

COOPERATIVE EXTENSION & OUTREACH

2017 Impact Report



UNIVERSITY OF GUAM
COLLEGE OF NATURAL
& APPLIED SCIENCES



Buenas yan Hafa Adai,

I was once told at a national extension conference that if your Extension program is not dealing with the issues being highlighted on the first few pages of your local newspaper, your relevance to the community needs to be re-assessed. This year's impact report tells a great story that demonstrates our relevance to the community that we serve. Sometimes, we don't tell our story loud enough so that people truly know who we are and what we do. There is no better organization in this country that reaches nearly all counties and small island communities than Extension and Outreach programs. We work with farmers, people with disadvantages, health care organizations, senior citizens (manamko), and youth via our 4-H programs, to list a few. We are the outreach arm of any land-grant university and we take pride in delivering non-academic programs in the form of workshops and publications. Today, we have moved into social media via Facebook and Instagram to be able to reach all community members we serve. We work closely with our research scientists to make sure their important research is re-written in a way that our stakeholders can find useful.

We don't want to be the best kept secret on Guam. Our mission is our relevance to the people of Guam, and to improve the lives of the community we serve.

Un dangkulu na si yu'us ma'ase,

Lee S. Yudin, PhD
Dean/Director
College of Natural & Applied Sciences



Hafa Adai!

The mission of the University of Guam Cooperative Extension & Outreach (CE&O) is to deliver research-based, unbiased scientific information to the citizens of Guam. In turn, we take the needs and concerns of the people to the university. Cooperative Extension & Outreach faculty and professional staff, across many disciplines, are committed to the Extension mission. We build partnerships across the university, across the island, across the water, and across the world to find answers, solve problems, and identify resources for citizens to make the best decisions for their lives.

Using research-based information in agriculture, we are assisting farmers to feed our island. With science based curricula, we are engaging youth in schools and clubs in STEM education. Our professionals are connecting people of all ages to deliver fact-based nutrition education.

By building capacity for decision-making in families, communities, and businesses, Guam will be able to capitalize on any opportunity and face any challenge. Through educational avenues and open dialogue, Cooperative Extension & Outreach works with our citizens to accomplish what we all want: vibrant villages, strong families, successful citizens, profitable businesses, and engaged youth who are tomorrow's leaders.

Dinanna' para i manmamaila' na tiempo,

Sereana Howard Dresbach, PhD
Associate Dean/Director
Cooperative Extension & Outreach

In 2014, USDA-NIFA and the Land-Grant University System celebrated 100 years of Cooperative Extension in the United States. In the century since its creation, this nationwide educational and outreach network has made significant contributions that improve lives.

The Smith Lever Act formalized Extension in 1914, establishing USDA's partnership with land-grant universities to apply research and provide education in agriculture. Congress created the extension system as rural-focused, because a majority of the population was agriculture and rural based.

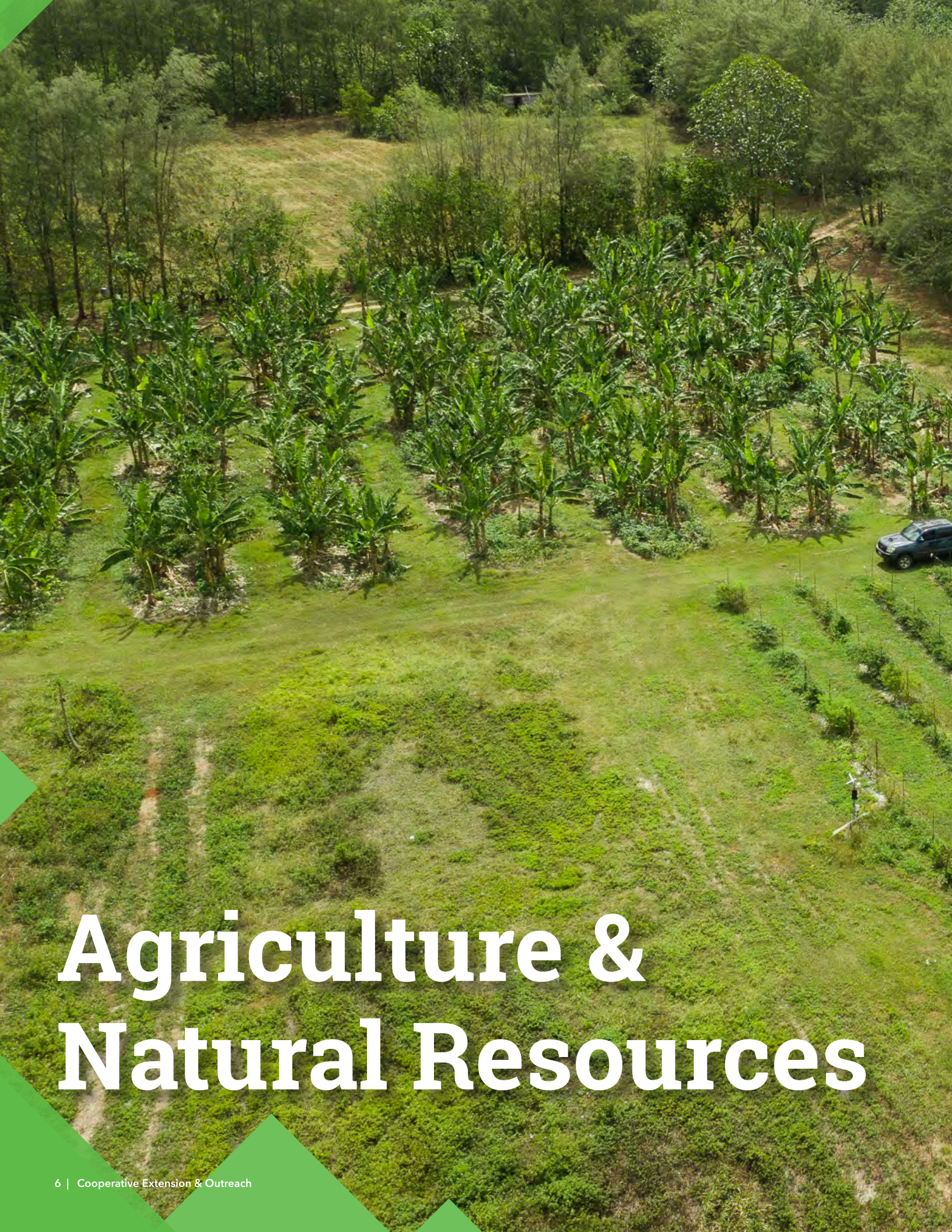
Over the last century, Extension has adapted to changing times and landscapes. The addition of discipline areas to meet the needs of individuals, families, youth, and communities expanded the educational programming to include 4-H Youth Development, Consumer and Family Sciences, Natural Resources, and Community Development.

Today, Cooperative Extension & Outreach is the engagement entity of the University of Guam. Our history mirrors the evolution of the land-grant institutions and Extension education. Starting as a small college, UOG has grown and fully embraces its land grant mission to serve the population for over 50 years. As the land-grant institution system evolves to address more and more issues in meaningful ways, UOG Cooperative Extension & Outreach will continue to engage partners to find ways to meet the needs of the people of Guam.

Source: <https://nifa.usda.gov/cooperative-extension-system>







Agriculture & Natural Resources



"Agriculture is more than farming, it is part of our everyday living."

~ Jesse Bamba



Cooperative Extension & Outreach
Professional Phoebe Wall, mentors
Department of Corrections (DOC) inmates
on home gardening and maintenance.



Community and Home Gardening

Community gardens are more than a recreational activity to fill time. Workshops focusing on gardens demonstrate how it all fits together - gardening, physical activity, produce, access, and human health outcomes. The important first step is engaging people to take charge of their food sources. Guam lacks deep, rich soils throughout the island, but that does not mean food production is limited.

Cooperative Extension & Outreach workshops provide easy steps to produce food through container and raised bed gardens. Gardening workshops are just the first step. Cooperative Extension & Outreach partners with a variety of organizations to address issues and concerns of all families on Guam. Collaborations with non-profit agencies, government, business organizations, as well as membership groups and alliances, have created opportunities to address the needs of our island. These collaborations have initiated research and disseminated information to those who use it to make lives better with a focus on food production.



Farmer Outreach

Cooperative Extension & Outreach for agriculture and natural resources is more than recommendations of plant stock. Extension programs and outreach link producers with the answers they need to feed themselves, their families, their communities, and their island. The link to research answers the questions about cultivars, optimal growing conditions, best management practices, elimination of pests, and strategies for market supply.

Extension programs utilize research that is continually evolving to address the needs of farmers and producers throughout the island. Research focusing on effective biological controls for pests, fungi, and cankers is translated into educational workshops and materials. Research agendas are driven by input from consumers, farmers, families and other stakeholders of Guam.



With Extension education, local producer Bernard Watson grows peppers as a source of income. Peppers are sold to local businesses for consumer purchases.



Walk to Wellness participants prepare for the final walk during the program celebration at UOG.



Walk to Wellness

Walk to Wellness focuses on reducing the risk factors of non-communicable diseases by increasing physical activity, fruit and vegetable consumption, and providing meaningful wellness education throughout the island. This program is an outreach activity of the *Community Healthy Living* research that involves several disciplines, each focusing on their specialty, but collaboratively developed education and outreach programs that impact individuals, families, and communities. The 12-week program of one-hour weekly sessions included group walking and wellness sessions, health screenings, village competitions, and incentives of fruit and vegetable plants and produce. Conducted in Santa Rita and Sinajana to start, over ninety people participated in this program. A long-term goal for this project is intended to expand into villages to encourage and improve village resources to support walking and other physical activity for all residents. Collaborating partners in this effort include *University of Guam Cooperative Extension & Outreach, Supplemental Nutrition Assistance Program Education, Department of Public Health and Social Services, Guam Breast and Cervical Cancer Early Detection Program, Guam Comprehensive Cancer Control Program, Tobacco Prevention and Control Program, Diabetes Prevention and Control Program, STD/HIV Program, Medically Indigent Program, and Medicaid Program.*

Seven Trees, Seven Practices

Seven Trees, Seven Practices focuses outreach activities to demonstrate how to establish commercial and consumer based multi-storied cropping systems, one micro plot at a time. This program promotes conservation practices that create optimal growing conditions despite given constraints, such as limited financial resources, shallow soils, and expensive imported inputs. Practices such as sheet mulching, fruit tree windbreaks, filter strips, drip irrigation, nitrogen fixing hedgerows, contour planting, alley cropping, and multi-storied cropping are all practical strategies for the home owner, as well as the commercial producer.

This multi-storied agroforestry system includes intercropping of short-term cash crops and intermediate high value perennials like bananas and papayas, all planted within a grid of permanent fast-to-fruit trees, such as key lime, calamansi, breadfruit, fig, soursop, mulberry, and pomegranate. The pattern is designed to provide rapid-sale cash crops, soon supplemented by high value perennials. Once the initial micro-plot is established and harvesting begins, a second plot is started. Long term implications for this outreach effort focus on island food security by increasing locally grown produce.



Using native fruit bearing trees, such as breadfruit, helps homeowners and micro-farmers benefit from multi-storied agroforestry.



Professionals take a closer look at plant diseases that affect the growth and production of crops and plants.

A laboratory setting with a microscope in the foreground and a red text overlay. The background shows a wooden wall with a clipboard and a shelf with various items. The red overlay is a semi-transparent rectangle with a white border and a white dot at the top right corner. The text is white and centered within the overlay.

Focusing on Farmers

Home gardening is becoming more popular, not only as a hobby, but as a source for food. But home gardens are no less susceptible to threats than larger growing plots. Through multiple resources in Cooperative Extension & Outreach, consumers can assess, identify, and treat the pests plaguing their gardens. Using environmentally friendly methods to control pests and diseases, Extension faculty and professionals provide information and tips on implementing Integrative Pest Management (IPM) practices, which include the Prevention, Avoidance, Monitoring, and Suppression of pest populations approach (PAMS).

The Plant Diagnostics Lab can assist consumers to identify diseases and pests, such as anthracnose on papaya, hot pepper, and cucumber, as well as chlorotic purple leaf disease on tomato plants. Once identified, treatment can be implemented. More importantly, consumers are then able to introduce preventative strategies. Through various research efforts, varieties of vegetable plants, fruit and ornamental trees, as well as yard scape vegetation resistant or tolerant of disease and pests are identified to have the best success for gardens, yards, and farms. Using research findings, options for backyard and commercial farmers are shared throughout the island.

Protecting Guam

UOG Extension Entomologist Aubrey Moore, PhD, taught General Entomology during the Fanuchånan 2017 semester. As part of the laboratory section of this course, each student was required to make an insect collection.

On October 23, 2017, Jake Manuel, collected a butterfly from the underside of a soursop leaf. This specimen did not match any of the descriptions in the standard reference for Guam's butterflies. Images were emailed to Donald Buden, PhD, College of Micronesia, Pohnpei, Federated States of Micronesia to request for identification. Buden identified the butterfly as belonging to the genus *Doleschallia* and forwarded the identification request to John Tennent, PhD, Museum of Natural History in London, England. Dr. Tennent confirmed the species *Doleschallia tongana* by comparing the images with specimens in the museum. It is considered to be an invasive species because its caterpillars have been reported to feed on breadfruit.

UOG Cooperative Extension & Outreach will be monitoring all areas of the island by utilizing our partner agencies, as well as individuals, to the butterflies' location. Concurrently, Extension will be working diligently to ensure that the butterfly does not spread and threaten the island breadfruit trees.



Professor Aubrey Moore and student Jake Manuel search for butterflies in soursap trees during an insect identification exercise.



Eating Smart
Being Active

LIKE US ON FACEBOOK

UOG CNEP
University of Guam Community Nutrition Education Programs

For more info on UOG's Nutrition Education Call us at 735-2526/2630

GUAM SNAP-Ed



Consumer and Family Sciences



M. U. Lujan Elementary School
 Mission Statement
 To promote and provide academic opportunities
 in a conducive and nurturing environment
 for all students to explore and build a life of learning
 as a productive citizen in our community.

Statements

Daily Agenda
 April 13, 2018
 SBA Science
 Test

Spelling Words

1. Monday
 2. Sudden
 3. until
- forget
happen
follow
dollar

- 1) Reading: Trapped by the
Story map / Triarama
 - 2) Lang Arts: finish up B
 - 3) Spelling: write a sentence
 - 4) Math: Fractions/Dec
 - 5) Content: Heat
System -
- Vocabulary
- 1 barren
 - 2 Grasse
 - 3 floor

Story Map

Theme
 Title
 Characters
 Settings
 Problems
 Solutions

Reading I can ask and answer questions to demonstrate understanding of the text.	Reading I can read with sufficient accuracy + fluency to support Comprehension.
Language I can identify nouns in a sentence.	Language I can identify parts of a sentence: subject/predicate and Verbs.
Math I can fluently add and subtract whole numbers.	Math I can name the basic shapes. I can create.
Conte I can... of a...	

Students take part in answering food safety questions during an EFNEP lesson at M.U. Lujan Elementary School.



Food & Nutrition

Expanded Food and Nutrition Education Program (EFNEP) is a federally funded and operates in every U.S. states and territory, including Guam.

The strength of EFNEP is the engagement of paraprofessionals, usually those who live in the communities where they deliver programs, thus strengthening community connections. Through a community-based, relationship-driven, hands-on educational approach, EFNEP has directly impacted economic, obesity, and food insecurity challenges that face the nation as a whole.

EFNEP has two elements - the Adult Program and the Youth Program. Within the Adult Program, individuals and families improve in five core areas over a series of 8 lessons:

- diet quality
- physical activity
- food resource management
- food safety
- food security

Adult lessons are delivered through a learn-by-doing approach that engages them in practical skills to make positive behavioral changes.

In the Youth Program, EFNEP provides nutrition education at schools, after-school care programs, day camps, community centers, and neighborhood groups, as an enrichment program of activities. In addition to nutrition, the 7-lesson series includes topics on how food grows, kitchen skills, food safety, nutrition, and physical activity.

Community-Based Nutrition Programs

Supplemental Nutrition Assistance Program Education (SNAP-Ed) meets island residents in places where they live, work, eat, and play with age-appropriate nutrition and physical activity education programs. Community-based social media campaigns engage people and technology with SNAP-Ed messages. SNAP-Ed aims to improve the likelihood that people, eligible for or receiving SNAP, will make healthy food and lifestyle choices that prevent obesity.

Guam SNAP-Ed offers three direct nutrition education programs:

- *Food Friends and Mighty Moves (FFMM)*, is a train-the-trainer food and activity curriculum provided to the Department of Education's Pre-Kindergarten and Guam Head-start programs.
- *Plan, Shop, Save, & Cook (PSSC)*, is an adult curriculum focused on planning meals within limited budgets, while learning skills to understand food labels and pricing.
- *Eat Smart, Live Strong (ESLS)*, is a curriculum designed to improve fruit and vegetable consumption and physical activity among older adults aged 60 and above.

Guam SNAP-Ed utilizes a mobile kitchen and classroom to offer PSSC and ESLS in undeserved neighborhoods or in community settings, in partnership with various housing groups and community programs.

Guam SNAP-Ed also offers *5-2-1-Almost None*, a campaign that promotes four specific healthy behaviors: 5 fruits and vegetables per day, no more than 2 hours of screen time, at least 1 hour of physical activity, and almost no sugary drinks. SNAP-Ed currently partners with five elementary schools, eight food stores, and municipal offices in the villages of Agat, Ordot-Chalan Pago, Yigo, Yoña, and Santa Rita. In 2017, *5-2-1-Almost None* campaign reached 2,155 village residents in SNAP-approved food stores, as well as 2,567 primary school children who received a variety of school-based intervention initiatives.





Extension Professionals distribute food samples and recipes of kangkong infused tatiyas (tortillas) during annual Charter Day events at UOG.



Participants of the *Preventive Health Project* (PHP) discuss the effects of physical activity impact on family systems.



Actively Aging

The *Preventive Health Project* (PHP) goal is to prevent the development of chronic diseases, such as heart disease, diabetes, and obesity. PHP is a partner with the Division of Senior Citizens, teaching evidence-based curricula:

Prevent Type 2 (T2) Diabetes
Active Living Every Day (ALED)

Both programs are client-centered, delivered in a group setting presented at Senior Centers throughout the island.

Prevent T2 is a 12-month, structured lifestyle change program for people at risk of developing type 2 diabetes. The program has been completed at Dededo and Mangilao Senior Centers.

ALED is a 12-week program that uses group-based problem-solving methods to integrate physical activity into everyday living. Facilitated by a Extension Professionals, participants decide how to make their lives better through physical activity. This program was implemented in Sinajana, Agat, and Merizo Senior Centers and will be offered in other centers to come.



EFNEP Impacts:



541

Family members



1,198

Contact hours



1,288

Youth on Guam



9,016

Contact hours



SNAP-Ed Impacts:

89% of participants report using the "Nutrition Facts" label to make healthy food choices.



61% of participants report increasing the variety of fruits and vegetables they consume.



66% of participants report planning meals ahead of time and using a shopping list to stay within budget.



71% of participants increased their daily physical activity.



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Today's Schedule

3rd Grade Class Schedule
 3rd GRADE
 HOMEROOM
 Reader's Workshop

*8:30-8:45
*8:45-9:15
*9:15-9:30
*9:30-10:00
*10:00-10:30
*10:30-10:45
*10:45-11:00
*11:00-11:15
*11:15-11:30
*11:30-11:45
*11:45-12:00
*12:00-12:15
*12:15-12:30
*12:30-12:45
*12:45-1:00

- 8:15-8:30 (15 minutes) - Pick Up Students - Homeroom
- 8:30-10:00 (90 minutes) - Reading - Writing
- 10:00-10:15 (15 minutes) - Recess
- 10:15-10:45 (30 minutes) - Reading - Writing
- 10:45-11:15 (30 minutes) - Chamorro
- 11:15-11:40 (25 minutes) - Content - Math
- 11:40-11:55 (15 minutes) - Positive Behavioral Intervention Support (PBIS)
- 11:55-12:40 (45 minutes) - Recess - Lunch
- 12:40-1:40 (60 minutes) - Math

Sunday	Monday	Tuesday	Wednesday



Past Yesterday was
 Present Today is
 Future Tomorrow will be

FLUENCY CHECKLIST

- ✓ **Accuracy:** I read the words correctly.
- ✓ **Rate:** I read not too fast and not too slow.
- ✓ **Expression:** I read with feeling in my voice.
- ✓ **Punctuation:** I follow the punctuation.



WEBSTER'S
 DICTIONARY



Community Development



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Science Saturdays

With no after school STEM youth program offered on Guam, UOG Cooperative Extension & Outreach provided the first step to developing future scientists through the *GENE-ius* program. Focused on students in grades 4 through 6, youth explored various scientific principles through engaging activities developed by University of Hawai'i at Mānoa. The trial session recruited 52 students, from different school districts, to participate in multiple hands-on activities to enhance critical thinking and problem-solving skills. A pre- and post-test assessment tool for measuring the preparedness and performance of the students indicated a 121% increase in students' knowledge as a result of the course experience. Several parents expressed their interest in enrolling their children in the complete program that expands the focus into multiple science disciplines. An enhanced program is planned for future Saturdays.



"Guam GENE-ius encourages children to explore the world of science and helps foster problem-solving skills while building an overall passion for science."

~ Kamile Wang



Community decisions are more effective when made with research based information.



Community Decisions

The *Knowledge@Guam Initiative* (K@GI) builds upon the community capitals framework and public issues education as a useful capacity building approach. The main objective of the initiative is to enhance the ability of community and government planning workgroups to use common issue and data metrics for important community issues. The overarching role is to improve decision making in local communities, empower communities to guide their own decisions, and improve the social and economic well-being of Guam residents. Extension personnel work in a variety of ways, such as technical project workgroups, on government councils, boards, and commissions, to ensure the access, interpretation, and use of data for all involved. These meetings and project planning sessions allow for promoting the use of research-based information, exchange of information and improved decision-making on challenging community issues, such as economic development and community infrastructure.

Water You
Doing?





4-H Youth Development

Youth Empowerment



One of the most important resources for Guam's future is our youth. 4-H is America's largest youth organization and is delivered through Cooperative Extension & Outreach at the University of Guam. 4-H values every child, their strengths, their experiences, their motivations, and harnesses those qualities to improve the world. Empowering youth in a positive environment, where they receive guidance from adult mentors, youth develop skills to lead Guam, the Pacific Region, and the world in proactive leadership roles.

A year of exploration and innovation, Guam 4-H focused on cultural perpetuation, environmental issues affecting the Pacific region, sustainability and management of natural resources, and food security in 2017. Specific to the island, Guam 4-H has documented a rise in people seeking culturally centered workshops, such as weaving, traditional fishing techniques, dance, and chanting. Guam 4-H is viewed as a source of educational programs for international visitors, as well as adult and youth volunteers.





C. L. Taitano Elementary School students come together to apply information learned in 4-H programs to create their own raised tire garden bed.



4-H Youth Development STEM Education Programs



66%

of participants report an increase in knowledge of STEM subject matter.



38%

of participants report increased retention of STEM subject matter.



97%

of participants indicated the use of subject matter in daily activities.



80%

of participants indicated a willingness to volunteer their time for 4-H activities.



C. L. Taitano Elementary School student transplanting plants from classroom to garden.

Cooperative Extension & Outreach Funding



 **\$1,938,461**
Local Funding

 **\$4,177,982**
Federal Funding



\$2,973,077 Smith-Lever
Capacity Funding



\$16,418 Sustainable
Agriculture Research & Education
(SARE)



\$18,667 Renewable
Resources Capacity Grant



\$127,255 Extension
Implementation Program (EIP)



\$23,343 Western Sustainable
Agriculture Research & Education
(WSARE)



\$78,992 USDA/Forest Service
(USFS) Guam Casaurina Program



\$138,619 for Expanded Food and Nutrition Education Program (EFNEP)



\$75,784 for Healthy Aging



\$266,737 for Supplemental Nutrition Assistance Program Education (SNAP-Ed)

\$20,000
4-H Military Partnership

\$366,089
4-H Science Technology Engineering and Mathematics (STEM) Projects

\$40,155

Plant Disease Diagnostic Training (PDDT) Agricultural Professionals

 **\$27,487**
Childrens Healthy Living





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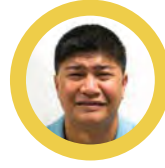
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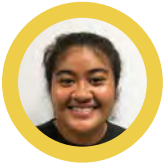
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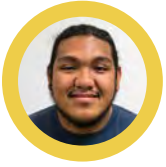
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Photo credits and captions

Page 1: Aerial view of University of Guam Agriculture and Life Science building. Photo taken by Luke S. Fernandez.

Page 2-3: Aerial view of Pãgo Bay, Mangilao. Photo taken by Luke S. Fernandez.

Page 4-5: Guasãli, a native flower found in the Marianas Islands. Photo taken by Luke S. Fernandez.

Page 6-7: Aerial view of local farmer Bernard Watson in Yigo. Photo taken by Luke S. Fernandez.

Page 8-9: UOG Extension Professional Phoebe Wall at home gardening demonstration. Photo taken by Luke S. Fernandez.

Page 10-11: Donne' Peppers grown by local farmer Bernard Watson in Yigo. Photo taken by Luke S. Fernandez.

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Page 22-23: CNEP Professional Terika Fegurgur conducts EFNEP lesson at M.U. Lujan Elementary School. Photo taken by Luke S. Fernandez.

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