American Samoa Community College (ASCC)

Division of

Agriculture, Human and Natural Resources (AHNR)

Accomplishment Report FY00

GOAL 1:

To achieve an agricultural production system that is highly competitive in the global economy. Through research and education, empower the agricultural system with knowledge that will improve competitiveness in domestic production, processing and marketing.

Performance Goals:

To research why farmers are not fully exploiting local markets. To increase farmers' awareness of local markets by increasing publications, demonstrations and workshops conducted by CES by 20% per annum.

Accomplishments:

Programs and projects primarily focused on village workshops, demonstrations, farm visitations and development of non-scientific publications with emphasis on marketing. The cultural sensitivity was highly considered to ensure integrity of the programs in the community. Strong partnership with other government and federal agencies (NRCS, EPA, National Parks, Coastal Zone, Department of Agriculture, Public Health, Department of Education, Samoan Affairs, Department of Commerce) have been observably encouraging as a sign of mutual agreement not only to promote agriculture but to include other related areas as well. Non-government organizations (Church of Jesus Christ of Latter Day Saints, Catholic and Methodist youth groups, private schools, Seven Day Adventist group, Farmers' Cooperative etc) have shown a much greater support in accepting and promoting programs in the community. This integrated approach has been very instrumental in the success of meeting goal one.

Extension has had programming in the following areas:

- Vegetable Production
- Pesticide Applicator Training
- Traditional Crop Production
- Pig Production/management
- Composting & Waste Management
- NxLevel Home Based Business/Entrepreneurship

Research projects have been conducted in the following areas:

- Integrated Pest Management
- Banana Bunchy-Top
- Taro Leaf Blight
- Breadfruit Mealybug
- Soil Invertebrates

Key: Short-term (ST), Intermediate-term (IT), Long-term (LT), Research/Extension (RE),

Multistate (Ms), Multi-institutional (Mi), Multidisciplinary (Md)

Results:

Outputs/outcomes

1. Number of farmers completing all non-formal education programs and presentations and adopting new practice or technology (IT, RE)

	Non-formal Ed		Adopting new practice	
Baseline	Target	Actual	Target	Actual
2000	120	355	30	46
2001	150		45	
2002	180		60	
2003	190		72	
2004	250		90	

2. Number of materials, including newspaper articles, fact sheets/brochures and television programs produced on topics related to improving productivity and global competitiveness (LT, RE, Md)

Baseline	Target	Actual
2000	20	28
2001	24	
2002	29	
2003	35	
2004	42	

3. Total number of farmers loaned tools/equipment from local businesses, Department of Agriculture and ASCC Land Grant (IT, Mi)

Baseline	Target	Actual
2000	12	23
2001	14	
2002	17	
2003	20	
2004	24	

4. Number of farmers buying vegetable cultivars, fertilizers and pesticides from local businesses, Department of Agriculture and ASCC Land Grant (IT, Mi)

Baseline	Target	Actual
2000	25	120
2001	30	
2002	36	

2003	43
2004	52

5. Number of farmers interviewed regarding their attitude towards marketing and their marketing practices (ST)

Baseline	Target	Actual
2000	40	53
2001	48	
2002	58	
2003	69	
2004	83	

6. Number of organizations/groups given assistance in developing gardens (ST, RE, Md)

Baseline	Target	Actual
2000	2	5
2001	3	
2002	4	
2003	5	
2004	7	

7. Number of farmers receiving financial assistance to develop existing enterprise and increase production (LT, RE, Md)

Baseline	Target	Actual
2000	3	3
2001	5	
2002	7	
2003	8	
2004	10	

8. Marketing (LT, RE, Md, Mi)

The number of roadside market stands has increased tremendously this year as a result of increased production of both banana and taro, in addition to two breadfruit seasons a year. The details and results of traditional crop production are included in the next issue of Agriculture census 2000 which is expected to be released early next year. The instrument to conduct a periodic marketing survey is being developed for future use. However, 53 people participated in two focused group discussions responded to this one question:

a. Why aren't farmers fully exploiting local markets?

40% felt that the American Samoa Government has not been fully supporting the marketing of their produce (the example given is the school lunch program where priority was given to Western Samoan produce). Therefore, it is better to give their produce away to relatives and friends.

30% responded that local produce does not sell well because the Department of Agriculture has been authorizing the sale of produce from Western Samoa, Tonga and Niue in the territory. This produce usually sells at a lower price and that creates unfair competition for the local farmers. It is better to give our produce to the pigs or give to family members.

20% refused to sell because they wanted higher price for fresh local produce and local businesses (supermarkets, restaurants etc) wanted to buy local produce at lower prices and resell at a much higher price which is unfair to local producers. The usual comments were better to give produce away or compost the produce in the backyard.

10% said the Farmers' Market down town is too far away from their farms and transportation is another problem. Additional comments: not all farmers have vehicles…it is not worth taking your produce because the transportation cost might exceed produce sales if you pay another person's truck.

b. Approximately 31 roadside market stands have been observed lately, and 22 are produce stands from local farmers. These stands sell bananas, taro, giant taro, fruits and vegetables. The last comments from local farmers why they prefer roadside stands are:
1. Convenience, 2. You own the stand, 3. You choose your own price, 4. Less competition, 5. You can work close to the stand, sell your produce & watch the children and 6. You can close down at any time.

Impact Statements

A. Vegetable Gardening:

American Samoa is in a unique and unfortunate position of having a population suffering from malnourishment not from lack of food, but from overabundance of high-fat, low-nutrient processed foods. A recent study by Brown nutritionists declared the American Samoan population the most overweight in the world, and the rate of diabetes is estimated at 33% of the adult population. Lifestyle diseases are prevalent, and children are frequently seen suffering from boils, a result of vitamin deficiencies. In order to address this dire situation, school vegetable gardens are being promoted. By managing their own gardens from a young age, students will have better access to fresh vegetables, and therefore a nutritious meal. This year, 8 new school gardens were established and 37 previously started gardens continue to produce. In eight schools, the students used their harvest to make vegetable soups. The teachers commented that students who previously claimed to dislike vegetables were asking for seconds, and now know that proper preparation can make vegetables a tasty part of their diet.

In response to the adult population, the AHNR in collaboration with the American Samoa Public Health Diabetic Division and its counterpart, the Center for Disease Control in Atlanta have been engaged in village campaigns to promote vegetable gardens among diabetic clients and interested people. The good news was that six different diabetic groups have been recruited and started a garden each with more than 40 members. There were 74 small-scale vegetable gardens, which included 36 new ones this year. "Who else can provide this service?…your seeds are the best

seeds on island…get some more seeds" said three farmers that supply vegetables to school lunch program. In an effort to enhance the production of family gardens in the territory, the Church of Jesus Christ of Latter Day Saints Community Service/Welfare Program has recently donated over thousand assorted vegetable seeds to AHNR. AHNR in partnership with the American Samoa Public Health and Center for Disease Control, American Samoa Department of Education and non-government organizations (LDS) have collaboratively shared resources and funding in this intermediate to long term program.

B. Piggery Waste Management

The American Samoa Power Authority (ASPA) has recently issued a warning that the island of Tutuila has only 40 years left of potable water at the current rate of population growth and water consumption. The island has few freshwater year-round streams, and those that exist in populated areas are clogged with trash and not fit for consumption. Primary contributors to the water problem are the many small piggeries around the island. Few pig owners have a waste management system in place, and most owners simply hose their waste onto their bananas, and sometimes even into streambeds.

AHNR is partnering with NRCS, EPA and Department of Commerce to develop an action plan to educate local pig farmers about the importance of waste management. The emphasis will be on the construction of piggeries that have septic systems and/or composting bins. A second goal of the plan of action is to educate school children about the benefits of composting by setting up small scale composting projects in public school classrooms around the island. This plan of action is in the process of being developed. A second achievement is the application of the three local farmers for the FY 2001 SARE grant for monies to construct such a piggery. Through the SARE program, these farmers will be required to use their piggeries as a demonstration site for others, and it is planned that CES agents will document the progress of these piggeries through brochures, TV news spots and tours in order to spread the information to the public.

In September, as part of the Department of Commerce Coastal Zone Management "Coast Week" educational program, CES agents and EPA staff conducted a piggery tour. Approximately 15 people attended the tour, which visited the AHNR piggery, where a composting facility is in the process of being built a dry composting piggery, and a wet composting piggery.

C. Small Business Development

Small businesses have foundered in American Samoa, with the tuna canneries and the government remaining the two primary employers in the territory. Part of the reason for the failure of local businesses is the lack of training on the part of the business owners, leading to poor financial management. A couple of frustrated farmers have had their Development Bank of American Samoa loans turned down due to lack of a business plan.

In August of this year, three AHNR staff attended the NxLevel "Home Business Development" and "Agribusiness" Instructors' training. The purpose of their attendance was to

train and certify them to as trainers in this entrepreneurship program, so that they may better assist the community, and especially local farmers, in developing solid business plans. The staff will begin offering the enterpreneurship program next fiscal year.

D. Traditional Crops

Poor management in addition to pests and diseases are the main contributing factors to poor quality of crop yields such as banana and taro. These local crops have a difficult time competing with imported Western Samoan produce and US bananas. For the same reason, these traditional staple foods would consequently sell at a lower price in order to be on the market. When the local farmers were complaining that the American Samoa Government was not giving them a fair chance to compete with outside suppliers for the school lunch program, the issue subsequently became a big challenge for AHNR. The question was what could we do?

In response to farmers' call for help, AHNR in conjunction with the American Samoa Department of Agriculture immediately conducted survey to determine the potential of production of banana in the territory. The assessment concluded that 12 farmers could produce more than 60,000 pounds of banana per week. AHNR realized that quality was the next movement to beat the competition. Extension agents then conducted 5 banana and 3 taro production/management workshops in which quality was strongly emphasized. The good news was that, the 15,000 pounds contracted to Western Samoan producers on a weekly basis at $1.50/lb was then supplied by American Samoan farmers, even though a monthly purchase quota was drastically dropped down to 10,000 pounds at a selling price of $0.85/lb. Despite this reduction, the local farmers are now enjoying and monopolizing this steady market in the territory.

E. Non-Formal Education and Presentations

It is not easy to convert local farmers from continuing to practice conventional methods of farming that contribute to soil erosion, plant pests and diseases, low production and mineral depletion. This year 2000, Extension has been engaged in 17 farmer workshops. However, understanding the culture and language of this U.S territory in the South Pacific is the main key to the success of farmer workshops and training, no matter how smart you are. Regardless of limited manpower, this year has gone beyond the targeted number of 120. Approximately 355 farmers were engaged in non-formal education which included topics such as vegetable gardening, banana production and banana bunchy top disease, taro army worm, pesticides, cucumber cost of production, composting, swine breeding, swine waste management and how to write SARE grants. This is a major accomplishment in the history of extension education in the territory. Of 355, approximately 46 farmers have integrated new practices into their farming system as compared with the targeted 30 for this year. These practices vary from sustainable production methods to improving pest control and produce quality.

F. Information Dissemination: (Printed materials, including newspaper articles, fact sheets/pamphlets, and television programs, farm visitation).

1. How many farmers read the local newspaper? Properly only a few. This type of question is very sensitive when asked in farmers' gatherings because it reflects their educational level. However, there are ways to find out the best approach to deal with illiterate clients. About 90% of the 65 clients surveyed prefer television and radio news programs while 10% still favor written materials in addition to the first media outlets. This survey was conducted with a group of clients with ages ranging between 19 and 68.

2. Throughout the year, 16 television news spots and 12 printed materials have been developed and modified as a joint Research-Extension effort to help the local community increase awareness on improved farming practices. The magnitude of the media outlets has enabled AHNR to reach more people to develop necessary skills in order to achieve a highly competitive agricultural system. Through active television programs and easy to read printed materials, 960 farmers' phoned in and 432 visited the extension office. Approximately 403 school children participated in field trips being taken care of by Agriculture Extension. One Tilapia Fish Farm video has been developed and completed through financial assistance from SARE. This video program is now played 4 to5 times a month on the territorial version of PBS, and as a result, five new similar fish farms have emerged. The good news about these projects is that extension agents are also technical advisors for these new developments.

3. Low or no educational background has often been blamed for low production and poor methods of farming. However, this statement is absolutely not true for American Samoan farmers. What the farmers really need is guidance and training on the spot. This idea has proven to elevate the standard of living for farmers that lack modern education, according to four business/farmers in the territory. There are more interactions in the field, more problem solving and less time spent away from the farm if the agent have a chance to visit local farmers at their homes. However, more farmers still want to see new things in the research station. No matter where the agents serve the farmers, the most important fulfillment of our mission is customer satisfaction. AHNR has never negative press in the local media or negative feedback from farmers for bad service and that is good news. Farm visitation is still one of the best old approaches to outreach programs in American Samoa that still exists. This year, approximately 181 farms (small to medium size) have been visited by extension agents.

G. Farmers equipment/tools loaned from local businesses, Department of Agriculture and ASCC AHNR.

Because of slopes, large equipment such as tractors is not recommended. In fact, because of the terrain and high rainfall, no tillage agriculture has been practiced in American Samoa in the last century. There are no local businesses that loan tools to farmers. However, the AHNR has helped enhance vegetable production in the territory by lending tools to 6 Diabetic Groups Vegetable Gardening Projects with over 40 members. The local Department of Agriculture has a tool/equipment rental program serving approximately 17 farmers. Theses program really helped farmers who could not afford expensive equipment/tools.

H. Pesticide Applicator Training (PAT)

1. An uncountable number of people who are engaged in agriculture in American Samoa are either unsupervised or not certified to handle and use pesticides. This mismanagement has led to misuse and abuse which is considered "very dangerous" to American Samoa's limited resources. Because of AHNR's commitment to saving the environment and citizens, a quarterly schedule of pesticide training has been developed for the whole year. Eighty-five participants attended PAT and were certified in the year 2000. About 75% of the attendants were new certified applicators. As a result of active networking with local EPA, American Samoa Department of Agriculture, the Pesticide Applicator Training has been able to recruit a large portion of illegal users of pesticides into undergoing training for the first time.

2. The American Samoa Pesticide Training popularity last year (1999) drew the attention of the Church of Jesus Christ of Latter Day Saints at Sauniatu Agriculture Center in the Independent State of Western Samoa. The training was set up for four consecutive days in which 22 trainee students, 3 farm managers and 7 farm workers attended. This was a result of a joint effort of the American Samoa Community College Land Grant and the Mormon Agriculture Center in Western Samoa. The Mormon Church of Western Samoa financed this project. The college president still consults AHNR staff for technical assistance.

3. The lack of knowledge on the sales agents' part contributes to a lot of complaints from farmers who buy pesticides from two local suppliers. The American Samoa EPA steps in and solves this problem by encouraging sales employees to attend pesticide safety and certification training. Our Pesticide Applicator Training continues to be a success in the year 2000. Of 85 total participants, 11 were tuna cannery employees who use pesticides indoors and around warehouses, 11 employees of the Department of Agriculture and 7 employees of American Industries Inc., (ACE Hardware) who handle fertilizer and pesticide sales. "I'm glad more pesticide sales people are now in this training because I got frustrated when I asked for something to control my *lausului* (banana black leaf streak)" said one commercial banana farmer.

4. The Pesticide Applicator Training did not stop with the certification program but continues to expand its horizons to other avenues. Through EFNEP and the Food Safety Program, 36 clients attended "Pesticides/Household Products in Foods" presentation for the first time. AHNR anticipates more training of this type in the future.

5. The Star Kist Samoa (tuna cannery) Occupational Safety and Health Fair attracted 75 participants who registered and viewed ASCC Land Grant Pesticide Safety display booth on site for the first time. "Oh No!….This protective gear is expensive but it can save you for the next hundred years" said one Shift Supervisor. AHNR will continue to network with the two local tuna canneries in the territory.

6. Farmers' Field Day

The American Samoan farmers still remember Farm Fairs of the 1980's as an event to look forward to. Preparing to receive big awards during prize giving ceremonies was a yearlong dream for every producer. However, this undertaking was an excellent idea but it subsequently becomes an expensive operation. ASCC AHNR hosts farmers' Field Day once a year. The same event was scaled down and held this year 2000 to coincide with the National Agriculture Day in March. Though most schools as well as farmers had a preconception of this special event as a big agriculture fair where animals and produce are displayed. However, this was not the case this year as we treated this effort as an educational opportunity to challenge everyone. It has been a successful undertaking where 41 farmers and 159 students attended and witnessed a remarkable display booth prepared by Agriculture Extension Division.

ASCC Courses Offered

AGR 100 Practical Job Experience

GOAL 2:

EXTENSION

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.

Goal 3:

Performance Goal:

To increase the production and consumption of locally grown nutrient dense fruits and vegetables through demonstrating, offering workshops, assisting with gardening, developing and promoting recipes; touring AHNR plots and gardens; providing seeds, seedlings, tools, and fertilizers to church groups, farmers, food stamp and ES-WIC clients, schools and other youth groups.

Program Accomplishments:

An integrated approach to fruit and vegetable production incorporating locally grown produce in the diet is being used to help accomplish this goal. During the first year of the Plan of Work, programs have been presented in many villages, schools and appropriate government offices. Food demonstrations used recipes with locally grown produce. Using this local produce as part of the food stamp allocation is being promoted by demonstrating recipes using fruits and vegetables and distributing "Five A Day" materials to food stamp recipients. In-school programs emphasized the production and the consumption of local fruits and vegetables.

Extension programs have been offered in the following areas:

1. Vegetable and Fruit Production
2. Proper Selection, Handling, Storage, and Preparation of Nutritious Fruits and Vegetables
3. Food Safety
4. Pest and Weed Control
5. Fruit Tree Propagation

There is ongoing research into the following areas:

1. Identification of Vegetables best suited to production in American Samoa
2. Pest control for Vegetables and Fruit Trees
3. Control of Vegetable and Fruit Tree Diseases

Output/Outcomes:

- Number of persons completing vegetable gardening programs. (ST) (Md) (Mi)

5 High Schools	89 students
13 Elementary Schools	274 students
22 Early Childhood Education	401 children
Teachers	132 adults
Farmers	74 gardens
Total	970 persons*

- Number of persons increasing their knowledge of vegetable gardening. (LT) (Md) (Mi)

4 Elementary Schools	102 children
2 High Schools	29 students
Teachers	7 adults
Farmers	25 adults
Total	163 persons

*These are in addition to the 970 who finished programs.

- Number of new vegetable gardens. (ST) (Md) (Mi)

Early Childhood Schools	3 gardens
Elementary Schools	3 gardens
High Schools	1 garden
Farmers	36 gardens
Total	43 new gardens

- Number of persons completing fruit production programs. (ST) (Md) (Mi)

Youth in school	266 children
Teachers	46 adults
Farmers	20 adults
Total	332 persons

- Number of new fruit trees planted. (LT) (Md) (Mi)

  There were 556 seedlings given out and it is estimated that most of them were planted. We will be surveying to see how many of them are still growing.

- Number of persons increasing their knowledge of fruit production. (LT) (Md)

  It is estimated that all of the 332 persons completing the fruit production programs increased their knowledge of fruit production.

- Number of persons completing fruit and vegetable related food, nutrition, and food safety education programs. (ST) (Mi)

  There were 264 graduates from the EFNEP program and 350 ES-WIC clients. These all completed information and demonstration lessons related to the "Five a Day" project.

  Total completing ---------- 614 persons

- Number of persons increasing their knowledge of the importance of fruit and vegetable consumption, how to select and prepare, and how to safely handle and store it. (ST)

  Counting all the EFNEP and ES-WIC and 4-H there were 798 persons

- Number of servings of fruits and vegetables consumed. (LT)

  According to food recalls and responses to verbal questions, of all the people participating in fruit and vegetable presentations (798) 62% of them eat one or more fruits each day and 72% eat two or more vegetables each day.

- The number and types of fact sheets completed and distributed. (LT) (RE) (Md)
  - A few fact sheets were distributed with seeds and seedlings; some "Five a Day" materials given to students, teachers, and clients; and some food safety fact sheets and hand washing posters distributed. However, more are being developed and translated for future use.

- Types of fruits and vegetables recommended for production as well as recommendations for pest, disease and weed management. (IT) (RE) (Md) (Ms)
  - Fruit seedlings given for Avocado, *Sea Sea*, Mountain Apple, Pineapple, Pacific Lychee, Papaya, Beach Almond, Quava, Cacao, and Natal Plum.
  - Vegetable seeds and starts given for Bakchoy Cabbage, Cucumbers, String Beans, Corn, White Radish, Green Onions, Leaf Lettuce, Taro (leaf), Green Peppers, Tomatoes, Swamp Cabbage, Sweet Potato, Pumpkins, Eggplant, Chili Peppers, Watercress, Chives, and Kolarobie.

Vegetable Garden Success

Many of the vegetable gardens are on the school grounds and cared for by the students. Produce was not only distributed to the students' families, it was also used to make a wonderful vegetable soup for the student body and visitors. Some schools sold their produce as a fundraiser for project materials. Three of the garden projects are CYFAR project sites and were considered small-scale agriculture.

Farmer Success

One of the farmers has taken to heart all the information he has learned about fruits and vegetables. He farms 15 acres, which is a large operation on this island. He established a Farmers Market not far from the AHNR compound. A few other farmers sell their produce at his market. It is one of the most popular stands in American Samoa.

ES-WIC Nutrition Success

Most of the participants in this program are of Polynesian ancestry and include pregnant mothers, breastfeeding mothers, single pregnant teenagers, and mothers with young infants and children ages' birth to 5 years. The participants were able to acquire knowledge and skills needed to establish nutritionally sound diets and more healthy lifestyles.

Agents noticed that mothers with fewer economic resources are more likely to breastfeed their children for a longer period of time. They feel breastfeeding is more affordable and a beneficial choice for happy and healthy infants.

Approximately 75% of 350 participants reported and demonstrated increased knowledge or skills related to diet and lifestyles in the following areas:

- 66% - knowledge of prenatal, lactating, infant or pre-school diet
- 60% - knowledge of parenting practices, such as prolonged breastfeeding contributing to a healthy child

- 60% - ability to plan nutritionally balanced meals/menus for children/family to avoid malnutrition/obesity including vegetables and fruits
- 96% - ability to understand food labels, select, buy and or prepare appropriate foods to meet nutritional needs of family and themselves (very successful part of program).
- 60% -able to improve sanitary practices such as sterilizing utensils and boiling water towards formula/food preparation for children and family
- 65% - ability to manage a food budget for the family

Food Safety Impact

The food safety agent presented food safety information to children in four schools. The two hundred participating children were then divided into 3 groups to help develop activity lessons on food safety. The first group developed food safety puzzles, the second group created power phrases, and coloring books were designed by group three. Not only were children and teachers involved in these activities, but also parents wanted to give ideas for the coloring book. Power phases were collected and the best ones were used to emphasize food safety concepts. The best of the designed puzzles were incorporated into food safety lessons. At the end of two months of workshops and activities, a verbal assessment was given to the children in all four schools. There were 186 children who scored at or above 80% on general food safety information and all 200 did perfectly on the fill in the picture with the correct pieces. Every group recited the winning power phrase, " Cover our food--eat it quick. Sit to long--make us sick!"

ASCC Courses Offered

NUT 150 Nutrition

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.

Part 1: Impact Statements

A. To develop, transfer, and promote the adoption of efficient and sustainable agricultural, forestry, and other resource conservation policies, programs, technologies, and practices that ensure ecosystems achieve a sustainable balance of agricultural activities and biodiversity. (Hatch, McIntyre-Stennis, SARE, IPM, Water Quality Grants, PIAP).

1. Each research scientist will publish at least two referred or technical report articles a year to inform peers of research results relating to conserving, maintaining, or protecting ecosystem integrity or biodiversity.
2. Each research scientist will produce at least two non-technical publications,workshops, or broadcasts conveying research findings to subsistence, commercial growers, CES agents, and other agricultural professionals.
3. Each research scientist will offer at least one higher education course per year to students at the American Samoa Community College, which addresses the objectives of impact statement A, in order to develop future scientists, professionals, and leaders in environmental sciences.

4. To develop, transfer, and promote adoption of efficient and sustainable agricultural, forestry, and other resource conservation policies, programs, technologies, and practices that protect, sustain, and enhance water, soil, and air resources. (Hatch, McIntyre-Stennis, SARE, IPM, Water Quality Grants, PIAP).

1. Each research scientist in an appropriate discipline will publish at least two referred or technical report articles a year to inform peers of research results relating to conserving, maintaining, or protecting water, soil, or air resources. These articles will be in lieu of articles related to impact statement A.
2. Each research scientist in an appropriate discipline will produce at least two non-technical publications, workshops, or broadcasts conveying research findings to subsistence, commercial growers, CES agents, and other agricultural professionals. These non-technical publications and broadcasts will be in lieu of publications and broadcasts related to impact statement A.
3. Each research scientist in an appropriate discipline will offer at least one higher education course per year to students at the American Samoa Community College, which addresses the objectives of impact statement B, in order to develop future scientists, professionals, and leaders in environmental sciences.

Part 2: Results

A. Outputs/outcomes which ensure that ecosystems achieve a sustainable balance of agricultural activities and biodiversity[1].

1. Referred and technical report articles.
    a Brooks, F. E. 1999. Incidence and distribution of banana bunchy
    b top virus in American Samoa. J. of South Pacific Agric. 6(1):25-28. [ST]
    c Brooks, F. E. 2000. List of plant diseases in American Samoa: 2000. Land Grant Tech. Report No. 31. American Samoa Community College, Pago Pago, AS. [IT]
    d Hirata, L. 2000. Comparative cost of teepee-trellised vs. non-trellised cucumber production in American Samoa. Land Grant Tech. Report No. 32. American Samoa Community College, Pago Pago, AS. [IT]
    e Whistler, A. 1999. Guide to the most commonly used medicinal plants of Samoa. American Samoa Community College, Pago Pago, AS. [ST]

2. Non-technical publications, workshops, or broadcasts.
    a Brooks, F. E. 1999. Plant pests and diseases of American Samoa.
    b U. S. National Park Service, National Park of American Samoa. [ST]. Taro leaf blight. Pests and diseases of American Brooks, F. E., R. Liu, S. Sua, and M. Utufiti. 2000. Pesticides vs. traditional treatments for banana scab moth control in American Samoa. American Samoa Community College, Pago Pago, AS. [IT]
    c Brooks, F. E. 2000. Banana bunchy top virus. Pests and diseases of American Samoa No. 1. American Samoa Community College, Pago Pago, AS. [ST]
    d Brooks, F. E. 2000Samoa No. 2. American Samoa Community College, Pago Pago, AS. [ST]
    e Brooks, F. E. 2000. Plant diseases. *In* State of the Environment 2000. M. Kirschman (ed.) American Samoa Environmental Protection Agency, Pago Pago, AS. [ST]
    f Hirata, L. 2000. Yield studies of cucumbers. Samoa News article, March. [IT]
    g Hirata, L. 2000. Cost of production of cucumbers. Workshop. [IT]

[1] Key: Short-term [ST], Intermediate-term [IT], or Long-term [LT] critical issues. There were no multistate, multi-institutional, multidiscipinary, or integrated activities this year.

h Vargo, D. 2000. Kava production and protection workshop conducted by J. Konanui, March 15. [ST]

i Currie, J. and T. Lualua. Traditional and medicinal botanical garden. Est. 30 JUN 1999 at the ASCC Land Grant Program, Malaeimi, AS. [LT]

j Whistler, A. 1999. Traditional and medicinal plant workshop. [ST]

3. ASCC Courses Offered.

AGR152:Survey of Agriculture. 3 credits.

4. Outputs/outcomes that protects, sustains, and enhances water, soil, and air resources.

1. Referred and technical report articles.

a. Vargo, D. L. 1999. The earthworms (Annelida, Oligochaeta) of American Samoa. Megadrilogica 7(7):45-48. [IT]

b. Vargo, D. L. 2000. Soil invertebrates of American Samoa. Micronesica 33(½):1-10. [IT]

2. Non-technical publications, workshops, or broadcasts.

Vargo, D. 2000. World day for water. Elementary and secondary school workshops conducted by N. Tuisamoa during March 20-24. [ST]

3. ASCC Courses Offered.

AGR155:Soil Science. 3 credits.

Goal 5:

Enhanced economic opportunity and quality of life for Americans. Empower people and communities, through research-based information and education, to address economic and social challenges facing our youth, families, and communities

To address this goal during FY 2000, programs were offered in the following areas: Youth at Risk issues, Environmental Education (Indoor Air Quality and Tree Planting), Samoan Culture and Arts/Crafts, Clothing Construction, *Elei* Fabric Art Printing, Vegetable Gardening, and Youth Development Issues. A 4-H Mini-Fair was planned and held for the youth. There was also a big AHNR celebration as a public awareness program. Samoan Culture has been included in program development and delivery.

Performance Goals:

1. To help ease the difficulties created during social transition, the Family, 4-H, and Nutrition staff will increase workshops in Culture Awareness. Pilot projects have included cultural arts and crafts, nature art and *siapo* (tapa) making.

2. To increase social stability, Parenting workshops are being updated and adapted.

3. To increase economic opportunities for Homemakers, the number participating in the following programs will be increased by 50% over the next five years:

   - Entrepreneurship
   - Home based businesses
   - Elei Fabric art printing
   - Vegetable gardening
   - Clothing Construction
   - Family Finances
   - Parenting

q To increase social stability, the number of youth participating in the following programs will be increased by 50% over the next five years:
   - Teenage Pregnancy
   - Drug Abuse
   - Career Development

Output/Outcome Indicators:

1. The number of children and youth who will participate in youth at risk programs. (ST)

Baseline	Target	Actual
2000	250	300
2001	300	
2002	350	
2003	400	
2004	450	

2005 The number of parents who will participate in Home Economics programs. (ST)

Baseline	Target	Actual
2000	100	250
2001	130	
2002	160	
2003	190	
2004	220	

2005 The number of youth and parents who will participate in Culture Awareness programs. (ST)

Baseline	Target	Actual
2000	200	250
2001	230	
2002	260	
2003	290	
2004	320	

2003 Children and Youth At Risk program materials are being developed, translated, and/or adapted for the American Samoa Territory. (IT)

They will be adopted when finished.

2004 Community collaborations and coalitions are being organized to address the issues identified by the stakeholders. (LT) (Mi)

These issues include parenting education, family financial programs, small and home based business workshops, and youth development issues.

2005 Number of persons completing programs who plan to adopt one or more principles, behaviors, or practices. (LT)

This information will be gathered after the instruments are developed to be used with the programs.

2006 Number of these persons who actually adopt one or more principles, behaviors, or practices within six months after completing one or more of the programs. (LT)

Instruments are being developed to gather this information over the next 4 years.

4-H Mini Fair

A 4-H Mini Fair was held on September 30, 2000. More than seventy youngsters participated in the planned activities. There were more than thirty donors of prizes and food for the event. Deans from various departments of the community college, Home Economics Teachers and Extension Agents were present to judge the various project categories. More than forty prizes were given. In the words of one participant, "This Mini Fair has given my club a chance to show what they have learned from the workshops presented by the 4H Agents." A judge stated, "This Mini Fair showed the interest that the young people have in their culture. I

recommend that this be an annual or semi-annual event". Over the next few years, new activities will be planned and other mini fair's hosted.

Family and Consumer Sciences Impact

A. In FY 2000, one hundred and sixty-five elementary and high school students participated in the clothing construction and care programs. They learned how to make clothes using the tape measure, patterns, sewing machines and other equipment. They experienced cutting and sewing shorts and shirts. Most of the students shared how happy they are to be making and modeling their clothing. A follow-up survey will be used in the next three to six months to see how many continue to use their skills and/or want to take advanced training.

B. During the last half of FY2000, approximately 60 people, ages 18 to 50 participated in the Family Consumer Sciences clothing construction workshops. They represented non-denominational church organizations, womens' village groups, day care center workers and independent individuals. The novice started with the basics and continued until the outfit was completed. The advanced learned many different techniques to give their outfits a finished and more professional look. The program participants have passed the word around and other community members have requested workshops for the future.

Future Plans

Plans for the next few years include conducting follow-up surveys of program participants to determine program effectiveness. These will be telephone assessments, one-on-one interviews, group verbal input, and written questionnaires. Other evaluation instruments such as pre/post tests, surveys, questionnaires, enrollment reports, record books, success stories, meeting minutes, personal contacts and interviews, project and visitation reports, accomplishment reports and other tools will be utilized to determine and evaluate the impact of the programs

Note: ASCC has no research staff in the area of Families, 4-H and Nutrition which has the responsibility for this goal.

2000 Stakeholders Input Process Update

Similar to 1999, the 2000 stakeholder input was collected through island wide public meetings, village meetings, program group meetings, workshops, surveys, individual clients meetings, and the AHNR (Agriculture, Human and Natural Resources) Advisory Council. The majority of the participants were farmers, homemakers, 4-H leaders and members, workshop participants, and parents.

The mass media was utilized to assure participation at the public and village meetings. Public service announcements were aired on all radio and television stations. The AHNR Director and staff were interviewed on the local TV evening Samoan and English news. The meeting schedules were also published in the local newspapers. In addition, the Office of Samoan Affairs village *pulenu'u* (mayors) informed the village residents about the public and village meetings.

All residents of American Samoa (including the islands of Tutuila, Tau, Ofu, Olosega, Swains, and Aunu'u) had the opportunity to participate in the stakeholder-input process. The majority of the participants in the stakeholder-input process were Samoans (the population is about 90% Samoan). Meetings and interviews were conducted in the Samoan language. English translation was available for participants who do not understand the Samoan language. The survey instruments were both in English and Samoan.

A total of 288 individuals participated in the process. The four major islands of Tutuila, Tau, Ofu, and Olosega were covered. Five public meetings were organized in all three traditional districts representing 57 villages and 10 counties. In addition, 201 farmers, community forestry stewards, Pesticide Applicator's Training (PAT) participants, Department of Education cooks, Public Health Clinics clients, parents and students completed the survey.

Summary of Stakeholders Inputs:

Goal 1:

An agricultural system that is highly competitive in the global economy. Through research and education, empower the agricultural system with knowledge that will improve competitiveness in domestic production, processing, and marketing.

Responses from the stakeholders indicated the need to focus on the following programs and activities:

- Develop and implement an Agriculture Education curriculum in the schools (from elementary to high school levels)
- AHNR to work with other government agencies and non-government organizations to:
    1. Establish an agriculture market for the Manu'a farmers

2. Provide reliable and affordable transportation modes (plane or boat) to carry farmers produce between Tutuila and the Manu'a islands.

3. Research and Extension should focus on vegetable production, now that taro (Colocasia esculenta) is doing better

4. AHNR to conduct agriculture, marketing, and processing workshops in schools, villages, churches, and other community organizations
5. Extension agents need to make more field visits to clients
6. Encourage the use of local staples such as taro (Colocasia esculenta), banana (Musa paradisiaca), *ta'amu (*Alocasia macrorrhiza), *ufi (*Dioscorea spp.) for school lunch meals and reduce the use of imported potatoes and rice

- Conduct research in the following areas:
  1. Whether the taro leaf blight disease (Phytophthora colocasiae) affect other vegetable and traditional crops
  2. Preserve and multiply the native Samoan taro (Colocasia esculenta) cultivars
  3. Why the *lau fao* plant (Heliconia paka) is disappearing
  4. Local and off-island market outlets for farmers produce and value added products
  5. Agricultural financial assistance such as grants and loans for agricultural research, production, and marketing.
  6. Improve farm roads, water supply, and to level hilly and mountainous areas for farming
  7. Control of feral pigs
- Open an Agricultural Store where seeds, fertilizers, tools, equipment, machinery, and pesticides are readily available
- Sponsor Farmer Subsidy Program to help farmers acquire farm inputs at lower prices
- Initiate a program where lands are make available for families who wish to start gardens and plantations but do not have their own land
- Farmer Cooperatives and Associations should work on obtaining seeds, fertilizers, pesticides, and other farm inputs at lower prices for members
- Need to offer more Pesticides Applicators Training (PAT) courses for the clients and people who are selling the pesticides
- AHNR should develop fact sheets on agriculture and related topics and make them available in an accessible location for all clients
- AHNR, Office of Samoan Affairs, and the business community need to organize competions and functions such as the Food & Farm Fair, Agriculture Open House, and *Talo Mua* (Village Cultural First Harvest Festival) to encourage people to farm the land and start agriculture related businesses
- Form an Agriculture Board to monitor the crop & livestock production, control market prices, review agriculture imports, and make decisions that will protect local producers and businesses
- Propagate and raise seedlings of important trees
- Protect and conserve trees
- Conduct workshops to create awareness about plants in the Samoan rainforest
- Propagate trees for windbreaks, construction materials, and food

- Propagate and multiply fruit tree seedlings such as lime, orange, avocado, soursop, and guava
- Start a traditional medicinal plants demonstration plot

Goal 2:

Not included in the plan of work

Goal 3:

A healthy, well-nourished population. Through research and education on nutrition and development of more nutritious foods, enable people to make health promoting choices.

Stakeholders input implied the need to concentrate on the following programs and activities:

- Develop and teach curriculum on vegetable production, nutrition, physical education, and health in schools (from elementary to college), villages, churches, and interested groups
- Introduce locally grown vegetables into school lunch meals for all students
- Set up demonstration and community garden plots to attract people to start vegetable gardening
- Increase the number of agents' visitations to vegetable farmers to insure they get a good start on planting their gardens
- Provide incentives such as free seeds, fertilizers, tools, tillers, fence wire, and advisory assistance from agents for beginning vegetable farmers and groups
- Stress the importance of vegetables for a healthy diet through farm visitations, workshops, demonstrations, and television and radio programs
- Advertise and advise the public on how vegetables help prevent boils, diabetes, high blood pressure, heart problems and other diseases
- Host TV and radio programs on how to plant vegetables and what vegetable crops should be planted during different times of the year
- Coordinate programs to control vegetable prices – they are too expensive
- Organize programs that teach parents and children how to cook vegetables
- Propagate and raise seedlings of various good quality fruit trees
- Offer demonstrations on plant propagation, pruning, and management of fruit trees such as mangoes, oranges, and others
- Investigate why some fruit trees such as apples and oranges do not bear fruit in American Samoa
- Help farmers with testing the soil pH and performing other soil fertility tests
- Educate the children about the nutritional values of fruits and vegetables
- Host vegetable production workshops in the villages
- Revive the Food and Farm Fair to allow farmers, homemakers, 4-H youth, and all clients to compete in the vegetable categories
- Limit the importation of vegetables from off-island

- Sponsor programs to develop and test vegetable recipes that are attractive and acceptable to the local population
- Publish printed materials that list fruit trees and their uses
- Register all vegetable farmers

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.

The following suggestions were offered:

- Pass legislation to protect trees, encouraged community tree planting through village *pulenu'u* (mayors) and *aumaga* (young men's organization), agroforestry practices, and composting
- Plant trees to protect and improve our environment
- Propagate trees for beautification and soil conservation
- Multiply enough tree seedlings for distribution to landowners at no cost
- Establish programs to motivate people to plant trees
- Educate the community about the importance and value of planting trees
- Reduce the use of pesticides (use it as the last resort)
- Ban the importation of all non EPA approved chemicals
- Enforce local quarantine laws to stop the entry of chemicals from neighboring Samoa and other Pacific island nations
- Stop burning of rubbers and plastics
- AHNR to collaborate with EPA and Public Health in designating dumping sites for engine oils/diesel and addressing the problem with waste water from piggeries and Laundromats
- Emphasize the importance of traditional cultivation practices and cultural and biological control methods for pests and diseases such as: crop rotation, mixed cropping, hedgerows, mulching, composting, green and animal manure, hand pulling/slashing of weeds, hand picking and smashing of pests, pruning, smoke for control of taro planthopper (Tarophagus prosperpina), planting of *gatae tree* (Erthryna varigata) for taro rot (Pythium spp.) control, and *pate plant* (Coleus blumei) for control of taro cutworm (Spodoptera litura)
- Activate community projects such as the *aumaga's* (young men's orgranization) village work on Mondays and Wednesdays for village projects such traditional crop plantations and vegetable garden competitions, water catchments clean up, village beautification, pest control - collection of African snails (Achatina fulica) and rhinoceros beetles (Orcytes rhinocerous)), and others
- Carry out educational awareness programs on the TV, radio, newspaper, and during workshops for farmers, homemakers, youth, families, schools, churches, non-government organizations, and all clients on agricultural practices that are environmentally friendly.

Goal 5:

Enhanced economic opportunity and quality of life for Americans. Empower people and communities, through research-based information and education, to address economic and social challenges facing our youth, families, and communities.

Survey results from the stakeholders indicated the need to offer programs in the following priority areas: Parenting, Money Management, Sewing, Nutrition & Food Preparation, Vegetable Gardening, Food Safety, Flower Gardening, Community Pride Projects, How to Develop and Run a Small or Home Based Business, and Farm Management. Stakeholders also suggested:

- Educational programs that encourages parents to spend more time with children after work and school, working on agriculture projects, joining 4-H activities, family prayer meetings, family sharing sessions, *fagogo* (story telling), and participate in farm competitions
- Programs that compensate and recognize children for working on their farms
- Promote sharing of excess harvests to neighbors, friends, families, school lunch program, hospitals, and other charities
- Incentive programs such as free seeds, tools, and fertilizers to promote vegetable gardening in schools, villages, church youth groups, families, and other organizations
- Public awareness programs during career days, Samoan days, and TV, radio, and newspaper programs that promote agriculture and showcase successful farmers
- People should develop a sense of community development – people should help one another
- Everyone should start their own vegetable gardens so that they can save money and become less dependant on imports from off island markets
- Research should investigate the following :
    1. Vegetable crops varieties that do best in American Samoa
    2. *Nonu* tree (Morinda citrofolia) fruit as a dietary supplement and medicine
    3. *Manunu tree* (Tarenna sambucina) and *ti tree (*Cordyline terminalis) for their medicinal uses
    4. Overseas markets
- Start an aquaculture program
- Encourage flower arrangement programs. (AHNR should offer a flower arrangement class for mothers and ladies who want to make bouquets for homes and churches)
- Strengthen and support programs that educate young people, parents, teachers, families, and the community about child abuse and other youth at risk issues