

FY2021 Report Status: Approved as of 07/08/2022

Contributing Organizations

American Samoa Community College

Executive Summary

Overview

The American Samoa Community College Division of Agriculture, Community and Natural Resources (ASCC ACNR) is reporting on its programs and projects addressing the following critical issues: Agricultural Sustainability and Food Security, Ecosystem, Family and Community Resiliency, Health and Wellness, and Youth Development.

In 2021, ASCC ACNR continued to serve its clientele through its research and extension programs in partnership with government agencies and non-governmental organizations at the local, regional, national, and international levels. NIFA funding enabled ASCC ACNR to successfully complete activities in the following areas in 2021.

- Taro crop improvement through conventional breeding
- Vegetable crop variety trials
- Plant clinic service
- Invasive ant detection and control
- Technical support for public health prevention of mosquito-borne diseases
- Science mentoring
- Youth at risk activities
- Basic sewing workshops
- Farm safety and pesticide trainings
- Aquaculture feed production
- Healthy living promotion
- Invasive rubber tree control
- Urban forest activities
- Crop education and distribution of planting materials
- Vegetable gardening
- Animal management

Factors that affected program/project implementation in 2021 included

1. COVID-19 pandemic restrictions, including American Samoa Code Red and Level 3 Community Transmission lockdowns that resulted in:
 - Limited staff access to offices, research laboratories, extension greenhouses, and demonstration projects and field trials
 - Limited research and extension services delivery to the community
 - Staff shortages due to staff sick with COVID-19
 - No travel outside of American Samoa to attend meetings, trainings, workshops, and forums in the United States
 - Stoppage of air and sea transportation services delayed the delivery of ASCC ACNR's programs and services to the Manu'a islands
 - Delay in recruitment of personnel
 - Delay in procurement of supplies and equipment, because most of the needed materials, supplies, equipment, scientific apparatus, and related resources must be ordered from the United States.
2. Shortage of academically and professionally qualified local personnel to fill ASCC ACNR scientist, specialist, research assistant, extension agent, and technician positions.
3. Delay in settling the Experiment Station land boundary disputes resulted in limited access for research and extension personnel to land for demonstration and research plots due encroachment by unauthorized people
4. Lack of qualified translators to conduct workshops and translate materials into Tongan, Filipino, Chinese, and other Asian and Pacific Island languages as the local populations of these ethnic groups increase.

Despite these constraints, ASCC ACNR personnel were able to continue serving the people of American Samoa through limited programs and services in agriculture, natural resources, health and nutrition, and community and youth development. Staff learned to work remotely, meet via Zoom, conduct trainings virtually, sign documents electronically, and communicate more via telephone and email and other means. ASCC ACNR research and extension staff tried their best to deliver programs and services to clients using available human, financial, and physical resources and despite the impacts of the COVID-19 pandemic restrictions. ASCC-ACNR will continue to focus on the aforementioned projects and programs in 2022.

Critical Issue: Agricultural Sustainability and Food Security

Taro is the main traditional staple food crop of American Samoa. ASCC ACNR continued its research and extension efforts to increase and improve local production of this key commodity. The taro breeding program evaluated 300 newly developed varieties, selecting 25 to multiply for further evaluation. Extension staff assessed existing disease resistant taro cultivars grown locally and imported from independent Samoa and multiplied and distributed 1,060 taro tops to farmers and gardeners of those varieties with superior qualities. This combined research and extension effort will enable our community to have access to planting materials that are disease resistant, high-yielding, and of superior eating quality. Increased local taro production translates to increased food security and increased profits for farm families.

Increasing local production of fresh fruits and vegetables is important to reduce reliance on imported and processed foods, improve community nutrition, and provide new economic opportunities for local farmers. Through numerous vegetable variety evaluation field trials and taste tests, ASCC ACNR identified varieties of several nontraditional vegetable crops that grow well under local conditions and which had superior eating quality according to local consumers. These included varieties of eggplant grafted large-fruit tomato, okra, and edamame. The Agricultural Extension program promoted local subsistence and commercial vegetable production by producing and distributing 7,975 vegetable seedlings to 579 farmers and gardeners. They helped establish 15 new community vegetable gardens and provided technical advice through 176 farm visits. Increasing local vegetable production and consumption of fresh produce will benefit the local economy as well as community health.

Small scale swine production in American Samoa is important in traditional culture and provides affordable, nutritious protein for families. ASCC ACNR extension programs addressed the key problems of low productivity due to decades of inbreeding and threats to environmental and human health due to poor swine waste management practices. Extension agents conducted 176 farm visitations to advise on improved waste management practices and provide other technical assistance and distributed 55 piglets from the artificial insemination breeding program to help address the inbreeding problem. Increased pork production helps reduce reliance on expensive imported meat, increase farm profits, and meet the needs for family consumption and cultural functions. Improved waste management can provide valuable compost for farms and gardens while protecting drinking water, streams, coral reefs, and other marine life.

Increasing local production of tilapia will help reduce reliance on expensive imports of this highly favored fish, reduce fishing pressure on wild fish stocks, and provide income for local fish farmers. The biggest constraint for local tilapia farms is the high cost of feed. ASCC

ACNR's Center for Sustainable Integrated Aquaculture and Agriculture, led by University of Hawai'i's American Samoa Sea Grant Extension Agent, assisted local farmers to produce feed in its facility using less expensive local materials (supplied by farmers), saving farmers a total of approximately \$4,500 versus imported feed.

Critical Issue: Ecosystem

American Samoa is blessed with large areas of relatively intact native forests remaining in the uninhabited portions of the islands. In addition, native and introduced trees are essential components of traditional agroforests and urban and community forest areas in villages and public areas of the islands. ASCC ACNR programs protect the native forest from human threats and threats from invasive plants and insects while also providing assistance to conserve and enhance trees in agroforestry systems and in villages. The ASCC ACNR Forestry program reached 1,651 participants through its community and Arbor Week workshops and tree planting activities in schools, churches, and villages while distributing 509 saplings to more than 56 clients and landowners. By promoting responsible stewardship of American Samoa's forest resources, ASCC ACNR helps preserve the many environmental, social, and cultural benefits these forests provide.

Invasive species represent perhaps the greatest threat to American Samoa's native forests. The Forestry program worked with landowners and communities to control the highly invasive trees *Falcataria moluccana* and *Castilla elastica*, destroying a total of 5,315 seedlings, 3,707 saplings, and 2,011 trees. ASCC ACNR also worked to control another, newer, threat to the islands' ecosystems, the little fire ant. This species was first detected in the territory in late 2018. In 2021 ASCC ACNR continued its efforts to inform the public about the threat posed by this ant and enlist their assistance to detect any additional infestations. As a result of ASCC ACNR's work, out of the six initially detected infestations, little fire ants are no longer seen at five of the sites. Control efforts continue at the sixth. In addition, public awareness efforts have resulted in detections of three additional infestations that are being targeted in 2022. Exotic species such as these invasive trees and ants will transform American Samoa's ecosystems without urgent action to stop them. ASCC ACNR remains one of the leaders in American Samoa's efforts to protect those ecosystems.

Critical Issue: Family and Community Resiliency

Most families in American Samoa have limited income. For these families finding ways to save money on essentials is important, and one of ASCC ACNR's most popular programs is the basic sewing workshop in which participants learn hands-on how to sew clothes for their own families or for others by starting their own business. In 2021 185 participants completed the program. All participants learned how to sew their own clothes, and several were able to purchase sewing machines themselves to start their own home-based business.

Critical Issue: Health and Wellness

Overweight and obesity and associated noncommunicable diseases afflict a disproportionate number of American Samoans. ASCC ACNR's wellness programs seek to help participants learn to make healthy lifestyle choices through a range of community and school nutrition and healthy living workshops and physical activity and exercise sessions. Posters and 'Sugar Shocker' display boards posted in numerous public buildings reinforce the messaging. In 2021 a total of 4,800 participants joined activities including cooking demonstrations of affordable and nutritious meals, vegetable gardening, physical activity and exercise, food safety, and wellness education.

American Samoa is home to mosquitoes that can spread diseases such as filariasis, dengue, chikungunya, and Zika virus. ASCC ACNR provides research-based technical assistance to the vector control staff of the local Department of Health. In 2021 ASCC ACNR worked together with DoH to develop, test, and implement a premises inspection protocol for the department to detect, document, and help mitigate mosquito breeding sites in villages, schools, and workplaces to control vector populations and reduce disease transmission.

Critical Issue: Youth Development

ASCC ACNR 4-H and youth programs provide hands-on learning activities for young people to develop positive life skills and habits. In-school and village 4-H club activities, tours and field trips to ASCC ACNR extension and research facilities, and presentations for schools and church youth groups served over 1,700 local youth in 2021. ASCC ACNR staff mentored 16 elementary and high school students on science symposium and science fair projects and through the National Institutes of Health sponsored STEP-UP program. Many of these students return year after year to ASCC ACNR for mentoring and eventually choose STEM related fields in college.

Merit and Scientific Peer Review Processes

Updates

None.

Stakeholder Input

Actions to seek stakeholder input that encouraged their participation with a brief explanation None.

Methods to identify individuals and groups and brief explanation None.

Methods for collecting stakeholder input and brief explanation None.

A statement of how the input will be considered and brief explanation of what you learned from your stakeholders

In FY2021, the Agriculture Extension Program (AEP) served 935 clients, conducted 176 farm visitations, one farm safety day, five pesticide safety workshops, and hosted three tours/field trips to the ASCC-ACNR compound for 278 visitors. The Center for Sustainable, Integrated Aquaculture and Agriculture (CSIAA) served 289 clients and conducted six farm visitations and two outreach workshops for 28 participants. The 4-H program conducted 23 workshops and activities for 1764 youths and chartered one new 4-H in-school club with 38 members. The Family and Consumer Sciences (FCS) program conducted 130 nutrition workshops and 10 basic sewing classes attended by 5226 participants. The Forestry program conducted 34 workshops for 1651 clients and participants. The Wellness Center conducted 28 workshops and activities for 1028 participants.

Similar to 2020, stakeholders' inputs were used to identify emerging issues, redirect extension programs, hire staff, make improvements, and develop new programs for the community.

As in 2020, priority issues learned from stakeholders included the need to extend and deliver research and extension programs to the outer islands of Manu'a and Aunu'u; need to integrate more Science, Technology, Engineering, Art, and Mathematics (STEAM) focused activities in the classroom and a er-school programs; need to establish community garden plots or other options for clients who have limited land or access to land to start their own vegetable gardens; need to implement plans to increase diversity in all ASCC-ACNR programs by including all races, ethnicities, and special needs populations to access and participate in workshops and meetings and become members in advisory councils. Moreover, there is a need for ASCC-ACNR staff to learn to work remotely, meet via Zoom, conduct trainings and workshops virtually, serve clients remotely, sign documents electronically, and communicate more via telephone and email and other means during a pandemic such as COVID-19 and other emergencies and disasters. Clients continued to request assistance with the control of invasive species such as the little fire ant (*Wasmannia auropunctata*) and Mexican rubber tree (*Castilla elastica*); identify and/or develop crop varieties with tolerance to heat, salinity, and local diseases and pests; develop plans and programs to help clients prepare before, during, and a er disasters (natural or man-made); and increase opportunities for education in the natural sciences, especially lab and field experience, for local elementary and high school students and teachers. There is also a need to hire qualified translators to conduct workshops and translate materials into Tongan, Filipino, Chinese, and other Asian and Pacific Island languages as the local populations of these ethnic groups increase.

ACNR research and extension programs are addressing the aforementioned needs and issues given the available human, financial, and physical resources and despite the impacts of the COVID-19 pandemic.

Highlighted Results by Project or Program

Critical Issue

Agricultural Sustainability and Food Security

Closing Out (end date 09/06/2023)

Evaluation of newly developed taro (*Colocasia esculenta*) varieties for taro leaf blight resistance, salt tolerance, nutritional composition, eating quality, and yield

Project Director

Ian Gurr

Organization

American Samoa Community College

Accession Number

1018655



Taro crop improvement through conventional breeding

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

American Samoa's loss of all traditional taro varieties in the 1990s due to taro leaf blight disease shows the need for this project. Taro, the staple food crop of American Samoa, is subjected to changing climate, soil, pest and disease conditions. Production and evaluation of new taro varieties is important to identify varieties with acceptable eating quality and tolerances to heat, salinity, pests and diseases.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

A taro breeding program, with subsequent field propagation and micropropagation, has allowed the development and multiplication of new taro varieties that are currently being evaluated for disease resistance, yield and eating quality.

In addition, eight taro varieties that show taro leaf blight disease resistance and salt tolerance have been requested from the Pacific Community's Center for Pacific Crops and Trees germplasm repository in Fiji. These varieties will arrive in 2022, will be evaluated under local conditions, and may be used as parent material in the future.

Briefly describe how your target audience benefited from your project's activities.

Three ASCC-ACNR developed taro varieties produced in 2019 are now being propagated for large scale field trials this year. In 2021, seedlings of approximately 300 newly developed taro varieties were grown out and, a er

preliminary evaluation, 25 varieties were selected and propagated to increase planting material for further evaluation. After this evaluation, the best performers will be further multiplied by micropropagation and by field methods. Large scale field trials will then be conducted when the amount of planting material is adequate.

Salinity tolerance evaluation of selected varieties was to be conducted at the Aunu'u Island wetlands where taro production has suffered during the past decade due to salt water intrusion. The effort started a year electrical conductivity measurements in 2015 in one section of the wetland showed water EC of 4.5 mS/cm and soil EC of 1.58 mS/cm. But surprisingly, measurements in early 2021 indicated a return to ideal water and soil EC levels and increased taro production in that area suggesting the high salinity may have been temporary. Further investigation into water and soil salinity in these wetlands is needed before salinity tolerance evaluation of new varieties will be started.

Briefly describe how the broader public benefited from your project's activities.

Production of locally selected high yielding, disease resistant taro varieties with excellent eating quality will enhance economic security for both commercial as well as subsistence farmers while increasing the long term viability of production and consumption of this most important component of local agroecosystems, local culture, and local diet. The breeding program has made great strides in selecting and evaluating suitable germplasm which is now being multiplied for more extensive testing.

Identification of Vegetable Crops, Varieties and Production Methods Ideal for American Samoa Conditions.

Project Director

Ian Gurr

Organization

American Samoa Community College

Accession Number

1018658



Vegetable crop variety trials

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Most produce consumed in American Samoa is imported. Increasing local production and consumption of fresh produce will benefit the local economy as well as community health. Wet tropical conditions and destructive plant pests and diseases necessitate the field evaluation of vegetable crops and varieties to identify those that grow well under these challenging conditions. Benefits include improved food security, better nutrition and community health, and a healthier environment due to reduced pesticide use.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Vegetable crops not commonly grown locally but that are grown in other tropical areas are being evaluated in field trials and subsequently grown in demonstration plots to identify and promote the types of vegetables and the varieties that will grow well in American Samoa.

Briefly describe how your target audience benefited from your project's activities.

Vegetable variety trials and demonstrations of the following crops were conducted: eggplant, graded large-fruit tomato, okra, edamame, zucchini, and winter squash. Certain varieties of each of these crops were found to grow well in American Samoa except for zucchini and winter squash (both due to poor fruit set). Grafting of heat tolerant large-fruit tomato varieties to bacterial wilt resistant eggplant rootstocks is a practice that could increase tomato production locally.

In an ASCC-ACNR trial, 83% of un-graded tomatoes died due to bacterial wilt disease compared to 12% for the graded group. Grafting methods for tomato to eggplant rootstock have been taught to four vegetable farmers. Two large-fruited tomato varieties that fruit well in our conditions have been identified. ASCC-ACNR held 2 community youth workshops on easy-to-grow vegetables including okra, and okra varieties from ASCC-ACNR harvests were shared with a local restaurant. Participants and the restaurant owner later requested seeds/seedlings of selected okra varieties. Edamame is now being sold in the local markets. A leafy green (edible hibiscus) promoted by ASCC-ACNR has found another market as a fresh ingredient in baked goods.

Briefly describe how the broader public benefited from your project's activities.

Technical reports and making cuttings/seeds easily available (through the ACNR extension vegetable seed program) are the next steps to increase awareness and local production of these crops and varieties. Adoption of these crops by farmers and consumers will result in increased vegetable production and consumption that will lead to food security, community health and economic benefits.

Agricultural Extension

Project Director

Molly Lagai

Organization

American Samoa Community College

Accession Number

7003040



Animal Management

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Inbreeding in swine production continues to be a major issue faced by swine farmers in 2021. Low productivity is one of the outcomes of inbreeding. Hence, introduction of diversity in the gene pool is needed. Moreover, pig waste management continues to be a problem with swine operation and the environment.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Agriculture extension agents distributed 55 piglets from the artificial insemination (AI) project to 55 farmers. The program staff continues to conduct demonstrations to 176 pig farmers on the use of the ASEPA recommended waste management systems.

Briefly describe how your target audience benefited from your project's activities.

Agriculture extension agents conducted 176 farm visitations and distributed 55 piglets from the AI breeding program to 55 pig farmers. Agriculture extension agents also advised farmers on improving stocks through the use of AI animals. The use of AI animals improved production in many pig farms in by reducing the inbreeding problem. The gradual increase of swine production provided a fresh source of meat for family consumption and cultural functions; decreased reliance on expensive imported pork; and generated revenue for the farm operation.

Adoption of the recommended waste management systems by 176 pig farmers resulted in a safer environment by using the pig manure in composting as an alternative source of fertilizer, and eventually reducing the negative impacts of pig waste on the drinking water, streams, coral reefs and marine life.

Briefly describe how the broader public benefited from your project's activities.

Adoption of the recommended waste management systems by 176 pig farmers resulted in a safer environment by using the pig manure in composting as an alternative source of fertilizer, and eventually reducing the negative impacts of pig waste on the drinking water, streams, coral reefs and marine life.



Aquaculture Feed Facility

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The high cost and availability of commercial feeds for fish (aquaculture) farmers continues to be the main issue in American Samoa.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The feeds program was established in 2012 through collaborative research with the University of Hawaii, Oceanic Institute, StarKist Samoa and the Center for Tropical and Subtropical Aquaculture in order to develop low-cost, high-quality tilapia feed formulations. Samples of tuna fishmeal from StarKist Samoa were analyzed for nutrient profiles along with local breadfruit, cassava, bananas, and taro. Several feed formulations were developed to allow farmers to choose the best option for them.

While multiple local starch sources were included, all farmers choose to buy wheat flour from the store for their fish feed. Farmers need to provide only the starch source and oil (soybean oil), and the machinery usage, fishmeal as well as the custom-made vitamin and mineral mixes are provided free of charge by the CSIAA for farmers to make their feed on site. The Center for Sustainable Integrated Agriculture and Aquaculture (CSIAA) continues to maintain equipment for the production of fish feeds that is available to local fish farmers with no charge.

Briefly describe how your target audience benefited from your project's activities.

Farmers continued to make use of the feeds facilities to produce feed for the farm. In 2021, the CSIAA produced 912.5 pounds of tilapia feeds. Since most aquafarmers in American Samoa own their land and have access to village water, their largest operating cost is typically feed. The cost for farmers to make one 50lb bag of feed at the CSIAA is \$12.69. The cost to import one bag of 40lb tilapia feed is \$206.70. (\$51.10 for the feed + \$155.60 shipping, based on shipment in March 2022). Thus, a farmer saves \$245.69 (\$258.38-12.69) per 50lb bag of fish food by making their feed at the CSIAA rather than importing it.

Briefly describe how the broader public benefited from your project's activities.

American Samoa, like many other remote locales, is hyper-focused on food security – especially with the Russian war, pandemic induced supply-chain issues, and inflation costs. Based on a [2019 Tilapia Market Report](#), the Territory imports at least 225,000lbs of frozen whole-fish tilapia a year at an average wholesale price of \$1.69. The retail price for frozen tilapia ranged from \$1.61-2.14 per pound, with one remote store on Tutuila charging \$3.54 per pound. In 2021 the aquaculture program provided 18 fresh whole tilapia (25lbs of fish) to a local grocery store (TSM) to conduct direct test marketing – and the fish sold out in less than two hours at a price of \$2.69 and the store purchaser asked if we can provide more fish for them to sell. With the recent dramatic increase in inflation, the hope is to encourage more local aquafarmers to sell their tilapia locally to help meet both food and economic security goals. In addition, fish farming is a potential substitute for capture fisheries, and as wild fish stocks continue to decline, aquaculture can both provide livelihoods for fishers as well as fresh fish for our islands community to eat.



Crop Education and Distribution

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

American Samoa's loss of all traditional taro varieties in the 1990s due to taro leaf blight (TLB) disease shows the need for this project. Taro, the staple food crop of American Samoa, is subjected to changing climate, soil, pest and disease conditions. Production and evaluation of new taro varieties is important to identify varieties with acceptable eating quality and tolerances to heat, salinity, pests and diseases.

Farmers and consumers are all interested in the disease resistance, high yield and superior eating quality of the taro being produced in the taro breeding and multiplication program at ASCC ACNR. These varieties are being evaluated for their performance under local conditions, and the best ones multiplied and distributed to farmers.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

A taro improvement program has been in progress at ASCC ACNR for approximately 9 years. The Extension Agents have collected stakeholders' and farmers' feedback on different varieties that are grown locally, sold by different markets, and consumed by the people. Several varieties were selected because of the high yields, disease resistance, and good eating quality and are propagated in the field to be distributed to the community and new farmers.

Briefly describe how your target audience benefited from your project's activities.

The Agriculture Extension staff identified improved cultivars that perform well in the tropics, are disease resistant, and have good eating quality. Agriculture Extension Agents distributed 1,060 taro tops and 51 banana setts to 176 interested and new farmers. Different improved cultivars of taro and disease-resistant varieties of bananas are being multiplied and distributed to our community.

Briefly describe how the broader public benefited from your project's activities.

Taro and banana are the main starch food crops of American Samoa. This project will enable our community to have access to planting materials that will not only be resistant to diseases, but are high-yielding and good eating quality. Fifteen farmers reported that their production increased by 15% as a result of planting improved varieties of taros and bananas. Increase production translates to food security and economic profits for the farm families.



Farm Safety and Pesticide Training

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

In FY2021, there were still questions and concerns on the quality of the fresh produce sold to the public. The quality of farm produce and the effect on the environment from the use of pesticides and poor farming practices are raising much concern in American Samoa. The Department of Health cited or shut down farming businesses due to poor sanitation or use of illegal pesticides. Local produce has been rejected by the School Lunch Program because of poor quality due to lack of knowledge of better farming practices to ensure good quality produce.

Improper handling of pesticides before, during, and after usage continues to be an issue for the safety of applicators and environment.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Farm Safety & Pesticide Safety Training programs teach community residents on how to safely handle pesticides. The safety of our community and environment is of the highest priority. These programs are geared at making sure that applicators are well-versed with the importance of handling pesticides safely. The purpose of farm safety workshops is to educate children about safety issues in and around farms and homes. The Agriculture Extension program conducted one farm safety workshop for 86 participants and 5 pesticide certification workshops for 39 participants.

Briefly describe how your target audience benefited from your project's activities.

About 90% of Farm Safety and Pesticides workshops' participants gained knowledge in pesticides safety concepts, laws, and best practices. Moreover, about 90 % of farmers developed skills in pesticides application and calibration. About 80% of participants adopted the recommended and best practices in pesticides calibration and application. About 15% of participants decided not to use pesticides after completion of pesticides certification trainings. The Agriculture Extension program continues to collaborate with the American Samoa Environmental Protection Agency (ASEPA) and other local government agencies in assisting farmers and residents in addressing issues concerning farm safety and produce quality.

Briefly describe how the broader public benefited from your project's activities.

If pesticides are handled properly, American Samoa's environment and its people will be safe. Our goal is to make sure that the well-being of our community and the environment are protected.



In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Accurate identification of a plant pest helps ensure appropriate and effective management. While farmers and gardeners know how to identify and control the most common pests, they may be unsure about others. In addition, unrecognized pests or symptoms may represent new, accidentally introduced invasive species. In such cases, rapid identification and delimitation surveys are the essential first steps in efforts to eradicate or slow the spread of the new pest or plant disease.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

ASCC-ACNR scientists offer a plant clinic service to extension agents, farmers, gardeners, and the general public to diagnose and provide recommendations for control of plant pests. As a member of the Western Plant Diagnostic Network, ASCC-ACNR can access regional- and national-level expertise if required for difficult cases or for taxon specialists to verify detections of exotic invasive species.

Briefly describe how your target audience benefited from your project's activities.

Several of the plant clinic cases, as in previous years, involved invasive exotic ants. The most common complaint is for stinging tropical fire ants. First detected in American Samoa in 2002, this species is now present at low elevations throughout the inhabited area of all the islands. Field trials and demonstrations conducted by ASCC-ACNR in 2008 showed how tropical fire ants can be effectively controlled using granular baits, and this method continues to be recommended to plant clinic clients. In 2021, white-footed ants appeared in heavy infestations at two sites. Though present in American Samoa and in the region for many decades, these species seem to be becoming more of a problem recently, both locally and regionally. They can reach very high densities around and inside houses, and also form mutualistic relationships with sap-sucking insects such as so scales, mealybugs, and aphids. They feed on the honeydew these insects excrete and in exchange protect them from their natural enemies. The resulting high densities of these plant pests can seriously damage crops and ornamental gardens. As a result of these plant clinic submissions, ASCC-ACNR has initiated trials to test control measures employing a combination of baits for the ants and soil applied systemic insecticides for the sap-sucking insects.

Briefly describe how the broader public benefited from your project's activities.

If these trials are successful, then residents will benefit from improved productivity of crops, increased aesthetic value of ornamental plants, and reduced nuisance for workers from high densities of ants on farms and in gardens.



In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Overweight and obesity (OWOB), poor nutrition, non-communicable disease, and food safety continued to be major issues for both adults and youth in American Samoa. Hence, vegetable gardening, nutrition education, and healthy living workshops are needed to educate and motivate community residents to adopt healthier lifestyles.

Increasing local production and consumption of fresh produce will benefit the local economy as well as community health.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The Agriculture Extension outreach programs continued to provide seeds/seedlings (7,975) at no cost to the community (579 farmers), schools and 4-H clubs (32) for vegetable gardening. Agriculture extension agents continued to conduct follow-up visits to farmers, schools, and vegetable producers. Moreover, the Extension office continues to sell seeds of improved vegetable varieties (97) at an affordable price to the public to encourage vegetable farming.

Briefly describe how your target audience benefited from your project's activities.

The Agriculture Extension program agents distributed 7,975 seedlings to 579 farmers at no cost. Agents also assisted in starting 15 new vegetable gardens and conducting 176 farm visitations. Farmers and gardeners acquired knowledge and developed skills in vegetable gardening, pest and disease control, harvesting, and marketing. Project participants also reported that their family members prepared and consumed healthy and balanced meals, improved family diet, and generated revenue from vegetable sales.

Briefly describe how the broader public benefited from your project's activities.

Increasing local vegetable production and consumption of fresh produce will benefit the local economy as well as community health.

Critical Issue

Ecosystem

Invasive Ants In American Samoa

Project Director

Mark Schmaedick

Organization

American Samoa Community College

Accession Number

1019069



Invasive ants detection and control

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

As a result of their social organization and their sheer abundance, ants play important roles in most terrestrial ecosystems. When certain ant species are accidentally introduced and invade new areas, however, they can be extremely disruptive, causing severe ecological harm as well as economic damage. One of the worst of these invaders worldwide is the little fire ant. This species was first detected in American Samoa in 2018 and since then ASCC-ACNR has taken the lead in detection and delimitation surveys and education and eradication efforts against this ant.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

ASCC-ACNR has conducted educational programs on TV, in schools, and in government agencies to inform the public about the threat this ant poses and to elicit their assistance in detecting and reporting any additional infestations. Known infestations have been mapped, and meetings held with residents of those areas to request their assistance in controlling the ants. Year-long treatment programs have been conducted in six of the infested areas along with assessments of treatment efficacy. In addition to the support from NIFA, the invasive ant control activities are also supported by funding from US Forest Service and US Fish and Wildlife Service grants.

Briefly describe how your target audience benefited from your project's activities.

Using control methods developed by the University of Hawai'i's Hawai'i Ant Lab, little fire ant prevalence at five of the six initially detected infestations in American Samoa have been reduced to zero. Treatments are ongoing at the sixth site, and monitoring will continue at all the sites for possible resurgence of any remnant populations. In addition, during 2021, efforts to educate the public about the need to watch out for and report possible little fire ant infestations and follow-up detection surveys have resulted in detection of three additional infested areas. Mapping of these newly detected infestations is underway to be followed by meetings with residents to discuss the situation, answer questions, and enlist their assistance prior to initiating control programs in these areas.

From discussions with families in the little fire ant infested areas, a clear pattern has emerged of the ants spreading to new areas by hitchhiking on plants, firewood, and lumber transported from infested areas. This information is incorporated into our programs to educate residents to watch out for and report little fire ants and to prevent their spread to new areas.

Briefly describe how the broader public benefited from your project's activities.

Although much work remains, the knowledge gained in the past two years from adapting and applying the control methods developed in Hawai'i and observations on the distributions and movement of little fire ants in American Samoa will be key to controlling this pest and preventing its further spread on the islands. If the onslaught of invasive ants can be halted and reversed, then residents will benefit by being able to continue traditional farming and gardening activities and recreation such as hiking in the forest. If not, then residents will be forced to curtail these types of outdoor activities.

Critical Issue

Family and Community Resiliency

Family and Consumer Sciences

Project Director

Molly Lagai

Organization

American Samoa Community College

Accession Number

7003042



Basic Sewing

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

According to the World Bank collection of development indicators, the 2020 GDP per capita in American Samoa was reported at 12,845 USD – the lowest of any state or territory in the United States.

The 2015 Household Income and Expenditures Survey showed that American Samoa median household income is \$22,000 – one of the lowest in the United States as compared to the US median of \$52,000.

In 2017, American Samoa had a poverty rate of 65% — the highest poverty rate of any state or territory in the United States.

According to the Statistical Yearbook by the ASDOC, 54.5% (2010) of American Samoa families are considered poor and below the US poverty level. The DOE Standard Base Assessment indicates that more than 50% of public-school students fall below the basic level of reading and math (SY 2015-16 AS Report Card).

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

In 2021, FCS conducted 10 sewing workshops for 185 adults and all participants received certificates of completion in the basic sewing program.

Briefly describe how your target audience benefited from your project's activities.

The participants were able to tailor and sew their own clothes. All participating adults in the sewing programs acquired knowledge and developed skills in sewing and resource management. Participants reported the Basic Sewing Program as a useful program for families in the community. Most participants are saving money from doing their own sewing. About 10% of the participants bought their own sewing machine and started their own businesses at home.

Briefly describe how the broader public benefited from your project's activities.

The program enhances community resiliency by increasing family self-reliance.

Critical Issue

Health and Wellness

Health and Nutrition

Project Director

Molly Lagai

Organization

American Samoa Community College

Accession Number

7003044



Healthy Living

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Overweight and obesity (OWOB), poor nutrition, non-communicable disease, and food safety continued to be major issues for both adults and youth in American Samoa. There is a continued need for more nutrition, vegetable garden and healthy living workshops to educate the community about healthier lifestyles.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The FCS and EFNEP conducted 140 workshops in nutrition and healthy living in the schools and the community to 4,815 participants. The Wellness Center conducted 13 workshops promoting physical activity/exercise and nutrition in the schools and the community. Nine different schools visited the ACNR Wellness Center (288 students/11 teachers) and received hands on physical activity lessons and/or nutrition education as part of their tour of ASCC-ACNR. A total of 367 community members visited the ACNR Wellness Center Exercise Lab to help increase their physical activity.

Twelve Sugar shocker drink display boards were distributed throughout the community to help educate people about the excessive amount of added sugar found in different sweet drinks. The Territorial Bank of American Samoa received 2 display boards; 2 display boards were given to two different schools; 1 display board was given to an ASWIC clinic; 4 display boards were put up in the ACNR Wellness Center building; and 3 display boards were put up in the ACNR Research building. The Territorial Bank of American Samoa received 4 added sugar health communications posters (2 different posters were put up for display in their Utulei employee lounge and 2 different posters were put up for display in their Tafuna employee lounge); and 2 different added sugar health communications posters were put up for display in the ACNR Wellness Center Exercise Lab.

Briefly describe how your target audience benefited from your project's activities.

About 80% of the participants in the workshops acquired knowledge and developed skills in preparing nutritious, balanced, and safe meals; vegetable gardening; food safety; physical activity and exercise; and wellness.

Participants also reported consumption of more than one serving of fruits and vegetables a day.

In January 2022, an employee at the local movie theatre (and a former ASCC student) approached an ACNR employee in the movie theatre lobby and explained how he still remembered a hands-on activity at the ACNR Wellness Center. He still remembers learning how much added sugars were in the drinks he used to consume. He told the ACNR employee that he's been able to significantly decrease his intake of sugary drinks and has replaced them with more nutritious and healthy drinks such as water and milk.

The Samoan translation for a poster titled, "Wash Hands A er Touching Animals," was completed and approved by the Samoan Studies Department and ASCCs President. Seventeen food cost surveys were completed in 8 different villages as part of the Children's Healthy Living (CHL) Program Center of Excellence contract.

ASCC ACNR collaborated with CHL Program partners throughout the Pacific region to work on and submit an application for the Food System Resiliency for Children's Healthy Living (CHL Food System) grant. The grant was approved and ASCC will be awarded a sub-contract by University of Hawaii Manoa.

Given the high prevalence of OWOB and lifestyle-related problems in American Samoa, nutrition and physical activity education are "key issues" and a top priority to help change cultural attitudes, norms and practices related to food, nutrition, and physical activity.

Briefly describe how the broader public benefited from your project's activities.

If enough people are able to make positive lifestyle changes (better nutrition, increased physical activity, etc.) and if enough people can be influenced by the Healthy Living project participants, this project will greatly benefit the future of American Samoa—especially if these positive lifestyle changes can be maintained over time. This project increases the possibility for lower healthcare costs, longer life expectancy, and a better quality of life for the people of American Samoa. Home vegetable gardens are economically beneficial because they offer families a way to help lower the overall burden of rising food costs. In addition to the support from NIFA, the Healthy Living program activities are also supported by funding from the EFNEP program.



Prevention of Mosquito-Borne Disease

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Mosquito species present in American Samoa are capable of spreading the parasite that causes lymphatic filariasis and the viruses that cause dengue, chikungunya, and Zika. Previous research by ASCC-ACNR and others has shown that the major vector species on the islands develop as larvae in water-holding container habitats, such as drums, old tires, buckets, cans, etc. Eliminating these water-holding containers from village environments can reduce disease transmission by reducing populations of these vector species in the villages.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Educational programs by ASCC-ACNR and the American Samoa Department of Health have stressed the need for families, businesses, schools, and government agencies to eliminate or mitigate water-holding containers that may accumulate on their premises. For those who fail to do their part, local law provides an enforcement mechanism. This enforcement is primarily the responsibility of the Department of Health's Environmental Services Division. In 2021 ASCC-ACNR worked with the Division to develop and test a protocol for premises inspection for disease-vectoring mosquito larval habitats. The procedure can be used at residences, workplaces, and schools for educational purposes and to document cases of noncompliance with public health guidance and local laws on vector control. The protocol was tested in a hands-on session with Division field staff.

Briefly describe how your target audience benefited from your project's activities.

Arbovirus transmission in American Samoa is episodic—occurring primarily as intermittent outbreaks—making it difficult to assess outcomes of vector control education efforts during times when there are no outbreaks. Nevertheless, a practical but rigorous standard protocol is now in place to systematically inspect premises for disease-carrying mosquito larval habitats and to document their presence. The protocol uses data from ASCC-ACNR vector research to focus efforts on those waterholding containers that have been identified as most productive, while not wasting time and effort on containers that may hold water, but which have been shown to not produce significant numbers of vector mosquitoes. ASCC-ACNR will continue to provide technical support and plans to conduct additional trainings on vector survey and control for the Environmental Services Division personnel.

Briefly describe how the broader public benefited from your project's activities.

If research-based measures are incorporated into vector control operations, then residents may benefit from reduced vector populations and decreased incidence of vector-borne diseases.

Youth Development

Youth Development

Project Director

Molly Lagai

Organization

American Samoa Community College

Accession Number

7003041



Science Mentoring

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

There is a need for more local professionals in the science, technology, engineering and mathematic fields in American Samoa. Opportunities to provide students with experience and develop interest in these fields are lacking. Providing these opportunities may increase the number of local students entering these fields.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

ASCC-ACNR scientists serve as mentors for numerous elementary and high school students conducting science symposium and science fair projects and for high school students interning in the NIH's summer STEP-UP program for those interested in research careers. The Division also hosts local teachers for hands-on training on an ad hoc basis.

Briefly describe how your target audience benefited from your project's activities.

ASCC-ACNR staff mentored 16 elementary and high school students in science symposium and science fair projects. Four ASCC-ACNR mentored high school students placed 1st, 2nd, 7th and semi-finalist in the Island Wide High School Science Symposium. Research areas included locally produced plant-based insecticides and organic fertilizers made from compost and fishmeal. ASCC-ACNR organizes the annual local STEP-UP program and this year mentored 1 student. This student experience of conducting a mentor-supervised research project and participating in science competitions is valuable in increasing student interest in STEM fields. Many of these students return year after year to ASCC-ACNR for mentoring and eventually choose STEM related fields in college. Seven staff from ASCC-ACNR also acted as judges at 6 school and island wide science fair competitions.

Briefly describe how the broader public benefited from your project's activities.

Increase in youth entering science and technology programs will help address the dire shortage of local personnel to fill positions in these fields.



Youth at Risk

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

According to the World Bank collection of development indicators, the 2020 GDP per capita in American Samoa was reported at 12,845 USD – the lowest of any state or territory in the United States.

The 2015 Household Income and Expenditures Survey showed that American Samoa median household income is \$22,000 – one of the lowest in the United States as compared to the US median of \$52,000.

In 2017, American Samoa had a poverty rate of 65% — the highest poverty rate of any state or territory in the United States.

Resource management (poverty), parenting, culture, and youth at risk issues continued to be major areas of concern in American Samoa. The DOE Standard base assessment indicates that more than 50% of public-school students fall below the basic level of reading and math (SY 2015-16 AS Report Card). According to the 2011 CDC American Samoa YRBBS, 15.2% of high school students smoked marijuana one or more times during their life. Also, in 2011, 28.8% were offered, sold, or given an illegal drug on school property compared to 14.3% in 1993. School enrollment dropped in SY2015 from 17337 in SY14 to 16648. An average American Samoan youth is overweight and 35% are obese and 40% have at risk waist circumference scores.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

In 2021, the 4-H youth development program conducted 11 community outreach presentations for 943 youths, three inschool club activities for 65 youths, three a er-school 4-H club activities for 86 youths, and six school outreach presentations for 251 youths. The 4-H Program hosted four tours to the different Extension and Research plots for 420 youth.

Briefly describe how your target audience benefited from your project's activities.

About 90%, or 1589, of 4-H members and participants acquired knowledge for positive self-development and life skills concepts and practices. Due to Covid-19 restrictions on travel, there was an increase in the number of participants in 4-H programs throughout the year. The goal of the 4-H program is to teach skills and empower the participants (youth) and parents to make the right choices.

Briefly describe how the broader public benefited from your project's activities.

The program provided the youth with the opportunity to be engaged in experiential, highly interactive, projects-based workshops and activities to increase their knowledge and develop skills that are o en transferrable in life, including the workplace.

Type

Projects / Programs

Projects / Programs without a Critical Issue

0

Not Provided