitat for the Hawksbill Turtle at the village of Tula. The agencies involved conducted presentations to the village of Tula council of chiefs prior to planting of assorted plants for the habitat. The plants were collected and propagated by the Forestry as requested by the DMWLR. The assorted species planted at a strip of the open seashore, covered almost two miles from

east to west of the shoreline. The species included 2,400 assorted crotons, 150-sophora *toemantosa*, 32 *Callophyllum inophyllum*, 12 *Thespesia populnea*, and 40 *Terminila cattapa*.

The Community Forestry and Conservation Education program assisted 29 students of the Summer Institute Program through lecture presentations and practical sessions. The medicinal garden was an interesting stop where students learned about various plants that could heal many diseases and ailments of the Samoan people.

⇒ **Staff Development**

- Forestry staff (Ritofu & A’eau) attended “The Outdoor Circle and the Kaulunani Urban Forestry Program, 2005 Training Conference and Field Day – Design, Construction and Maintenance with Trees in mind.” October 11 – 12, 2005, Waikiki Beach Marriott Resort, Waikiki, HAWAII
- Forestry Program manager and UCF coordinator attended the “Increasing Access to USDA/CSREES Competitive Grants program” workshop held on October 24 – 26, 2005 at CNR Conference Room
- All forestry staff (14) attended “American Samoa Extension Methods Workshop” conducted on December 5 – 6, 2005 by Dr. Mike Bondi and Dr. Rick Fletcher of University of Oregon

**ANNUAL FORESTRY ACTIVITIES
October 01, 2005-September 31, 2006**

Program	Activity	Numbers	Impacts	Comments
FSP	Trees released	4,387	Native Trees	Project Inspec
UCF	Trees released	3,122	Assorted Spps.	Project Inspec
GH	Seeds/seedlings/cuttings Propagation	8,760	Mixed Spps.	Exam Soil
GH Visits	UCF/FSP	264	Information/Trees	GH Set /Pres
GH Presentations	Schools/churches/villages	55	Awareness	GH Manual
FSP Site Visits	Meetings/Plans/Follow up	227	Technical Assistance	Weekly/SAP
UCF Site Visits	Plan/Assess/OK	37	Tech/Com- Supp	Project Plan
GH Transplants	Transplanting	4,803	Tech/Production	GH Data Collection
Total	8	21,655	8	8

Greenhouse: 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 farmers made frequent visits to obtain information on planting materials or request technical assistance to improve their farm production. The greenhouse project attracted many clients who are interested in finding out more about new plant species, benefits of trees, and 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. A greenhouse is built in Manu’a High School to provide education for students and serve the forestry and agricultural needs of the community.

Impact: In September 2005, the Forestry Program employed two Manu'a citizens to manage the activities of the greenhouse and provide services to the schools and community residents. 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 completion date is set for May 2007 given time and funding availability. The public has been invited to visit the greenhouse for plant materials and to seek advices for forestry and agricultural developments. The teachers and students from the Manu'a high school and elementary schools were also invited to use the greenhouse for field classes and experimental science projects. Many residents of Manu'a complimented the greenhouse establishment and for accessibility to technical advice, supply of planting materials, and offered educational programs.

TV Program: Forestry TV shows is a bi-weekly 30-minute program hosted by Forestry and Agricultural Extension staff to disseminate information on natural resource management, forestry, agriculture developments and cultural land issues. The program highlighted Community Developments in Forestry and Agriculture, such as planting healthy crops, native species in public places, and increasing arboriculture capacity with public parks, tree pruning, maintenance and others.

Impacts: The television program is a successful and exciting public program that transmitted much useful information on various aspects of the Forests, Trees, and Natural Resources. The Forestry Office received many compliments from the community people and residents regarding programs recorded and aired through KVZKTV station.

Television Program

Date Recorded	Title	Panel Members	Facilitator/Comments
01-31-06	Erythrina Gall Wasp a New Pest Invaded American Samoa	Dr. Mark Schmaedick, Pito Malele, Ta'elefusi Malala Malaeti'a Misa.	Pito Malele
02-14-06	ASCC-CNR Instructional Program	Aufa'i Areta, Malagamali'i Tavita Elisara, Lefua Amio Luvu, Valelio Aetonu.	Aufa'i
02-28-06	Exotic Insect Threat to American Samoa	Dr. Mark Schmaedick, Ta'elefusi Malala Misa, Neil Gurr, Pito Malele.	Pito Malele
03-14-06	Agricultural Extension Service-Banana Production & Fruit Trees	Failagi Saili, Tugai A. Peters, Pito Malele	Pito Malele
03-28-06	Strawberry Guava as an Invasive Species	Dr. Eric Hanson, Ta'elefusi Malala Malaeti'a Misa, Pito Malele.	Pito Malele
04-09-06	Agricultural Extension Service	Aufa'i Areta, Larry Hirata and staff.	Aufa'i Areta
06-06-06	ASCC-CNR Students	Malagamali'i, Tavita Elisara, Noel Opa, Faiane Miller.	Ta'elefusi Malala Malaeti'a Misa

06-20-06	4H Summer Program	Pito Malele, Nellie Fuimaono, Sau Tuiasosopo.	Pito Malele
07-03-06	Stream Research	Ta'elefusi Malala Malaeti'a Misa, Sharon Fanolua, Lisa Wade.	Ta'elefusi Malala Malaeti'a Misa
07-18-06	4H Summer	Pito Malele/4H Staff	Pito Malele
08-01-06	Grafting Demonstration	Pito Malele, Failagi Sali, Ag/Extension Staff	Pito Malele
08-15-06	Filariasis Elimination	Dr. Mark Schmaedick, Pito Malele, ASCC Students.	Pito Malele
08-29-06	Forest Short Course	Ta'elefusi, Malala Malaeti'a Misa, Tiapula Imo, Tilani Aumavae, Mageo, Akenese.	Ta'elefusi Malala Malaeti'a Misa
09-12-06	VTC Viewing and Official Opening	President Dr. Adele Galea'i, Dean Tapa'au Dr. Daniel Aga, CNR Staff	Tapa'au Dr. Daniel Aga
09-26-06	Stewardship of the Land	Pito Malele, Logona Misa, Tony Maugalei, Eric Pese, Ritofu Lotovale.	Pito Malele

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 including wildlife.

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. The people who walked the trail praised the trail for it served as a natural resource for the community to relate to Samoan words, proverbial expressions and cultural traditions that originated from the forests.

Key theme: Invasive Species

Activity: Fruit fly surveillance. ASCC continued the 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 22,522 fruit flies were collected from these traps and identified during FY 2006. No exotic species were detected.

Impact: American Samoa has two economically important fruit fly species. Accidental introduction and establishment of additional species would further endanger fruit and vegetable production. 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 harm fruit and vegetable production in the territory.

Activity: **Erythrina gall wasp invasion response.** Unusual galling damage to erythrina (coral) trees was first noted in American Samoa on December 26, 2005. Tiny wasps were reared from the galls, and the specimens were identified by Dr. John LaSalle of CSIRO Australia as the erythrina gall wasp by January 2. A delimitation survey conducted January 4-5 by staff of ASCC and the national park of American Samoa found the wasp already present in most of the villages on Tutuila Island, precluding any attempt at eradication. ASCC and American Samoa Department of Agriculture officials notified authorities responsible for wharf areas of the need to prevent spread of the wasp by removing erythrina trees in the vicinity of the docks. ASCC CES staff on Ta'u, Ofu and Olosega Islands were shown how to distinguish the wasp galls so they might detect infestations early enough to prevent spread and establishment. Information about the wasp, including photos of the insect and its damage were presented in two half-hour TV programs broadcast locally. Other countries in the region were alerted to the threat by a posting on the Pest Net list serve and through a "Pest Alert" publication posted on the website of the Secretariat of the Pacific Community's Plant Protection Service. In February, galls were collected from 31 sites on Tutuila Island to check for any parasitism of the gall wasps and to collect gall wasp samples for a phylogeography study by colleagues at the University of Hawaii. No parasitoids were found and results of the phylogeography study are pending.

Impact: The case of the erythrina gall wasp in American Samoa demonstrated that once detection is made, authoritative identification and an extensive delimitation survey could be completed very quickly. Unfortunately in this case the initial detection came too late to have any hope of preventing establishment on Tutuila Island. Efforts to prevent spread to other islands were unsuccessful. By March the wasp was found on Aunu'u, and by September on Ta'u, Ofu, and Olosega. After its extremely fast spread through South and Southeast Asia and into the Hawaiian Islands, it was not surprising that the wasp spread so quickly in American Samoa despite our efforts.

The three species of the genus *Erythrina* in American Samoa are not endemic, but are important in agro forestry as nitrogen fixing trees, as windbreaks, as shade trees for other crops. They are also important in landscaping, as "living fences", as shade trees in parks and villages, and in traditional medicine. Native birds and bats feed voraciously on erythrina flowers. Initial results from classical biological control efforts at the University of Hawaii and the Hawaii Department of Agriculture appear promising and those efforts may provide a long-term solution that works for American Samoa as well as Hawaii.

Key theme: **Apiculture**

Activity: **Technical assistance for nuisance bee problems.** ASCC 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. Some of these feral colonies were collected and established in hives at ASCC for pollination of research station crops and education about bee biology and culture.

Impact: Honeybees were introduced into American Samoa several decades ago in a failed commercial venture. Currently there is no longer commercial or hobby beekeeping in the territory, but feral honeybees are abundant. Although they may be valuable in pollinating a few crops, the honeybees are perceived mainly as a pest. They frequently make their nests in the walls or ceiling spaces of buildings, and during times of low nectar availability they congregate in large numbers at trashcans and other locations where sugar-containing beverage containers are deposited. Technical assistance from ASCC helps residents safely mitigate honeybee problems. In addition to ensuring good pollination of research and demonstration plots, the bees maintained

at ASCC are a resource for educating students and the general public about bees and beekeeping. In the future they can provide the basis for a small-scale apiculture extension program.

Key Theme: Bioterrorism

Activity. As the American Samoa Cooperator for the National Plant Diagnostic Network (NPDN), I take part in scheduled monthly conference calls and each year I present a territorial report for at the Western Region's annual meeting. In 2006 it was in Hilo, Hawaii. During the year I taught 'First Detector' training to six employees of the A.S. Department of Marine and Wildlife Resources and two Agricultural Extension Agents from the American Samoa Community College Land Grant Program. I was invited to present the NPDN and its First Detector program to ASIST, American Samoa Invasive Species Taskforce. I was present for a review of a training exercise between government agencies and universities from Guam and Hawaii that tested their response to discovery of a select agent (Pierce's disease) and its vector (glassy-winged sharpshooter) on the island of Guam. During the same week, our Pacific Islands Distance Diagnostics and Recommendation System (PIDDRS) met with representatives from the Western Region NPDN and the University of Georgia (PIDDRS server) to streamline our disease information transfer.

Impact. Membership in the NPDN links American Samoa with all U.S. Land Grant colleges and universities and makes their resources available to us in case of a bioterrorist act. This system also works for non-terrorist introductions of plant pests. We can submit digital images of a potential high priority pest to the NPDN through PIDDRS in less than 24 hours. Training First Detectors and making local agencies aware of the NPDN connection gives us extra "eyes in the field" and increases our ability to detect, identify, contain, and even eradicate new pest introductions.

Key Theme: Plant Health

Activity. The concept of plant health is relatively new to American Samoa. Most people have been surrounded by relentless vegetation all their lives and its health has seldom been an issue. Several disease epidemics have affected crop production, however, and people are beginning to realize there may be something they can do about it. The Plant Tissue Culture Laboratory (TCL) has been giving tours of its facility, appearing on TV, and mentoring high school students with their Science Fair projects since 2004. The goal of the TCL is to increase the knowledge and appreciation of the general public, and other agencies, for science in general and *in vitro* plant propagation in particular. The TCL Manager guided four high school students through the research process and into the annual Science Fair competition this past year. She is also an advocate for our program off-island and presented our program at a meeting of Pacific tissue culture specialists in Suva, Fiji in August 2006.

Impact. Requests from local growers regarding disease resistant taro and banana hybrids produced by the TCL are evidence of and increased awareness and appreciation of its capabilities. Recently, the local Department of Agriculture contacted us about multiplying a popular taro hybrid for mass distribution. This was especially satisfying in light of the strained relations between our two institutions, the College and DOA. The Science Fair participants did well, with one student finishing second overall and earning a trip to the US mainland for further competition.

Key Theme: Plant Germplasm

Activity. Over 40 taro leaf blight resistant hybrids were imported from the Regional Germplasm Centre in Suva, Fiji. They have all been multiplied, rooted, and all but five have been hardened-off in the greenhouse and tested in the field. Thirteen have been taste tested in public events designed to get public opinion on which taro hybrids to release and to promote our taro evaluation program. Six banana hybrids resistant to black leaf streak (black Sigatoka) have also been cultured and distributed to farmers on the main island of Tutuila for evaluation of growth and eating characteristics. All plant varieties have been accessioned into the TCL germplasm bank.

Impact. The goal of the taro evaluation program was to increase genetic diversity of both taro and bananas, providing a measure of crop security. I was in a grower's field last week and he was growing more than 40 rows, containing 10 of our taro hybrids, for evaluation by his workers and family. Resistant plants are of no value if farmers will not grow them. It is becoming increasingly difficult for banana growers to afford chemicals necessary to protect their crop against black Sigatoka and the local EPA is aggressively enforcing restrictions on unlabeled fungicide use. The banana hybrids we are introducing do not require any pesticide treatment. Local growers are becoming more willing to adjust their tastes slightly in order to benefit from this beneficial characteristic.

Key Theme: Plant Production Efficiency

Activity. The taro and banana evaluation programs have given the TCL an opportunity to adopt and refine *in vitro* culture materials and methods. In a trip to the Regional Germplasm Centre in Fiji, the TCL Manager learned a new way to initiate taro and breadfruit explants, increasing the number of positive cultures. At the same time, she refined plant tissue sterilization methods specific to bananas, taro, and breadfruit. New media for different crops have also been tested for our requirements, including altering the level of sucrose in a basic salt medium.

Impact. One person efficiently runs the TCL because of her professional, well-organized, scientific approach to the work. By using new methods of explants initiation and sterilization and the right medium for the stage of plantlet development, the TCL has kept the taro and banana evaluation programs supplied with fresh, high quality material for the past two years. Being able to meet our commitments in a timely manner is a service that may be as important a product as the disease-resistant plants we provide.

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
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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 mean 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.

Families, 4-H Youth Development, and Nutrition (F4-HN)

Outputs

During the reporting period, programs have been presented in villages, schools (ECE, Elementary and High Schools), churches and appropriate government offices (Food Stamp, WIC, School Lunch program). Food demonstrations used recipes with locally grown produce. Using local produce as part of the food stamp allocation was promoted with demonstrations of recipes using fruits and vegetables. Educational handouts on the Pacific Guide to Healthy Eating, Pacific Food Guide Pyramid, My Pyramid, and local Samoan recipe cook book, and Team Nutrition-Five A Day materials were given to food stamp clients, students, teachers and other clients. In-school programs emphasized the importance of: physical activity to reduce the high risk of obesity; production and the consumption of local food with gardening projects; and food safety. Seeds and seedlings were free for the people taking the program.

Outcomes

524 adults participated in the nutrition education program and 300 graduated and received certificates
300 students, parents, and teachers participated in gardening activities during summer programs and
Agriculture in the classroom (AITC) projects

1,310 Food Stamp clients attended nutrition education program (500 completed the Basic Nutrition lessons)

1,110 youths attended nutrition education workshops in school programs and 300 during the Summer 4H workshops

140 village mayors and 333 youths participated in a F4-HN Collaborative Nutrition and Vegetable Gardening program with the Department of Marine and Wildlife

50% of 1410 youths from 18 groups now eat a variety of food

40% of 1410 youths increased knowledge of the essentials of human nutrition

25% of 1410 youths increased their ability to select-low cost nutritious foods

4,100 educational handouts on the Pacific Food Guide Pyramid, 1450 mini posters of My Pyramid, 1,500 brochures, 1,200 Food Safety coloring books were distributed to schools and teachers during workshop lessons

I. 2,300 recipes were distributed to Food Stamp and WIC clients

II. 18 Food Safety workshops were conducted to 14 elementary schools

Impacts

A father attending the Food Stamp program has worked diligently to incorporate better food budgeting and safety practices into his daily routine. He took interest in raising a small vegetable garden. Most importantly, he has taken interest in his children and shares his enthusiasm for learning about food with his sons. He took EFNEP lessons, and helped with

her daughter's diet, she's a type 1 diabetic person. He is now able to plan accordingly within his budget and improved meal planning.

According to the Food Recalls taken from 524 adults, 75% of the adults eat one or more fruits and vegetable each day

About 70% of students attending Food Safety workshops have started washing their hands and followed the Food Safety Guideline

30% of Food Stamp program clients who are diabetic now learned how to select from the five food groups and bake or boil food rather than fried

According to principals of schools that completed the EFNEP program, they now will add physical education activities to their curriculum

The second food recalls for 300 participants that completed the 12 basic nutrition lessons indicated that many participants are consuming more locally grown produce especially fruits and vegetables

23 child care providers increase awareness about the importance of food handling and proper sanitation in the child care environment

Participants who completed the nutrition education lessons commented that they are now changing eating habits to more nutritious meals and food; learned how to stretch their food dollar; adopt a healthy diet, know how to keep food safe; and do physical activity every day

Key Theme: Proper Selection, Safe Handling, Storage, and Preparation of Nutritious Fruits and Vegetables

Activity: The Food Stamp Program is one of the many long-running nutrition programs in American Samoa. The first five working days of each month, Nutrition agents continue to provide services for the clients. Through lessons, songs, games, fact-sheet handouts, recipes and cooking demonstrations containing local ingredients from each of the five food groups, clients are receiving nutrition education. Emphasis is placed on eating more fruits and vegetables, reducing fat and salt consumption and eating a variety of food. Educational handouts on the USDA My Pyramid, the Pacific Food Guide Pyramid, recipes, "Team Nutrition" and "Five A Day" materials are given to food stamp recipients, students, teachers, and other clients. Food Stamp Staff distributes the coupons immediately following each nutrition session the attendance rises tremendously. Presentations about safe food handling, storage and preparation were part of the training for childcare providers and food stamp clients. At least 80 demonstrations were given to school age children on the correct way to wash the hands to prevent food borne illness. Lessons on Food Safety were also presented to youth organizations and village programs.

Impact: The Nutrition Coalition continues to work on projects to improve the health and well being of the people. They organized activities for the National Nutrition Month on March to promote Healthy Living in the Pacific. The School Lunch and EFNEP program organized a Meal Planning committee to promote eating local fruits and vegetables and to reduce having fatty food in the menu. Approximately 1,310 food stamp clients attended nutrition education workshop. Many clients commented that they are now using 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. About 50% of student participants are now eating more nutritious snacks and drinking water instead of soda as indicated in the surveys conducted in schools. More than 4,100 educational handouts on the Pacific Food Guide Pyramid, recipes, Team Nutrition, Five A Day, and My Pyramid were given to food stamp recipients, students, teachers, and clients. In addition, 1,200 Food Safety coloring books, 500 food safety guideline brochures, and 2,300 recipe sheets were distributed.

Key Theme: Human Nutrition

EFNEP (Expanded Food Nutrition Education Program) program helps people of American Samoa to get the best and the healthiest food for their money. Teaching people to eat well and live well-encouraged and motivated clients to live healthy lifestyles, increased physical activities, and enhanced their understanding of the importance of following the food guidelines in their daily living. Families also applied the knowledge acquired and skills developed from the EPNEP and Food Safety programs in choosing, buying, using, storing and preparing food. This program also provided nutrition education and physical activities for the Food Stamp clients and students in schools.

- **Activity:** American Samoa is working on a project called “Healthy Living In the Pacific” focus on three main objectives; to increase knowledge of nutrition; to increase production and consumption of local foods and to increase physical activities. Programs are set in schools and villages for HLPI project to continue presentations in 2006. Community participants supported the need to promote physical activities to prevent the high risk of obesity, high blood pressure, diabetes, and other related diseases. The nutrition agents provided nutrition education workshops to 18 elementary schools based on these main objectives. Physical activities were strongly recommended to be included in school curricula to address obesity and overweight problems faced by the children in American Samoa. The agents also conducted two workshops for the school lunch cooks to promote the importance of food safety and physical activity.
- **Impact:** Principals and teachers of the 18 participating elementary schools are now developing a physical activity curriculum for their schools. 55 ECE parents attended HLPI workshops, 30 of the 55 reported a reduction in their weight. The Nutrition Coalition is now having a healthy lifestyle program to address the high risk of obesity and high blood pressure for the community and schools. Three elementary schools (level 4) participated in a walking relay competition as part of emphasizing the importance of physical activity in schools. The participating schools received prizes such as t-shirts and a supply of bottled water.

KEY THEME: Vegetable and Fruit Production Including Pest and Weed Control and Fruit Tree Propagation

Activity: In 2006, about 20% of the trees in the greenhouse are fruit trees selected from fruit bearing trees of high yielding and nutritional values. The fruit tree selection included breadfruit, banana, coconut, sour sop, mango, avocado, golden apple, black sapote, star apple, pickle fruit, orange, lime, jack fruit, mountain apple, pickle fruit, and guava. These trees are treated in special propagation techniques such as air layering and grafting to improve their genetic potential for fruit quality and resistance to pests and diseases. Further, the Forestry personnel and student volunteers were involved with the propagation and issuing of more than 200 assorted fruit trees to forestry clients and others who requested fruit trees to plant in their plantations and school compounds.

Impact: As a result of the EFNEP nutrition education program and 4-H gardening workshops, Forestry extension program provided fruit tree seedlings to more than 100 program participants. Similar to 2005, EFNEP food agents prepared local fruit drinks using local fruits and served the fruit drink to more than 800 youth participants. Additionally, more than 50% of the participants indicated that they would make their own nutritious fruit drink at home using local fruits.

Activity: The greenhouse projects under the management of the Forestry program attracted many school students and teachers to participate in tours and exploratory expeditions for social studies, agricultural science, and environmental studies. Twenty five (25) schools and twenty five (25) teachers visited the greenhouses to fulfill curriculum activities on trees, watershed, water, and soils. Other school programs included student work-study, science fair projects, and short courses for ASCC students and forestry staff. The forestry staff led tours, and conducted presentations on

various aspects of forestry, natural resources management, and agriculture. After special tours and presentations, teachers and students were given seedlings of their choices, such as fruit trees, native species, food crops, flower trees, timber trees, and medicinal plants. The purpose of establishing greenhouses is to propagate sufficient planting materials for forestry research activities, and extension projects in the communities. There are three greenhouses in Tutuila, and one recently constructed in Manu'a High School in Tau. The greenhouses are the nuclei for agro-forestry work and also serve as laboratories to assist students and clients with special training and projects. Trainings were focused on soil preparation, plant propagation, seed technology, plant health, invasive species, maintenance, and distribution of trees to clients and partners. The holding capacity of the greenhouses is more than 20,000 seedlings. Approximately 12,000 plants had been distributed to visitors, students, teachers, extension/research projects, and forestry clients.

Impact: In 2006, more than 500 Forestry clients visited the greenhouses and requested trees for a variety of projects. Similarly, 25 schools and 500 students visited the greenhouses for science fair projects, geography studies, social studies, environmental science, and arbor week celebration in American Samoa. All the visitors who entered the greenhouse during the arbor week celebration were given more than two seedlings to plant at their homes in recognition of Arbor week. A total of 7,050 seedlings have been released to clients and visitors during FY 2006.

Key Theme: Human Health

Activity: SAM-033 or CRIS Accession No. 0208378. A Hatch Act Grant was approved to allow us to work with the American Samoa Department of Education (ASDOE) as a partner and the American Samoa Department of Public Health and American Samoa Community Cancer Network (ASCCN) as cooperators in order to determine the prevalence of overweight and at risk of overweight of schoolchildren in American Samoa. During the 2006/2007 school year we measured height, weight, waist and hip circumferences of 2795 boys and 2621 girls in kindergarten and grades 3, 6, 9, and 12 from all public and private schools in the territory.

A manuscript, "Assessing Overweight and Obesity in American Samoan Adolescents using International Obesity Task Force and Centers for Disease Control Body Mass Index Cutoffs, Waist Circumference, and a Quarter-Century Perspective," was submitted to the Pacific Health Survey summarizing our 2005 pilot survey of 390 schoolchildren aged 11 to 18.

Impact: Using age- and sex-specific body mass index cutoffs developed by the Centers of Disease Control and Prevention, the prevalence of "at risk of overweight" was 20% and 23% for boys and girls, respectively, while the prevalence of "overweight" was 35% and 34%, respectively. This information was presented at the Second Annual ASCCN Symposium on March 16, 2007. As a consequence we, together with ASCCN and ASDOE, intend to submit a proposal to the National Cancer Institute to address School-based Interventions to Prevent Obesity.

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.

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 biotic 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 agro forestry. 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.

Agricultural Extension

Key Theme: Pesticide Safety

Activity: Agriculture Extension maintained its commitment to strengthen the partnership with ASEPA and ASDOA to address pesticide safety in quarterly certification training programs.

Impacts: 56 people participated and got certified in the Pesticide Applicators' Safety Trainings this year. More people now see the importance of handling pesticides in a safe manner and are aware of how to use these chemicals safely.

Key Theme: Soil Erosion

Activity: The five species vegetative barrier trial has been discontinued after slope data and soil sediment data supported *Vetiveria zizanioides* as the most effective of the plant species tested. With USDA-NRCS, ASCC-CNR is making available planting materials to assist farmers install these hedgerows to reduce soil erosion

Impacts: Farmers that plant vetiver grass in a contour hedgerow can be assured that soil erosion will be reduced and that over time if the hedgerow is maintained, the cultivated area over time will naturally terrace itself thereby further reducing soil erosion.

Key Theme: Water Quality (I)

Activity: The water quality is an important environmental issue that has been addressed to the communities, schools, and the public through public awareness program. The water quality is a subject that has been encouraged and taught through curricula in watershed management and environmental education. The watershed curriculum for elementary schools is designed to use watersheds, streams and water catchments areas as field laboratories. These are the places where students and teachers should go to study and learn scientific aspects of water including the use for public consumption. Included in the curriculum are trees and soils, which are ingredients of the watershed program. The American Samoa Forestry Program in partnership with 25 elementary schools and teachers of grades 4, 5, 6, 7, 8 continued to offer presentations and field visits to the watersheds at ASCC, Nu'uuli, Malaeimi, Leone, Pago Pago, Alofau, Fagasa, and Manu'a.

Impact: Twenty five (25) teachers and 520 students who attended 15 presentations and 25 field-visits received better understanding of the watershed concepts and its application to their lives on the island. Students and teachers who attended field visits at forestry sites received trees to plant at their family lands. About 30% of the students and teachers involved have shown interests by returning to the forestry program to request trees and specific information for special projects such as science fair projects and others.

Key Theme: Water Quality (II)

Activity: Submission of two manuscripts on research results. "Assessing Anthropogenic Impact at Terminal Stream Reaches on Tutuila Island" and "Stream Water Chemical Parameters for Tutuila Island, American Samoa, Polynesia" was submitted to Pacific Science for publication.

We prepared five posters highlighting the macro fauna and flora found in American Samoa's streams: fishes, crustaceans, mollusks, periphyton, and stream ecology. Fifty of each poster will be printed and distributed to all schools and youth centers.

In cooperation with other territorial agencies operating as the Watershed Advisory Group (WAG), we presented our stream research results to an audience of village mayors and pastors on March 15, 2007. WAG will focus on preventing debris from entering streams and eventually entering Pago Pago Harbor.

Impact: Each village around Pago Pago Harbor has agreed to "adopt a stream" and keep it trash-free.

Key Theme: The Role of Greenhouse For Fruit Tree Production

Activity: The greenhouses in Tutuila and Manu'a Islands have concentrated on the propagation of 30% fruit trees selected from fruit bearing trees of high yielding and nutritional values. The selection of fruit trees includes breadfruit, coconut, papaya, bananas, sour sop, mango, avocado, golden apple, black sapote, star apple, pickle fruit, orange, lime, jack fruit, mountain apple, and seasea, etc. These trees have been selected and treated with special techniques such as air layering, and grafting to improve their genetic potential and improve the quality of fruit taste, and resistance to pest and disease incidence. More than 200 fruit trees and 100 fruits of various kinds had being released to students, teachers, LBJ Nutritional Programs, Forestry clients, and the general public who requested fruit trees to plant at their plantations or in the school compounds.

Impact: Over 150 participants who requested fruit trees from the greenhouse had extended the

importance of fruits of having high contents of minerals and vitamins for their diets. This is a result of the EFNEP nutrition education program, 4-H gardening workshops, and the Forestry Extension Service to the community. The ASCC-CNR EFNEP professionals and food agents had demonstrated how to prepare local fruit drinks using local fruits. The fruit drink served more than 1200 youth and 100 old participants. Almost 80% percent of the participants and people who attended fruit juice demonstrations had indicated their desires to make their own fruit drinks at home using local fruits.

Key Theme: Greenhouse Activities

The Forestry Program relies greatly on the availability of seed/seedling resources of various species of plants, and hardwood trees to be collected for propagation and multiplication in the greenhouse. The greenhouse is the nucleus for forestry work, and a learning facility for students to learn and demonstrate soil preparation, sterilization, plant propagation, and transplanting activities. The students who are assigned to the greenhouse work have the greater opportunity to understand the importance of assigned activities and the operation. The students also learn the science of plants, different kinds of hardwood trees, invasive species, greenhouse operation, and how trees can improve the health of our environment. The greenhouse therefore serves the need of communities to produce sufficient trees, through mass-producing of several plants species, for soil erosion control, windbreak, and coastal protection. The greenhouse staff has constantly conducted presentations, and provided guides for student's tours, who were interested in the greenhouse, and the Happy Trail.

Key Theme: Arbor Week Celebration

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

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 annual celebration. 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 1,200 trees were issued to Arbor Week participants on the final day.

Key theme: Biological Control

Activity: Protecting Manu'a breadfruits. Since its accidental introduction to Ta'u Island in the mid-1990s, the Seychelles scale has frequently irrupted to high population densities. The scale attacks many trees, but is particularly abundant on breadfruit, an important seasonal staple. Although Hurricane Olaf in 2005 severely damaged most of the breadfruit trees on Ta'u Island and temporarily suppressed outbreaks of the Seychelles scale, populations have rebounded. Past introductions of predatory *Rodolia*

spp. beetles to Tutuila, Ofu, and Olosega Islands have resulted in dramatic and sustained suppression of Seychelles scales on those islands. A program is being developed to rear the *Rodolia* beetles in the laboratory on Tutuila Island, screen for diseases and parasitoids and introduce the beetles to Ta'u. Breadfruit and Seychelles scale production protocols are in place and *Rodolia* rearing and additional stakeholder consultations will soon begin.

Short-term scale control is needed to alleviate the problem until the biological control agent can be established. Three reduced-risk insecticides were tested against the scales in an attempt to identify an effective alternative to the misting oil that is currently providing some short-term control. Unfortunately none of these was effective enough to replace the oil sprays.

Impact: It is very likely that introducing *Rodolia* will resolve the Seychelles scale problem on Ta'u Island as it has on the territory's other islands.

Key theme: Integrated Pest Management (I)

Activity: Improving effectiveness and reducing dangers from pesticide use in vegetables. Two additional field trials were conducted testing U.S. Environmental Protection Agency approved, reduced-risk insecticides as alternatives to broad-spectrum, more toxic products for control of melon aphids in cucumbers. Pymetrozine continued to show efficacy superior to the most commonly used broad-spectrum organophosphate, while three plant-extract-based products were less effective.

Impact: Farmers desperately need proven pesticide products to control pests when non-pesticide tactics are not enough as is often the case in vegetable production in the tropics. Products should be selected which minimize adverse effects on the environment, human health, and beneficial insects. By evaluating efficacy of reduced-risk pesticides against local pests under local conditions, we can demonstrate to farmers environmentally sound and effective alternatives to the more broad-spectrum biocides that have been used in the past.

Activity: Mosquito control and filariasis elimination videos. A video public service announcement was produced and aired on local TV to promote the American Samoa Department of Health's filariasis elimination program. This was the fifth video we have produced and aired to educate the public about the importance of mosquito control and public participation in the mass drug administration program to eliminate lymphatic filariasis.

Impact: American Samoa is the only United States territory where lymphatic filariasis is endemic. The disfigurement that can result from the disease, including elephantiasis and hydrocoele, make lymphatic filariasis the second leading cause of disability worldwide. In American Samoa clinical manifestations have declined in recent decades, but infection rates remained relatively high (17% in a 1999 survey). Although we were unable to quantitatively assess impact of this and our earlier videos, it is clear from informal discussions with residents and health professionals that the informative spots have raised awareness of the benefits of dengue- and filariasis-vector mosquito control through reduction of breeding sites and have increased participation in the mass drug administration program (MDA) for elimination of filariasis. Infection rates measured in sentinel villages have declined dramatically, to 13% in 2003 and 0.95% in 2006.

Activity: Mosquito trapping. ASCC continued evaluations of new trapping technologies for sampling of American Samoa's most important disease vector and nuisance mosquito, *Aedes polynesiensis*. The recently developed BG-Sentinel trap (Biogents GmbH, Regensburg, Germany) was found to be the most effective trap. Use of this trap represents the first safe and efficient method for sampling *Ae*

polynesiensis. We used the trap in two studies: the first to assess the impact of a village-level source reduction program on activity-density of female *Ae. polynesiensis*, and the second to measure the filarial infection rates of host seeking females in three villages after the seventh year of the American Samoa Department of Health's mass drug administration program to eliminate lymphatic filariasis.

Impact: The discovery of this new trap's efficacy for the key local mosquito vector creates unprecedented opportunities for evaluation of control efforts, disease surveillance, vector monitoring, and vector ecology research in American Samoa and throughout the South Pacific. The traps have already been deployed successfully in our 4-village study of community-level vector control and most recently to provide data on mosquito infection rates in three villages to bolster strategic planning in the filariasis elimination program.

Key Theme: Integrated Pest Management (II)

Activity. The main objective of my laboratory in 2006 was refinement of a detached leaf bioassay to detect resistance to taro leaf blight disease. I conducted 56 separate 5-day trials to determine the effects of 12 variables on bioassay results. These included plant and leaf age, attached vs. detached leaves, wiping or wounding the leaf surface, inoculating the upper vs. the lower leaf surface, and spore concentration. I also tested over 30 taro hybrids for disease resistance using the bioassay. I wrote two proposals to fund the next project, phenotypic and genotypic variation and distribution of the leaf blight pathogen, *Phytophthora colocasiae* in Samoa and American Samoa. One proposal was funded, the other is pending.

Impact. Disease resistant varieties are one of the best approaches to pest management, especially in subsistence-type agricultural systems. Breeding programs need fast, dependable, inexpensive methods of evaluating new germplasm. This bioassay can provide an early screening for several different components of plant resistance. It also offers a reliable method of testing other host-pathogen interactions that may be useful to IPM. For example, plants develop increasing resistance to leaf blight with age. In areas where blight is a problem, planting several months before the beginning of the wet season may produce a more resistant crop during the critical 4-6-month corm-building period. In regards to the location and virulence of *P. colocasiae* isolates, if areas are detected with particularly strong isolates, they could be avoided. Alternatively, the strong isolates could be tested with the bioassay against different taro hybrids and the most resistant could be planted in that location.

Key Theme: Tropical Agriculture

Activity. I co-authored a proposal with Dr. Brent Sipes, University of Hawaii, on the 'Feasibility of large-scale vermicomposting in the American Pacific'. The proposal was rejected by Sustainable Agriculture in Research and Education (SARE), but may be resubmitted, with revision, in another category. We hosted a graduate plant pathology student from the University of Guam and University of Florida and assisted her with her dissertation research on the target leaf spot pathogen, *Corynespora cassiicola*.

Impact. All Pacific islands have problems disposing of organic wastes. The use of certain species of worms to convert organic matter into high-protein animal feed or nutrient-rich, pathogen suppressive soil amendments is an attractive option to land fills or open disposal. Animal feed is very expensive to ship and a local source would be a great economic stimulus to poultry, fish and swine production. Soils of volcanic and coral islands lack organic matter content and nutrients are quickly depleted. Vermicompost is a possible solution. *Corynespora* can be a serious pest on crops grown in the tropics, including papaya, tomato, cucumbers and melons. Determining its host range and developing genetic

markers for various strains will enhance research efforts to breed resistant varieties; tomato is the current focus.

Key Theme: Plant Health

Activity. Plant Pathology and Entomology have maintained a Plant Clinic for the people of American Samoa since 2000. This past year we logged 21 formal submissions, plus numerous informal diagnoses and recommendations. Complaints ranged from fungal and bacterial diseases to aphids, whiteflies, mites, and bee and wasp eradication from structures. I attended a meeting at the University of Hawaii to introduce PIDDRS to members of the Hawaii Department of Agriculture. As one of the founders and users of PIDDRS, I presented my views on the system. I made three submissions to PIDDRS for confirmatory diagnoses in 2006. We met with the new manager of ACE Hardware, along with our top extension agents, and discussed pesticides and other home and garden supplies he could order on trial, especially for the farming community. Available, affordable pesticides are a continuing problem in these remote islands. If the proper pesticide cannot be obtained, unlabeled products will be imported illegally. We are working together with ACE and AS EPA to address this problem.

Impact. Our Plant Clinic is the only resource in the territory for science-based, dependable plant diagnostic advice. We use an integrated approach to pest and disease management and try to determine which pesticides, if any, are most appropriate, if they are EPA registered, their cost, and if they are available to growers. The local Farmers' Cooperative has asked me to present an instructional workshop specifically for pesticide use on bananas. This is an important step in the realization by local farmers that regulations must be followed. Through this workshop I hope to show them the rationale behind the regulations and so strengthen their compliance.

Key Theme: Biodiversity

Activity

We imported 39 taro hybrids from the Regional Germplasm Centre in Suva, Fiji. These clones are from breeding programs in Southeast Asia and the Pacific, including Indonesia, the Philippines, Samoa, Fiji, Thailand, and Malaysia. Of these hybrids with putative resistance to taro leaf blight disease, our plant tissue culture laboratory has multiplied 35. Thirty have been tested for disease resistance at least three times each with the bioassay. Twenty-two have undergone six-month field trials and five are in the field now. Seventeen of the new hybrids have been taste tested and five recommended for distribution. Land Grant's Agricultural Extension agents will distribute plantlets multiplied by our tissue culture laboratory. The local Department of Agriculture is growing and distributing some of the same plants.

Impact. One of the goals of the taro evaluation project was to increase genetic diversity in the local taro crop. Crop security is especially important to islands that can be isolated by hurricanes, shipping or fuel problems, war, etc. Taro production was non-existent in the Samoan Archipelago from 1994-1998 due to a taro leaf blight epidemic. The Samoans were growing one favored, susceptible taro variety almost exclusively and it was destroyed. Clones from many different countries should provide a variety of resistance genes against leaf blight, and perhaps other diseases. Though we are only providing a limited number of the top varieties to "seed" the fields, farmers that participated in the field trials are still growing many of the hybrids.

VI. Goal 5: ENHANCED ECONOMIC OPPORTUNITY AND QUALITY OF LIFE FOR AMERICANS
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OVERVIEW

There are many economic and social challenges that face Samoan families. One of it seems to underline 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.

Outputs

To address this goal during FY 2006, programs were offered in the following areas:

Entrepreneurship and Home based businesses, Arts and Crafts, Ag. In Classroom, Samoan Culture, Character Counts, Indoor Air Quality, Basic Sewing, Printing Elei fabric, Farm Safety, Reading literacy, Self-Care for Mental Health clients and Youth development issues. Samoan Culture has been included in program development and delivery of all areas. The F4-HN staff provided 3 workshops for ECE parents on Parenting and Financial Management. A collaborative program on Child development and Parenting with Day Care Centers was very successful and will continue in 2007.

Outcomes

- Of the 1,533 youths enrolled during FY 2006, 80% actually adopted one or more principles, behaviors, or practices within six months after completing one or more programs
- Of the more than 700 youths, teachers and parents who participated in Samoan culture awareness programs, 80% of the participants plan to use the developed skills to preserve their culture
- Two 4H agents spent 100 hours each with over 1,000 students in the elementary schools completing the reading literacy programs
- Seven ASCC students took Basic Sewing program for Job Practical Experience and received 1 credit
- Six Day Centers having Child Development and Sewing programs with the enrollment of 79 Day Care Providers
- Of the 188 adults and 252 youths who enrolled in the Sewing program, each participant learned how to make their own clothes using the tape measure, patterns, sewing machines and other equipment

Impacts

- 50% of the student participants learned how to raise own vegetables, understand the nutritional value of vegetables, and develop skills marketing the vegetables
- Two hundred eighty nine (289) youths participated in the 4-H Summer workshops and learned Agriculture (Grafting, Vegetable Gardening), Sewing for kids, Musical instruments, Games, and Tree planting
- 60% of the student participants in the sewing program learned how to sew their own shorts
- Thirty six (36) teachers have added more hands-on experiences in Arts and Craft activities; they commented it's an excellent learning experience to share with the kids during art sessions
- ECE requested more sewing programs for the ECE parents, 55 participants learned how to sew for themselves and their children
- Of the 188 adults who participated in the Sewing program, ten (10) bought their own sewing machines and twelve (12) started their sewing and elei fabric printing small businesses
- Twenty (20) village 4H program participants learned how to do arts and crafts, elei, and flower arrangements
- The 4H agents provided workshops on Arts and Crafts, Ag. In Classroom, Indoor Air Quality, Character Counts, for sixteen (16) Elementary Schools

Five (5) adults that participated in the sewing program expressed their sincere gratitude towards the program. They claimed it was their first time learning this trade and commented that the program made a difference in their life style. They also commented that with the knowledge they gained from this program, they would now save money by sewing their own clothes as well as the clothes for their children.

Collaboration among government agencies and non-government organizations sustained Youth program activities.

Key Theme: Children, Youth and Families at Risk

Activity: 4-H Cross Culture Awareness Project—The purpose of this project is to promote Samoan traditional costume, art, crafts, language, music, culture, sports and agriculture practices. The importance of the identity and the appreciation of the uniqueness of the culture were always emphasized through the workshops offered. Workshop topics included Samoan Music, dance, siapo, (tapa making) elei (fabric printing), and respectful language and behavior. Their understanding of the culture was enhanced through the activities offered. Reading Readiness Project— the purpose of this project is to instill in the lives of the young children the love and interest in reading. The project staff designed activities to build self-confidence and equip children with behavioral skills needed to be successful in learning. Puppets are also used to develop the interest of the students to the stories.

Impact: One thousand, five hundred, thirty-three (1,533) youth participated in the 4H program activities in FY2006. The participants attended and took part in different workshops such as: Arts and Crafts, Music, Samoan Culture, Indoor Air Quality, Elei, Tapa making, and others. 90% of the 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. Collaboration with the Department of Education, ASCC Samoan and Pacific Studies, and Families has ensured program sustainability. More than 600 school age children participated in more than 30 in-school reading and enrichment programs using the “Read to Me Samoa” approach and Samoan reading materials along with the English materials. Parents have also started reading more to their children, hence spending quality time as a family. A teacher commented, the “Indoor Air Quality” lessons that were provided by the 4H agent really helped the children understand the importance of the quality of the air they are breathing and are able to identify dangerous chemicals in their surrounding and their environment. They learned that every cleaning product on the market shelf and products used daily can harm their health. Teachers from different schools expressed their appreciation to the F4HN agents on providing Arts and Crafts workshops to the schools, it really helped the teachers to think creatively and apply a fun thinking activity to deliver a message from any subject to students so they can learn and develop more ideas.

Key Theme: Childcare & Youth Development

Activity: A three month workshop for 25 groups is a continuing effort providing the participants with information on the ages and stages of child development, nutrition and food safety, budgeting, setting up learning centers, arts and crafts, behavior management, and storytelling. Parenting Education workshops are being taken to the community and to the ECE program for parents.

Impact: Twenty eight (28) Child Care providers completed the Child Development and Parenting workshop and received certificates for FY 2006. It is anticipated that the program will enroll more Day Care providers for the next fiscal year. Moreover, the twenty eight (28) childcare providers also completed the 12 Basic nutrition lessons and received certificates. The Child Care participants requested more workshops for their centers. They learned how to discipline the children and

organized learning centers. Parenting workshops are being planned for the villages, church organizations, and DOE teachers as a result of stakeholder input sessions.

Key Theme: Dependent Care of Self-help

Activity: The Mental Health Program continues to be an on-going program for the F4HN and Mental Health Services. The F4HN will continue to work with mental health clients in different varieties of hands-on learning activities. Nutrition Education and cooking demonstrations were the first activities used with 38 Mental Health clients during FY2006. They were in attendance every Thursday afternoon for their weekly activity. Each visit has always been a success due to the response and support of the clients and staff who are always patient and cooperative with the lessons. They organized a bazaar and showcased what they sew, arts and crafts items, and other completed project items.

Impact: Twenty-eight participants learned how to make fans, picture frames, shorts, patchwork, and other items. The participants sold some of their items to staff members. The family members reported to the Mental Health staff that they were glad that his/her son or daughter learned how to cook and prepare meal for their family. Mental Health staff reported that their clients are very helpful during functions at their office. The Mental Health Clients can make crafts and sell to the public to earn money. The Mental Health Clients can bake cookies and muffins for fund raising.

Key Theme: Farm Safety

Activity: Two Progressive Agriculture Safety Days were conducted in American Samoa in FY 2006. The first one was held on Tutuila on the main island in American Samoa while the second one was held in Olosega Elementary School in the Manu’a Islands. Children with ages between 8 – 13 were targeted in a farm safety educational program. Topics covered included animal safety/Leptospirosis, farm equipment safety, fire safety, pesticide safety, food safety, indoor air quality, CPR/first aid and conserving our coral reefs. These sessions were conducted by a coalition of educators from the Coral Reef Advisory Group of the American Samoa Department of Commerce, the public awareness program of ASEPA, the American Samoa Department of Marine and Wildlife Resources, Le Tausagi, a local environmental group, the American Samoa Department of Public Health, the American Samoa Department of Agriculture, the American Samoa Department of Public Safety – Fire Station and ASCC-CNR.

Impacts: One hundred and eighty-six (186) students were the recipients of the farm safety educational programs. Participants became more aware of the hazards of farm life.

VII. STAKEHOLDER INPUT PROCESS

The following is a summary of the stakeholder inputs:

A. Agriculture Extension Section (AES)

Participants’ inputs were vital to the success of the 2006 plan of work. However, more constructive comments, suggestions, and recommendations continued to accumulate to help design and develop the 2007-2011 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. In 2006, the AES staff collected stakeholder inputs using focus group sessions.

The AES staff collected stakeholder inputs from 129 clients during the following focus group sessions:

Combined Stakeholder Inputs

**from Manu'a
(n = 129)
July/August 2006**

Participating villages and groups

Faleasao combined youth and adult session (FaC) n= 20
 Fitiuta combined youth and adult session (FiC) n= 24
 Luma/Siufaga combined youth and adult session (LSC) n = 29
 Ofu & Sili combined adult session (OSC) n= 21
 Olosega youth session (OY) n= 20
 Olosega adult session (OA) (n=15)

Agriculture Concerns

Vegetable (69)

Need to start Vegetable Garden program	37 FiC
Need vegetable seeds/seedlings	25 OY, 13 FiC, 4 OA
Need vegetable seeds/seedlings for vegetable gardens	3 FiC
Need vegetable seeds	4 OA

Training (17)

Need to conduct Pesticide Safety Course	9 FiC + 4 LSC
Need workshops on plant propagation e.g. Grafting; Air-layering etc.	1 OA
Need vegetable seeds/seedlings (workshops on planting)	3 OSC
Need workshops on proper animal management (Pigs)	9 OA

Administrative Support (59)

Need a community garden plot for learning/buying from	7 OA
Re-establish an office with a piece of land for agriculture demonstration.	20 OSC
Need to conduct more visitation (CNR staff to visit Manu'a)	1 FiC
Need to offer all Extension Programs (F4HN, Forestry, Agriculture)	18 FaC
Need to hire more Extension staff in Manu'a	13 FaC
Need Green/Screen-house for ornamental plants	7 OA
Need Farm-tools	9 OA

Marketing (74)

Need to provide/improve surface and air transportation for produce	2 FaC
Need to establish markets for Manu'a produce	59 LSC
Need to assist with marketing Manu'a produce	4 FaC
Need to establish markets in Manu'a for produce	9 FiC

Animal concerns (32)

Need to be provided with improved-bred piggery stock	7 OA
Need community poultry project (layers)	8 OA
Need Tilapia farming	4 OA
Need to control wild pigs (boars)/hunting program	8 FaC +4LSC
Need to hire Veterinarian for Manu'a	5 FaC

Pest control (41)

Need to control (kill) the Japanese-grass (mutia-palagi)	3 OA
Need assistance to control Taro armyworm/Breadfruit Seychelles scale	3 OA
Need a control for Fruit piecing moth	1 OA
Need to enforce quarantine regulations for Manu'a travel	17 LSC
Need pest control for Seychelles Scale insects & leptospirosis	13 LSC
Pest & Diseases control	4 LSC

Forestry concerns (57)

Need Trees to plant for beautification purposes	5 OY
Need to plant windbreak trees along the shoreline	18 OY
Need coastal area trees	6 OA
Need to hold tree planting competitions	8 FaC
Need more Forestry projects (coastal stabilization, etc)	6 LSC
Need to limit the introduction of Non – Samoan tree species	3 LSC
Need Green/Screen-house for ornamental plants	7 OA
Need to offer landscaping services	4 LSC

Family & nutrition workshops

Sewing Workshops – longer ones (32)	
Cooking Workshops (35)	
Elei Workshops (29)	
Land Grant to provide Sewing workshops	4 OY
Need more Sewing workshops (more time)	14 OA
Need Elei workshop	13 OA
Need Cooking/safety workshops	9 OY
Need Elei (Tapa) workshops	16 OY
Need Sewing workshop (enough time)	2 OA
Need to offer sewing program to homemakers and youth	12 FaC
Need to develop traditional handicrafts business	12 LSC
Need to bring to Luanuu programs to reduce High-blood pressure and Diabetes/ Balanced diet and exercise	6 OA
Need to develop healthy recipes using local produce	20 FiC
Need to offer nutrition, food safety, parenting, and cooking programs	15 FaC
Need vegetables for diet	10 OSC

Youth Concerns

Need Summer Programs for the Luanuu Youth (to include)	35 OY
Fishing	
Swimming	
Sewing	
Tree planting	
Vegetable gardening	
Cooking	

Camping/Hiking
 Sports
 Agriculture
 Art
 Safety

Need Swimming/safety workshops	5 OY
Need Fishing/safety workshops	4 OY
Need Art workshops	3 OY
Need Public-speaking workshops	16 OY
Need Socializing/Inter-personal relationship workshop	13 OY
Need trainings for Ofu youth on all Land Grant issues	3 OSC
Need to establish 4-H Program	65 FiC
Summer Youth (Internship, Summer JTPA and CNR Summer Institute Program)	27 FiC
Need to establish 4-H Program	28 FaC
Need to establish carpentry curriculum at Manu'a high school	6 FiC
Need to establish agriculture curriculum at Manu'a high school	6 FiC
Need to offer CNR Summer Institute program in Manu'a	4 FiC
Need to establish 4-H Youth Program	40 LSC
Need to offer agriculture curriculum in Manu'a High School	3 FaC
Need to offer agriculture curriculum at Manu'a High School	10 LSC
Need to offer CNR Summer Institute program in Manu'a	6 LSC
Need Sewing machines	5 OY

Miscellaneous

Need Fishing-lines	4 OY
Need ways to drain excess water from the Taufusi after heavy rains	13 OA
Need to control a different variety of seaweed in the sea	2 OA
Need Olosega to be represented at every workshop conducted by Land Grant in Tutuila	3 OA
Need to establish more job opportunities	12 LSC

B. Forestry Extension Services (FES)

In 2006, the Forestry Extension Section (FES) personnel continued to solicit stakeholders' inputs from 1,200 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) community out-reach, summer camps, greenhouse tours, Parent-Teacher-Association meetings, school visits, science fairs, field days, greenhouse projects, student internship, and individual consultations. Of the 1,200 stakeholders, 90% are Samoan and 10% 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 committed interest and accessibility. The survey outcomes indicated the following priorities for FES to address:

Stakeholder Inputs:

Maiava Hunkin of Futiga commented highly of our CNR TV Program

Reverend Emau Petaia expressed his compliment for the work that the forestry crew conducted in pruning fruit trees and ornamental shrubs at his resident in Fogagogo

Many people have voiced their appreciation of trees, especially (Pride of Samoa and Flame Trees) at the Lyons Park for the shade and beauty of the park which invites the people and tourists to use for outing picnics and special camp activities

The Department of Marine and Wildlife Resources commended our partnership project for the protection of the Hawksbill Turtle in Tula

The UCF/FSP clients who visited the greenhouse said words of encouragement and excellent commendation for our services in the greenhouse plus the TV Program

Many positive comments from the public regarding useful information in agriculture/forestry, and natural resources been released through CNR TV Program

Fagaoali'i Sunia continued to compliment our service at her property and encourage our service to continue with good work

The Small Business Women of American Samoa have complemented the forestry service in providing technical assistance and the supply of planting materials for their community research project in Vaitogi. Tilani who is the administrator insisted of providing financial help for project establishment

The manager of the Reef Restaurant had aired excellent remarks over the radio concerning the Forestry Service to the public

The DOC staff and Eric Gilman of Hawaii are our partners presently trying to obtain means of preserving Ottoville land (25 acres) for the Legacy Program of American Samoa

The KVZKTV staff and management always bring good commendation about our TV Program after recording of bi-weekly programs at the studio

Received many positive comments from the public regarding useful information in agriculture/forestry and natural resources been released through CNR TV Programs

Fagaoali'i Sunia is our current TSI Project client and she complimented our service all the times the forestry crewman visited her land for project inspection and follow-up visits

The Small Business Women of American Samoa had complemented the forestry service for providing technical assistance and the supply of planting materials for their community research project in Vaitogi

Tiapula Imo Mamea of Lau'i and Lauti Simona from Vatia have encouraged and commented highly of the Forestry TV Programs to educate the public concerning the conservation and Preservation of the Rainforest at Ottoville

Some of the Forestry Clients are very appreciative of our services in demonstrating and advising on pruning trees on their land

There is a great desire from the public to protect and preserve the Lowland Rainforest in the hands of the Haleck Family

Netini Sene and Paulo Salave'a of DOE have expressed their gratitude on the availability of information, brochures, posters, and tree plantings on school campuses especially the Ifilele tree that is used by their group as a name and logo for their special program

ECE Center had requested the Forestry Program to provide planting materials and technical knowledge in landscaping 18 ECE centers on the Island. The ECE learned of our service through the TV Programs and current beautification projects in schools

Alaysia Semo and Matalasi Afalava parents of students in our Forestry Work study program have indicated appreciation for work done by Forestry to their children and plants given for them

Fleix Consales and Rhonda Annesly appreciated the Medicinal Posters (Samoan and English) for use in teaching their children about plants of Samoa and their uses

Sesula MacMoore of Nuuli thanked the Forestry workers for visiting, identifying plants for her. She knew of this from TV Program

Mike Tipoti and Tuinei Fuata expressed appreciation on the outreach program at Amouli by Le Tausagi where Tony Maugalei and Logona Misa conducted a tree planting presentation

Six teachers attending the Communities for Conservation Workshop DMWR requesting information and plants for cultural uses to assist their teaching. This appreciation gratitude was made to Pito Malele, Eric Pese and John Ah Sue of the Forestry Program

Twelve mayors (12 Pulenu'us) and 4 Legislators commented highly on our TV Program regarding propagating of Native Trees: such as *Ililele, Malili Tava, Tamanu, Lagaali, and Auauli*

Tiapula Imo and Nikolao Mageo were included in our TV forum and they vouched to continually be active participants of the forestry program now and the future and finally thanked the Forestry Program for the good work

ASWBC Program Manager (Mrs. Tilani Aumavae) requested Native plants, of medicinal values and cultural uses to plant at their agro-forestry project in Vaitogi and she thanked the Forestry crew for the result of our assistance for the development and advice on their project

Taylor Mariner- expressed appreciation of vertiver slips that he got from the forestry nursery for the of soil erosion on his steep land at Fagaitua

Rev, Neru Nuuvalei (SDA – Satala) expressed appreciation of Virginia Mantra Outreach where Tony Maura Lei and Logon Mesa conducted power point presentation on forestry project assistance. Neru Nuuvalei requested trees to plant on his lands, and the program supplied all the trees requested

The following outcomes of forestry surveys and need assessments indicated priorities for forestry extension services:

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, rare, 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 agro-forestry 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, agro forestry, 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 2005, 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, and schools, in developing coastal stabilization projects. The FES continued to develop and maintain medicinal garden plots 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 for capacity building.

The FES program continued to address issues indicated in the stakeholders' inputs in partnership with the inter-agency 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 Programs (F4H&NP)

The F4HN Section staff collected stakeholders' inputs from 1,789 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 1,789 clients who participated in the stakeholder input sessions, 900 are adults and 889 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

- Games

- Nutrition

- Obesity

- Food Safety

- Entrepreneurship

- Job Readiness

- Samoan culture and language (oratory) preservation

- Samoan cultural and indigenous arts

 - o 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 2006, 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
- 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

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.