



Agricultural Development  
in the American Pacific (ADAP)  
Project

Impact Report  
**1988-2004**

## VISION

Agricultural Development in the American Pacific (ADAP) project enables sustainable environments, diverse economies, and strong communities.

## MISSION

ADAP advances the viability and security of Pacific island agriculture and communities through collaborative programs that are culturally appropriate, socially acceptable, economically viable, and environmentally sustainable.

## GOALS

1. To increase the abilities of current ADAP-affiliated staff and to provide extensive training for potential future ADAP-affiliated staff, students, and potential Land Grant students.
2. To increase the efficiency of delivery of ADAP-related programs.
3. To facilitate the development of projects that meet the needs of our Pacific island agriculture and community systems.
4. To increase articulation between academic programs in the 5 ADAP institutions.
5. To use ADAP funds and experience to leverage additional resources from new partners.
6. To facilitate the development of learning communities through active partnering with stakeholders.
7. To provide leadership in coordinating agriculture and related activities.



**A D A P**  
PROJECT

Agricultural Development in the American Pacific  
Pacific Land Grant Programs

### LETTER FROM THE DIRECTORS

*Hafa Adai! Talofa! Aloha! Yokwe! Kaselehli! Alii!*

*Lwen Wo! Mogethin! Rananim! Welcome!*

We are proud to present some of the innovative accomplishments of the ADAP (Agricultural Development in the American Pacific) Project's efforts to serve the people of American-affiliated Pacific Island nations.

Led by a Board of Directors made up of the Deans of colleges responsible for agriculture in the Pacific Land Grants, ADAP represents American Samoa Community College (ASCC), College of Micronesia (COM) (representing the College of the Marshall Islands, Palau Community College, and the College of Micronesia-Federated States of Micronesia), Northern Marianas College (NMC), the University of Guam (UOG), and the University of Hawaii at Manoa (UHM). The Board meets semiannually to discuss and allocate funds from ADAP and to network on other opportunities for the region. We thank our many supporters in Washington, D.C. and in the Pacific Region for providing ADAP with sustained funding since 1988.

Over its 16-year history, ADAP has evolved from a funding source into collaborative partnerships within and throughout the five Land Grant colleges in the region. Our vision has broadened from focusing on local issues of individual institutions to drawing on institutional strengths of each school to serve the Pacific as a whole. ADAP emphasizes sharing innovative ideas and improvements with colleagues and community cooperators to improve lives across the Pacific.

To empower Pacific peoples with knowledge and skills to use that knowledge, ADAP focuses on knowledge generation and dissemination on the one hand, and capacity building on the other. Both sides of the equation are necessary for high impact.

To encourage collaboration and extend knowledge, ADAP projects must involve at least two campuses and, in practice, have consistently drawn faculty and community members from all five campuses on most projects. While concentrated in the "American Pacific" Land Grants, ADAP outreach also extends to international partners. Our Paravet Distance Education project and Healthy Living in the Pacific Islands project, for example, are Pacific-wide initiatives, thanks to a strong partnership with the Secretariat of the Pacific Community, located in Fiji and New Caledonia. Both projects are featured in this publication.

The Honolulu-based ADAP Office handles the project's grant administration and works closely with the regional institutions on finances, planning logistics, and organizational activities. Regional ADAP coordinators, located at the four non-Hawaii Land Grants, provide local logistical support for day-to-day operations.

In the following pages, you will be introduced to a sample of outstanding projects utilizing Pacific resources, modern technologies and innovative research applied to better the lives of Pacific peoples. Due to space limitations, we regret that other projects developed and implemented by ADAP investigators and cooperators could not be included.

Thank you to our supporters, Land Grant and ADAP personnel, and all those involved in ADAP over the years, for their dedication and commitment to our efforts in the Pacific.

*Dan Aga (ASCC) ❖ Singeru Singeo (COM)*

*Anthony Benavente (NMC) ❖ Lee Yudin (UOG) ❖ Andrew Hashimoto (UHM)*

## ACKNOWLEDGMENTS

### Founding Directors–1988

Noel P. Kefford (Hawaii)  
Antonio Santos (Commonwealth of the Northern Marianas Islands)  
H. C. Pemerika Tauiliili (American Samoa)  
Ishmael L. Lebehn (Micronesia)  
Jose Barcinas and Wilfred P. Leon Guerrero (Guam)

### Founding Program Manager

Linda Hamilton

### Special Thanks

U.S. Senator Daniel K. Inouye  
U.S. Senator Daniel K. Akaka  
Daniel Kugler and Myron Johnsrud, USDA-CSREES



# TABLE OF CONTENTS

ADAP Communication Efforts and PEACESAT .....	1
The Paravet Program .....	2
Healthy Living in the Pacific Islands .....	3
Pacific Islands Distance Diagnostic and Response System .....	4
Locations of the Five Pacific Land Grant Schools .....	5 & 6
Portable Extension Office for Program Literature Exchange .....	7
Food Choices for Healthy Living Based on Food Group .....	8
ADAP Media Production .....	9
Scientific Literature Research Services .....	10
Livestock Waste Management .....	11
Artificial Insemination of Swine .....	12
ESCOP/ACOP Leadership Training .....	13
Capacity Building (student internships, BS, MS, Ph.D. support) .....	14



# From Coconut Wireless to High-Speed Video Teleconferencing

## *ADAP Communication*

“We’ve come a long way!” sums up ADAP’s steady progress in effecting a communications system over the program’s 16-year history. While telecommunications advancements have helped, ADAP still faces the challenge of communicating across the world’s most geographically isolated land masses, the Pacific Islands.

When ADAP’s five Land Grants joined forces in 1988, fax machines, computers, and even telephones were scarce in some locations. Investment in a communication system became one of ADAP’s first priority purchases, starting with hardware, such as fax machines (and for some, phones), and later computer hardware and software. Computers were followed by on-site computer training to develop local staff capacity.

Building internal capacity separate from that of the larger institution turned out to be no small feat. At first, the ADAP Honolulu Home Office made all purchases, so all new equipment and supplies – big or small – had to be shipped to the Home Office, and then transshipped to the locations throughout the Pacific.

Through a partnership with PEACESAT (Pan-Pacific Education and Communication Experiments by Satellite), a pioneering Pacific-wide satellite and ground-station network, ADAP established group conference calls for the first time — a “coconut wireless” among partner institutions. A base station at each American Pacific Land Grant school and ADAP as the common link allowed the five Land Grants to exchange and share information. And when tropical storms knocked out local phone service, the system proved invaluable as the only communication link available to an entire island nation.

Today, ADAP has kept pace with the latest in telecommunications: all offices are equipped with speedy computers, instantaneous communication available on e-mail via the Internet, and high-speed video conferences connecting the Pacific Islands with the mainland U.S. and foreign countries with just a phone call. ADAP projects have benefited from the greater communication efficiency and effectiveness. ADAP’s initial investments in equipment and training, followed by upgrades with partners, have enabled the Land Grants to better serve their clients.



Early work, such as at American Samoa Community College’s ground station, has led to more advanced communication abilities years later.

**Dates of Project:**  
1988–Ongoing

**Collaborating Institutions:**  
American Samoa Community College, College of Micronesia, Northern Marianas College, University of Guam, University of Hawaii, PEACESAT

**Purpose of Project:**  
To establish the infrastructure and local capacity to communicate efficiently across vast distances.

## TLC for Pacific Animals

### *The Paravet Program*

The Pacific Islands are home to 13 million animals, as an important food source and a cultural tradition. Critical animals include swine, cattle, chickens, goats, sheep, buffalo, horse, donkeys and a few others, but each nation has their favorites. In the Samoas, for example, weddings and funerals observed “the Samoan Way” must include at least a few dozen pigs. Although concern over these animals’ health care dates to the 1950’s, a 1998 assessment of animal health services showed that Pacific Island nations faced a steady increase in the number of animals, against a decline in animal health professionals, who number less than 100 veterinarians today. Animal doctors are also unevenly distributed across the Pacific. Island countries such as Fiji and Papua New Guinea, for example, have several veterinarians, whereas the Marshall Islands has none.

With potential for economic disaster in the region, a cross-Pacific team of veterinarians, animal handlers, and curriculum writers joined forces in 1998 to write and design one of the most comprehensive animal health curricula to date. Called the Paravet Program, the paraveterinary program of animal care basics using distance learning technology, was launched in July 2003 in Samoa. Students did homework at home locations, had a week of hands-on learning, and took a comprehensive final exam. A University of South Pacific curriculum expert then evaluated the course for improvement.

The Paravet Program moved on to the Commonwealth of Northern Marianas (CNMI), where local and hosted students from the Marshall Islands, Pohnpei, Kosrae, Chuuk, and Palau are set to graduate in August 2004. The hurricane-battered country of Yap also received a special Paravet training course starting in May 2004. ADAP’s formal financial support of the Paravet Program ends with the CNMI and Yap courses, but the Program continues its relationship with the Secretariat of the Pacific (SPC) and the University of South Pacific’s Institute for Research, Extension, and Training in Agriculture (USP/IRETA).

SPC’s expansion plans include more comprehensive animal production techniques, the handling of quarantine and animal biosecurity issues, and outreach to non-American-affiliated Pacific islands. Paravet graduates are anticipated to help ensure healthier and longer living animals for higher productivity for the local livestock industry and a better livelihood for farm families in the Pacific.



Dr. Fifita (blue shirt) from SPC Fiji instructs Paravet students in Saipan.

Dates of the Project:  
1998–2004

Collaborating Institutions:  
American Samoa Community College, College of Micronesia, Northern Marianas College, University of Guam, University of Hawaii, Secretariat of the Pacific; the University of South Pacific’s Institute for Research, Extension, and Training in Agriculture and international donors, including the Republic of China (Taiwan), Australia, New Zealand, and France.

Purpose of the Project:  
To establish a self-sustaining, Pacific-relevant distance learning program on the basics of veterinary medicine and animal husbandry, and to work with national and international partners to educate a select cadre of paraveterinarians in all 24 Pacific Island nations.



The Paravet manual and CD.





Getting base-line data requires on-site blood sampling in American Samoa (above). Seniors picking healthy beans in the Commonwealth of the Northern Marianas Islands.

**Dates of Project:**  
2000–2005

**Collaborating Institutions:**  
American Samoa Community College, College of Micronesia, Northern Marianas College, University of Guam, University of Hawaii, Secretariat of the Pacific Community (New Caledonia), Centers for Disease Control and Prevention (CDC), Uniformed Services University of the Health Sciences (USUHS), Johns Hopkins School of Public Health, Cancer Research Center of Hawaii

**Purpose of Project:**  
To address the disparities in prevalence of chronic diseases while respecting cultural values, by using community-based, holistic, collaborative, and sustainable approaches in Pacific Island communities.

## Healthy Lives...

### *Island Style*

#### *Healthy Living in the Pacific Islands*

The U.S. is facing a problem with obesity, but the problem is even more widespread among Pacific Island nations, where obesity has been increasing for decades and the impact on islander's health is alarming. With a Body Mass Index (BMI) of more than 25 deemed overweight and above 30 as obese, Samoans average a 32.5 BMI and Hawaii's Pacific Islanders average a 31.0 BMI. Chronic diseases, such as diabetes, cancer, high blood pressure, heart diseases, and gout, are on the rise in the Pacific. Hawaiian Polynesians have the highest prevalence of Type 2 diabetes among any Polynesian or part-Polynesian population in the world.

Once self-sufficient, Pacific Island nations, have become more dependent on food imports, including calorie-rich convenience foods. And once physically active populations, who fished for a living or farmed nutritional local foods, like breadfruit, bananas, yams, and taro, are now living a more urban and sedentary life-style.

The Healthy Living in the Pacific Islands (HLPI) Project seeks to turn the tide by encouraging a healthy life-style that can benefit Pacific Island economies through greater production and consumption of fresh, locally-raised food. It also aims to increase health and nutrition knowledge and to expand physical activity among all ages.

Successful implementation is anticipated to result in greater local capacity to monitor and evaluate the food and nutritional status of island populations. Health communication activities will help enable Pacific peoples to make healthier life-style choices.

ADAP funds were key in leveraging funding from the Centers for Disease Control and Prevention (CDC) and the Uniformed Services University of the Health Sciences (USUHS). HLPI accomplishments were also instrumental in securing U.S. Department of Agriculture for National Research Initiative (NRI) funding to sustain the program from 2004-2008.



# Keeping Pests Out of Paradise

## *The Pacific Islands Distance Diagnostics and Recommendation System*

As the most isolated land masses in the world, the Pacific Islands offer spectacular natural beauty and some of the world's most pristine land and ocean environments. Such isolation also makes them vulnerable to invasive species that can threaten a fragile island environment, economy, and public health.

Nearly two-thirds of all extinct plants and birds in the U.S. once belonged to Hawaii. Guam has battled a plague-like invasion of the Brown Tree Snake which has decimated its native bird population. And worldwide, losses to agriculture from alien pests have been estimated at \$55 billion to nearly \$248 billion in a 1992 study by the U.S. Invasive Species Advisory Committee.

To effect a Pacific-based rapid response to pest problems detected by extension agents, quarantine officers, and others, ADAP researchers teamed up with the University of Georgia to craft the Pacific Islands Distance Diagnostics and Recommendation System (PIDDRS). Hosted at the University of Georgia, the computer and Internet-based system is seamlessly available to all Pacific Island nations in the alliance.

Building on University of Georgia's highly regarded existing system, the Project has concentrated on serving unique Pacific needs and infrastructure bottlenecks. For example, most Pacific Land Grants do not have a full roster of diagnosticians to cover the possible gamut of pest problems. Thus, the system networks trained diagnosticians, wherever they may be located, to bring to bear our collective knowledge and experience on a pest issue. A unique response-storage system allows local personnel to draw on the knowledge and best practices of the most recent and effective pest-management solutions from throughout the region. This often allows for a variety of solutions, rather than one or none if they are not locally available. And links with the National Plant Diagnostics Network (NPDN) makes the valuable data collected in the Pacific part of regional and national databases.

Doing our part to preserve Paradise is now quicker and less costly, thanks to this Project. Where it once took two weeks to get a diagnosis on a diseased leaf sent by mail, ADAP and Land Grant researchers, and personnel from other government and non-government agencies can now get a 48-hour (or less) response by Internet and email.

[www.dddi.org/pacific](http://www.dddi.org/pacific)



Leyla Valdivia-Buitriago identifies a sample submitted to PIDDRS. Pests like the glassy-winged sharpshooter are showing up for diagnosis and control recommendation.

**Dates of Project:**  
2001–2005

**Collaborating Institutions:**  
American Samoa Community College, College of Micronesia, Northern Marianas College, University of Guam, University of Hawaii, Hawaii Department of Agriculture, University of Georgia, U.S. Geological Survey

**Purpose of the Project:**  
To establish a self-sustaining, Pacific-relevant distance diagnostics system for rapid identification and response to pests.

# Locations of the Five Pacific Land Grants

## College of Micronesia Land Grant partners

### College of Micronesia—FSM

**Local greeting:** Kaselehlia (Pohnpeian), Lwen Wo (Kosraen), Mogethin (Yapese), Rananim (Chuukese)

**Population of state/territory/island:** 115,000

**Name of Land Grant College/Dept:** Cooperative Research & Extension

**Founding of College/University:** 1974 (formerly Community College of Micronesia); 1992 (COM-FSM)

**Founding of Land Grant:** 1982

**Number of students on campus:** 2,303

**Number of students in land grant program/college:** Associates - 5; Certificate Program - 22

### College of the Marshall Islands

**Local greeting:** Yokwe

**Population of state/territory/island:** 133,894

**Name of Land Grant College/Dept:** College of the Marshall Islands

**Founding of College/University:** 1974 (College of the Marshall Islands); 1992 (College of the Marshall Islands)

**Founding of Land Grant:** 1982

**Number of students on campus:** 1,326

**Number of students in land grant program/college:** Associates - 14

### Palau Community College

**Local greeting:** Alii

**Population of state/territory/island:** 20,610

**Name of Land Grant College/Dept:** Cooperative Research & Extension

**Founding of College/University:** 1974 (formerly Community College of Micronesia); 1992 (Palau Community College)

**Founding of Land Grant:** 1982

**Number of students on campus:** 1,326

**Number of students in land grant program/college:** Associates - 14

### Northern Marianas College

**Local greeting:** Hafa Adai

**Population of state/territory/island:** 78,252

**Name of Land Grant College/Dept:** Cooperative Research, Extension & Education Service

**Founding of College/University:** 1981

**Founding of Land Grant:** 1987

**Number of students on campus:** 1,350

**Number of students in land grant program/college:** 15

### University of Guam

**Local greeting:** Hafa Adai

**Population of state/territory/island:** 163,94

**Name of Land Grant College/Dept:** College of Natural and Applied Sciences

**Founding of College/University:** 1952

**Founding of Land Grant:** 1972

**Number of students on campus:** 2,800

**Number of students in land grant program/college:** 30

# Grant Schools

## Marshall Islands

Population of state/territory/island: 56,429

Name of Land Grant College/Dept: Cooperative Research & Extension

Founding of College/University: 1974 (formerly Community College of the Marshall Islands)

Founding of Land Grant: 1982

Number of students on campus: 900

Number of students in land grant program/college: Associates - 12

## American Samoa Community College

Local Greeting: Talofa

Population of state/territory/island: 57,291

Name of Land Grant College/Dept: Community & Natural Resources

Founding of College/University: 1970

Founding of Land Grant: 1980

Number of students on campus: 431

Number of students in land grant program/college: Associates - 21

## University of Hawaii

Local greeting: Aloha

Population of state/territory/island: 1,244,898

Name of Land Grant College/Dept:

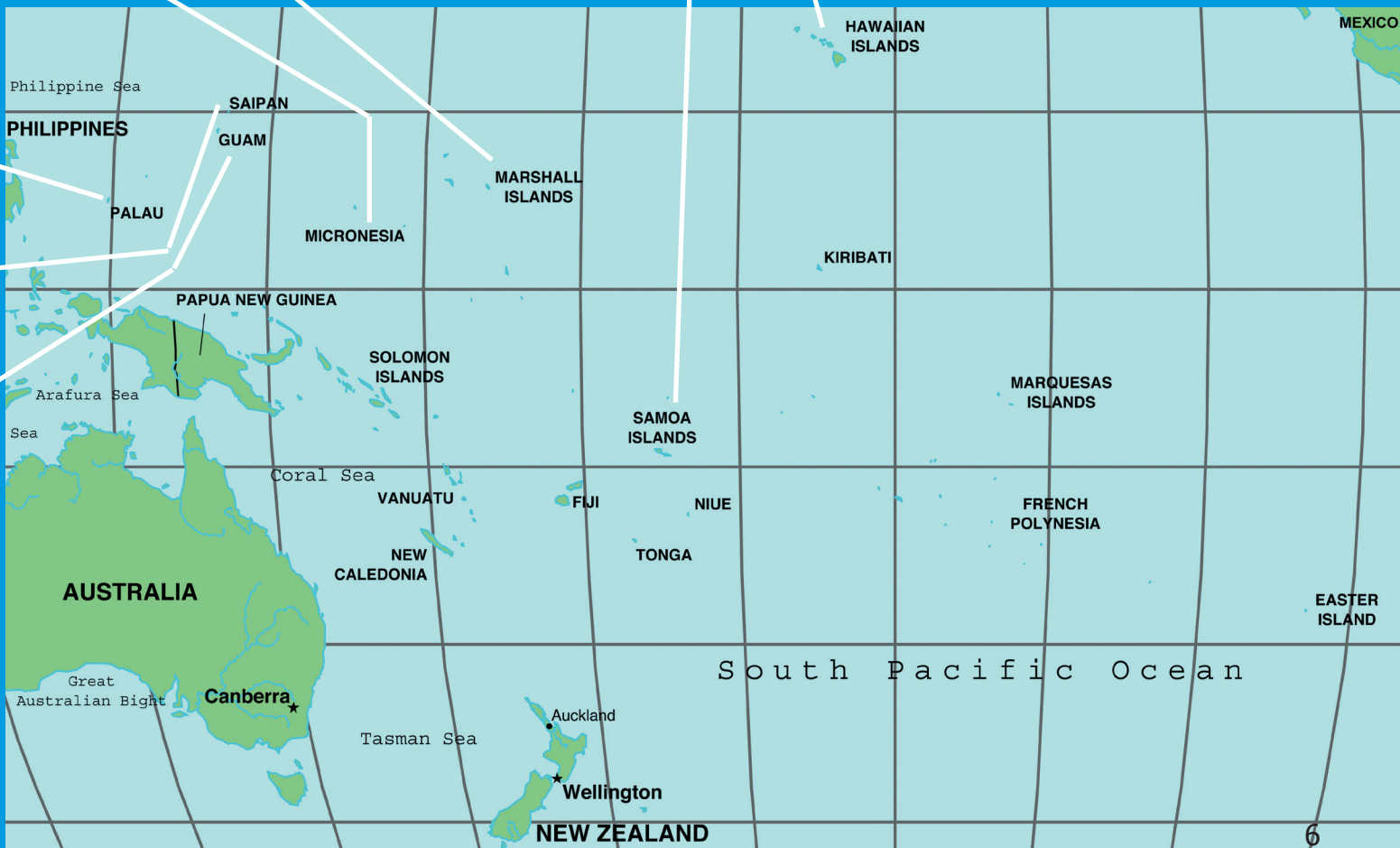
College of Tropical Agriculture and Human Resources

Founding of College/University: 1907

Founding of Land Grant: 1907

Number of students on campus: 18,686

Number of students in land grant program/college: 674





# Sharing Pacific-based Information

## *The PEOPLE Project*

A teacher in need of materials about the Pacific, a farmer in a remote rural area of the Pacific, and a Pacific Island homeowner in need of local information can all access information specific to the Pacific. Thanks to the Portable Extension Office for Program Literature Exchange (PEOPLE), once inaccessible or out-of-print information has been made available on low-cost CDs and on a Web site via the Internet.

In keeping with ADAP's commitment to providing access to Pacific-relevant information, the Project grew out of the recognition that many sources of information relevant to Pacific needs could not be easily put in the hands of the region's diverse populations spread out among 24 Pacific Island nations. With that in mind, PEOPLE was set up to make useful information available to extension agents, farmers, teachers, homeowners and other nonacademic personnel.

The Project drew on both current and historical sources to build its reference base. They include publications currently in distribution in the region, regional and Trust Territory publications no longer in print and revised to modern context as needed, publications relevant to issues and biological needs of the region from other Land Grants, and publications available by permission from non-governmental organizations (NGO's) and other organizations interested in the needs of tropical and subtropical agricultural communities.

Using the wealth of information provided, local extension services have initiated education programs and teachers and homeowners have become better positioned to make informative decisions. Future plans include expanding the system to include streaming audio and video on the Web site and DVDs on regionally developed video/audio clips and materials from other Land Grant programs.

[www.uog.edu/cals/people](http://www.uog.edu/cals/people)

**Dates of the Project:**  
1999–2002 (with local efforts continuing at the University of Guam).

**Collaborating Institutions:**  
American Samoa Community College, College of Micronesia, Northern Marianas College, University of Guam, University of Hawaii, Western Region Sustainable Agriculture Research and Education Program

**Purpose of the Project:**  
To establish a Web and CD-based archive of extension publications developed in or relevant to the Pacific Islands.



# Knowing What You Eat

## *Evaluating the Nutritional Value of Healthy Pacific Meals*

Living in the tropics, Pacific Islanders have created a variety of traditional foods from taro, fish, breadfruit and other Pacific delicacies, which, together with imported foods, have added diversity to island cuisine. When some imported convenience foods have replaced more nutritional traditional fare – such as rice and bread for taro – unwanted calories have been added to a Pacific diet.

How to make the most of foods from the best of both worlds? Pacific Land Grants began by identifying the nutritional content of traditional and imported foods consumed in the Pacific, and then designed healthy meals with an eye toward food choice, convenience, and nutrition. Published in English and some local languages, the project's numerous manuals are in high demand by nutrition health-care professionals treating Pacific Islanders suffering from the effects of poor nutrition and obesity.

This invaluable material has now reached out to Pacific Islanders residing in the mainland U.S. With diabetes near-epidemic among Pacific Island immigrants, community centers in states with significant Pacific Islander populations use the materials to plan healthier diets with traditional and western foods. Hawaii hospitals also use the materials to help ailing residents and immigrants of Pacific Island ancestry.

Healthcare and nutrition professionals have used other publications from the Project as resource materials for training sessions with clientele, community health workers, and other human service professionals. Information gathered by the Project has complemented the work of ADAP's Healthy Living in the Pacific Islands (HLPI) project, a major ongoing collaborative health initiative in the Pacific region. The long term use of the materials will help prevent poor nutrition and diminish health risks among Pacific Island children and teens by providing research-based healthy choices early in life from both imported and traditional island foods.



**Dates of Project:**  
1995–1999

**Collaborating Institutions:**  
American Samoa Community College, College of Micronesia, Northern Marianas College, University of Guam, University of Hawaii

**Purpose of the Project:**  
To establish research-based information on healthy Pacific Island meals by identifying the nutritional content of both traditional and imported foods consumed in the Pacific and disseminating the information to residents and healthcare professionals to help them make informed food choices for healthy living.





# Getting the Word Out on the Pacific

## *ADAP Media Production*

Generating Pacific-relevant information is one of the founding tenets of the ADAP Consortium, but *disseminating it is critically important* to create impact. What better way to see the ripple effect of new ideas and improvements from Land Grants spread across the Pacific than by sharing them with colleagues and others in written and digital formats?

Since the inception of the ADAP Publications/Media Project, the ADAP Home Office and the individual Land Grant Offices throughout the Pacific have been assisting project participants to do just that. The early efforts on producing primarily educational materials were time-consuming and labor-intensive. All final manuscripts had to be sent to the ADAP Honolulu Home Office for printing and distribution. The process required lots of manual labor among collaborating ADAP institutions and long waits for finished products to be shipped or mailed to different and sometimes remote locations.

Today, with the aid of modern Internet technology and ADAP's improved communication system, most of ADAP's publications are now available on the Internet for immediate access to information. The ADAP web site serves as the central gathering place for Pacific-relevant information, including project updates, linkages and databases. It is now ADAP's major information resource and its primary vehicle for reaching out to and linking the Pacific Region on a timely basis.

This project acts as the both the repository and dissemination point for the new knowledge generated by our efforts over the past 16 years. It also ties into the ADAP Scientific Agricultural Literature Search and Document Delivery Service (discussed elsewhere in this report) as a way of getting information resources out to those who need them in the region.

[www.adap.hawaii.edu/adap](http://www.adap.hawaii.edu/adap)

Dates of Project:  
1988–Ongoing

Collaborating Institutions:  
American Samoa Community  
College, College of Micronesia,  
Northern Marianas College,  
University of Guam, University  
of Hawaii

Purpose of Project:  
To provide access to Pacific  
relevant information devel-  
oped by ADAP institutions  
in a timely manner and facili-  
tate sharing of good ideas and  
adoption of effective project  
outcomes.

## Information, Please

### *Critical Research Support Services*

Land Grant researchers need access to high quality library support services and information to develop sound, valid and meaningful information products to serve their island nations. No such library facilities or services, however, exist for the vast majority of Pacific Land Grants.

Since the UH-Manoa Library houses the largest research library in the Pacific, ADAP partnered with the University of Hawaii to make available this resource to researchers in even the most remote areas of the Pacific. The partnership provides Land Grant researchers with interlibrary loan services, journal article research, and document delivery.

With ADAP's improved communication infrastructure, access to the UH Manoa Library is almost as convenient as on-site resources. Search results can be received immediately by e-mail. In 2003, electronic transmittal of copies of journal articles and book chapters in Adobe Acrobat .pdf format was initiated. As a result, researchers and extension agents at the Pacific Land Grants can now access relevant information resources quicker than some of their counterparts in rural mainland U.S. offices.

The latest development targets access to locally significant information. The AgNIC Web site – <http://libweb.hawaii.edu/libdept/scitech/agnic> – can provide researchers with organized access to selected authoritative full text resources on traditional Pacific Island crops.

Since the project's start in 1995, the UH Manoa Library has served 60 different Pacific Land Grant individuals on 11 island nations. That translates to 202 literature searches, 1,576 articles, and 18 interlibrary loans. In 2003 alone, 24 searches, 116 articles, and two interlibrary loans made their way across the Pacific, and each year has seen an increase over the last in requests for library research support services.



UHM librarian Eileen Herring provides service within the library and she also makes presentations throughout the Pacific.

**Dates of Project:**  
1995–Ongoing

**Collaborating Institutions:**  
American Samoa Community College, College of Micronesia, Northern Marianas College, University of Guam, University of Hawaii, and the University of Hawaii at Manoa Library

**Purpose of the Project:**  
To provide library services in support of research and extension services for the Pacific Land Grants.





Pacific swine production systems are typically small. Our poster, below, gives many 'how-to's to the reader. We also have a matching set of 11 fact sheets.

**Dates of the Project:**  
1996–2003

**Collaborating Institutions:**  
American Samoa Community College, College of Micronesia, Northern Marianas College, University of Guam, University of Hawaii

**Purpose of the Project:**  
To improve the management and use of livestock waste in order to address environmental concerns and sustainable agricultural development.

# Keeping Our Islands Paradise

## *Livestock Waste Management Project*

From ancient times, when pigs, dogs, and fruits stocked the double-hulled sailing canoes of seafarers who ventured across the Pacific, colonizing places as distant as Easter Island, swine have been part of the history of the Pacific. Commercially raised swine and poultry today are an important part of the Pacific Island diet, as well as a significant source of income for livestock farmers.

But for every pig in a pot comes a pot of manure. Improved farm methods that increased swine and poultry production made for a growing waste problem. This drew the attention of Pacific Land Grant faculty to search for environmentally-friendly, and economically realistic solutions of manure management.

Manure in the field was a valuable, cost-free soil conditioner and fertilizer, but in a stream or ocean, it became a smelly, costly, and potentially harmful pollutant. Farmers interviewed were diligent in cleaning livestock pens daily and about half of them even collected the wash water in ponds or septic tanks. But instead of applying the waste water to their fields, the vast majority of farmers preferred the traditional method of applying dry manure.

As a result, the project demonstrations focused on finding practical methods for drying or composting the manures for dry application; and devising methods to show liquid waste water was a more cost-effective and timesaving way of replenishing farm soil. The traditional practice of using coconut husks was even included to filter the solids out of manure effluent into the demonstration models.

The project tested and produced a variety of proven best management practices – to address diverse practices among the Pacific Islands — that honored environmentally sound traditional methods, while encouraging better diligence in livestock waste management. The impact of this work will occur over the long term, but will have increasing importance in protecting the Paradise in our islands, as animal and human populations continue to grow in the Pacific.



# Building a Better Pig

## *The Artificial Insemination Program*

If variety is the spice of life, then having diverse breeding stock would make pork, a delicacy throughout the Pacific, an even tastier treat. Such variety would also make for hardier stock and higher productivity for the local livestock economy. But what can island communities do with their small native pig populations? Bringing in small numbers of hearty new boars in the past had proven expensive and carried a high risk of introducing new diseases.

What was the solution to building a better pig? Pacific Land Grant faculty came up with a simple, but effective artificial insemination program that uses high quality boar semen from certified sources. The program had the additional benefit of providing training for local personnel in the art and science of artificial insemination to increase knowledge in effective animal husbandry practices.

Making it all happen still posed a challenge – as fertility cycles, new semen, and transport by air from the mainland U.S. all had to come together at the right time. With infrequent flights to the Pacific, researchers hit upon transporting the prized semen frozen and packed in liquid nitrogen to more remote locations. Local staff in American Samoa, Pohnpei, Guam, Saipan, Tinian and Hawaii then had to be trained to detect when females were in heat and to know how and when to apply artificial insemination.

As a creative and low-cost solution to a long-standing problem, the Project was a resounding success. Cooperating farmers were thrilled to see not just one better pig from every successful insemination, but a whole litter of new and better breed of pigs. The Project not only improved the genetics of the local swine population, but expanded local farming skills for generations to come. A how-to fact sheet and step-by-step video are also available to continue to build local capacity.



Dr. Halina Zaleski, above right, uses artificial insemination to impregnate a sow. The 'how-to' AI manual is above along with a photo of a larger training session in the Pacific (left).



**Dates of Project:**  
1997–2002

**Collaborating Institutions:**  
American Samoa Community College, College of Micronesia, Northern Marianas College, University of Guam, University of Hawaii

**Purpose of the Project:**  
To improve the genetic make-up of the swine population on Pacific Islands through better breeding management and the introduction of artificial insemination.



Interim Dean, Dr. Lee Yudin, College of Natural and Applied Sciences—University of Guam, and Dr. Douglas Vincent, Special Program Director for Contacts and Grants—College of Tropical Agriculture and Human Resources—University of Hawaii at Manoa, are both graduates of the ADAP-funded ESCOP/ACOP Leadership Program.

**Dates of Project:**  
1999–Ongoing

**Collaborating Institutions:**  
American Samoa Community College, College of Micronesia, Northern Marianas College, University of Guam, University of Hawaii, National Association of State Universities and Land-Grant Colleges

**Purpose of the Project:**  
To increase the number of well-schooled leaders in each Pacific Land Grant.

# Wanted: A Few *More* Good Local Leaders

## *The ESCOP/ACOP Leadership Development Program*

“Leadership...has to do with casting vision and motivating people,” says John Maxwell in *Developing the Leader within You*. Focusing on the building of the Pacific Land Grants’ infrastructure in the first few years, ADAP had assured that each Land Grant was well equipped with computers, fax machines, and office equipment, as well as job skills and small applied research and extension projects to begin the work of serving their Pacific Island communities. Now the time had come to heed the words and wisdom of leadership guru John Maxwell to develop well-trained leaders at many levels within the Land Grants to begin envisioning a future and leading others to fulfill that vision.

A rigorous training program that fit the bill for aspiring Land Grant personnel is annually provided by the National Association of State Universities and Land-Grant Colleges’ Experiment Station Committee on Organization and Policy and the Academic Programs Committee on Organization and Policy (NASULGC ESCOP/ACOP). Recognizing that leadership is a talent that can be learned through self-awareness and the desire to learn; each program candidate is exposed to a variety of self-growth opportunities. One phase of the development program, for example, requires that the participant have a “mentor” in his or her institution to support the learning process. With guidance from the mentor, each participant must also lead the development of a specific project that will benefit their institution.

About 10 Pacific Land Grant personnel have participated in this program in the last few years. Each participant in the program gains the experience of being a leader among his or her colleagues, faculty, and staff members. While the actual impact of participation in the program has yet to be fully realized, a number of its graduates are now in positions of higher authority in each school.



## Developing Homegrown Talent

### *The Capacity Building Project for Land Grant Staff*

Investing in a well-trained staff is as critical to the Land Grant program as it is for private industry, government, and non-profits. To establish a deliberate and progressive training program to attract and retain talented employees, ADAP sought ways to encourage promising individuals to “catch the Land Grant bug” early in their academic lives to make serving Pacific Island communities a career choice.

Designed exclusively for the four non-Hawaii Pacific Land Grants, the Capacity Building Project focuses on developing homegrown personnel by providing local residents with funded educational advancement. Funds are provided for tuition, travel, and stipends. In return, each graduate returns home to work in the institution’s Land Grant program that funded his or her education.

Three categories of opportunity address different levels of interest and educational progress. The first targets high school students’ awareness of opportunities in agriculture and related fields and provides interested students with small stipends to support a semester or two of on-campus learning opportunities. The second is an undergraduate support program for current Land Grant staff and faculty to start or finish their Bachelor’s degree. The last is for Masters and Ph.D. candidates who are committed to living in a Pacific Island nation and need support to upgrade their academic credentials as Land Grant personnel.

All three categories require rigorous screening for admission by a team of Land Grant faculty, and at times, reviewers from the larger educational institution. Funding is contingent on accepted candidates maintaining academic quality throughout the support period.

Dozens of promising and talented candidates have benefited from the Project’s in-country, Internet-based, and study abroad opportunities. Many participants have returned home to benefit the Land Grants through their increased knowledge and experience. Still others have gone on to become national leaders in various programs, thus advancing the benefits of the Project beyond the Land Grants themselves.



Laura Laumatia from American Samoa Community College and Martin Napui from Northern Marianas College are just two of many recipients of ADAP Capacity Building funding.

**Dates of Project:**  
1988–Ongoing

**Collaborating Institutions:**  
American Samoa Community College, College of Micronesia, Northern Marianas College, University of Guam

**Purpose of the Project:**  
To establish an education-based capacity building project for individual Land Grants to develop their current and future land grant staff from among local residents.





## Impact Report Group

### Story Contributors

James Hollyer	Robert Barber
Donna Shaver	Harriet Iwamura
Halina Zaleski	Annie Santos
Nicola Davison	Robert Jackson
Eileen Herring	Eseta Su'a-Kalio
Mark Wright	Esther Kapileo
Peter Manuelli	

Story Editing  
Gail Miyasaki

Layout  
Dennis Miyahara

Logistical Support  
Vanessa Troegner

### For Further Information

American Samoa Community College (684) 699-1575 - fax (684) 699-5011  
College of Micronesia (691) 320-2728 - fax (691) 320-2726  
College of Micronesia (FSM) (691) 320-8181 - fax (691) 320-2972  
College of the Marshall Islands (692) 625-3236 - fax (692) 625-4699  
Palau Community College (680) 488-2746 - fax (680) 488-3307  
Northern Marianas College (670) 234-3690 - fax (670) 234-0054  
University of Guam (671) 735-2002 - fax (671) 734-6842  
University of Hawaii (808) 956-8140 - fax (808) 956-6967

Funded by the United States Department of Agriculture Cooperative State Research,  
Education and Extension Service

ADAP Home Office - College of Tropical Agriculture and Human Resources  
3050 Maile Way, Gilmore Hall 112, University of Hawaii at Manoa  
Honolulu, HI 96822 USA  
[www.adap.hawaii.edu/adap](http://www.adap.hawaii.edu/adap) - [adap@hawaii.edu](mailto:adap@hawaii.edu)

The Pacific Land Grants and the U.S.D.A. are Equal Opportunity/Affirmative Action Institutions.