

## 2020 Annual Report of Accomplishments and Results

<b>Guam</b>
University of Guam of Cooperative Extension & Outreach (UOG-CE&O)
University of Guam, Western Pacific Tropical Center (UOG-WPTRC)

### I. Report Overview

The NIFA reviewer will refer to the executive summary submitted in your FY2020-2024 Plan of Work. Use this space to provide updates to your state or institutions as needed.

#### 1. Executive Summary (Optional)

The University of Guam (UOG) is the only four-year public institution of higher education in Guam. Per the mission of UOG, the university serves not only Guam but also the region of Western Pacific, which comprised 2.2 million square miles and island nations that are under the protection of the United States and have two-year colleges that also have land grant status.

Agriculture Experiment Stations, being a part of UOG since 1975, have significantly impacted the agriculture research on Guam and many islands in the Western Pacific. The Western Pacific Tropical Research Center (WPTRC) associated with the Land Grant college's research division accurately reflects our mission and research priorities. WPTRC faculty and administrators formulate clear and attainable goals and adopt the following mission: "Excellence in research in support of the land grant mission of discovery, learning, and engagement. We excel in the areas of tropical agriculture, environmental and life sciences. Our mission is strategically aligned with UOG's mission of responsiveness to Guam and other Western Pacific island communities' specific needs, thereby contributing to their economic growth and stability.

The University of Guam Extension & Outreach (UOG CE&O) engages the university community and the public through a multidisciplinary approach to address Guam's people's complex issues UOG CE&O works to increase its collaborations with government agencies, private entities, businesses, non-profit agencies, and non-governmental organizations. This approach is vital in Guam's interdependent Culture and has proven to be one of the strengths to ensure effective education programs are delivered on time. These partnerships have supported the mission of extending research-based information through multiple education venues to engage individuals, families, youth, and communities.

UOG Extension and research connect to the citizens through various engagement processes, not only in the education arena but also to gather perspectives of needs, concerns, issues, and emerging trends. This approach represents an educational effort to apply research-based, unbiased information for daily application in the use and protection of urban natural resources in the urban and rural environments, identifying food security strategies on the micro, mezzo, and macro-levels, youth and family development for leadership, and economic sector enhancement. With Guam's geographic position, the responsibility for social, economic, environmental, and policy research and application have potential for regional, national, and international implications that directly affect day-to-day living on Guam.



## II. Merit and Scientific Peer Review Processes

The NIFA reviewer will refer to your Plan of Work. Use this space to provide updates as needed or activities that you would like to bring to NIFA's attention.

Process	Updates
<p><b>1. The <u>Merit Review Process</u></b></p>	<p>Cooperative Extension &amp; Outreach regularly conducts stakeholder information gathering, specifically with economic groups, project audiences, and thorough evaluations of all education sessions. Also, stakeholders were identified to respond to questions about their needs and perception of assets in Guam. This interview process was summarized, and trends were identified. As a short-term project, four initiatives focusing on transdisciplinary, multi-tiered initiatives are implemented for 2019-2021. These initiatives are supplemental to all extension education programming currently conducted. The four areas are: <i>Harnessing Big Data; Our Youth, Our Future; Reinforce Family Resiliency</i>, and <i>Ensuring Food Security</i>. These initiatives are designed from the research and experience of extension faculty and program professionals.</p>
<p><b>2. The <u>Scientific Peer Review Process</u></b></p>	<p>Because of the small size of WPTRC, a review of individual Plans of Work and projects has been conducted mainly by WPTRC administrators (Director and Associate Director). They usually utilize external reviewers and their knowledge and experiences to ensure that the planned programs and activities address the critical issues of strategic importance, including those identified by the stakeholders during the development of Strategic Plans. All new research proposals (such as for Hatch, McIntire-Stennis, Regional Research programs) are being submitted to WPTRC Associate Director, who checks the submission for completeness and format. There are very few peers at the university with the expertise to review research proposals in agriculture fields. Therefore, a draft proposal ready for review is being submitted to the external ad hoc Peer Review Committee. The committee comprises three faculty members from other universities who are familiar with the issues addressed by the project. Based on the review, that includes assessment of (1) significance, (2) need, (3) approach, (4) new knowledge to be generated, (5) potential for impact, and (6) potential for success, WPTRC administrators make decisions regarding the allocation of resources.</p> <p>For all extension programs, the foundation for all education is the peer-reviewed materials, accepted as legitimate by the research contributors' breadth. A continuous review of the extension materials used in other systems and partnerships with other extension professionals is primary to integrating research-based materials from all disciplines into appropriate education processes for all learner groups. UOG CE&amp;O relies on the integrity of other extension systems to do the same and disseminate research from the UOG system. Faculty and extension professionals are expected to publish in peer-reviewed journals.</p>

### III. Stakeholder Input

The NIFA reviewer will refer to your Plan of Work. Use this space to provide updates as needed or activities that you would like to bring to NIFA's attention.

Stakeholder Input Aspects	Updates
<p><b>1. Actions taken to seek stakeholder input that encouraged their participation with a brief explanation</b></p>	<p>From the very beginning of the land grant university concept, engaging the public to address their needs was defined as being "grassroots". The "roots" are essential for a living entity to grow and prosper, hence the connection of the university to the public. Extension's root is addressing individuals, families, and communities' needs through access to research-based information. As people and communities evolve, so do needs and concerns. The Extension cannot be stagnant in the delivery of information. The continuous dialogue with stakeholders to understand their needs and explore new strategies to engage is the Extension model. Throughout 2019 and early 2020, UOG Cooperative Extension &amp; Outreach focused on four strategic thrusts to address stakeholders' needs.</p> <p>Through multidisciplinary teams of faculty, professionals, and staff, they designed and planned engagement activities to address four areas:</p> <ul style="list-style-type: none"> <li>• Ensure Food Security</li> <li>• Our Youth, Our Future</li> <li>• Reinforce Family Resiliency</li> <li>• Harness Big Data</li> </ul> <p>Extension professionals from all disciplines and responsibilities partnered together to identify and develop engaging programs around these topics. As each team strategized and implemented engagement strategies, no one predicted a worldwide health crisis. Each of the four initiatives shifted, and professionals adjusted the activities and, where applicable, transformed activities to be specific about COVID-19 for the needs of youth, individuals, families, and communities. While some activities were postponed due to the crisis, other activities are very specific to Guam's grassroots needs. Extension professionals further demonstrated their ability to adapt by identifying each program's pieces for the immediate need. While some parts of the strategic initiatives have paused, the mission of Extension is still the grassroots connection – deliver research-based information for citizens to engage in their daily lives and maintain continuous dialogue with stakeholders through consumers, families, individuals, businesses, agencies, member organizations, government partners, federal agencies, military, and outer islands representatives.</p>

	<p>Ongoing strategic conversations for initiatives, CE&amp;O professionals were asked to seek information about needs and potential strategies for programs from:</p> <ul style="list-style-type: none"> <li>• traditional stakeholder individuals</li> <li>• non-traditional groups</li> <li>• non-traditional individual</li> <li>• university potential or established partners/collaborators</li> <li>• ongoing interagency collaboration to lead strategic planning and big data capacity building and programming.</li> </ul> <p>CE&amp;O faculty and professionals are involved in various stakeholder groups as resource experts, board members, advisory members, and a host of other roles. Identifying issues and partnerships is a daily activity.</p>
<p><b>2. Methods to identify individuals and groups and brief explanation</b></p>	<p>Multiple methods to the breadth of stakeholder groups are used:</p> <ul style="list-style-type: none"> <li>-Web-based interaction via metrics of use of materials and random sample evaluation of materials</li> <li>-Survey methods with non-traditional stakeholders and non-users - identification of non-users to determine needs (individuals, groups, agencies, and others)</li> <li>-Person to person dialogue for in-depth exploration of issues for families, consumers, agriculture producers, and non-traditional stakeholders.</li> </ul> <p><b>Traditional Stakeholders</b></p> <ul style="list-style-type: none"> <li>4-H Clubs - Volunteers, Leaders, and Youth</li> <li>Northern and Southern Guam Farmers and Producers</li> <li>Soil Conservation Districts</li> <li>Volunteers</li> <li>Sanctuary Inc. (A home for troubled, abused, and runaway youth)</li> <li>Guam Public School System and other Gov Guam agencies</li> <li>EFNEP Clientele</li> <li>Guam Mayor's Council</li> <li>NRCS, USDA</li> </ul>

	<p><b>Non-traditional Stakeholders</b></p> <p>Administrators, boards, commissions and staff of government and non-government organizations from Department of Labor, Department of Public Health, Department of Youth, Guam Community College, Guam Economic Development Commerce Authority, Guam Environmental Protection Agency, Small Business Development Center, Guam Public School System Teachers, military, and businesses.</p> <p>WPTRC will employ several stakeholder input methods, including soliciting input from individual farmers, farmers groups and organizations, representatives of the industry, and federal and local agencies. Because of the relatively small number of faculty and stakeholders in Guam, it has been a long-lasting practice to invite stakeholders for various college functions and give them frequent opportunities to express their needs in informal settings such as personal contact with faculty members. Periodically, stakeholders (farmers, golf course superintendents, owners of nurseries) are invited to the college to make presentations and express their needs and concerns more formally. Both methods seem to work well, and WPTRC administrators plan to continue providing stakeholders' input. We intend that our future stakeholders will include producers, consumers, decision-makers, students, alumni, and business community members.</p> <p>Considering world events, identification of process, system, and response issues related to all issues will be examined, and identification of rapid response avenues. For UOG CE&amp;O, specific issues of food security and family resource management during crises are identified by stakeholder audiences and faculty and professionals.</p>
<p><b>3. Methods for collecting stakeholder input and brief explanation</b></p>	<p>Guam's island community can be best described as small and a close-knit community. UOG extension and research faculty continue to invest in relationship building and work closely with a broad base of community stakeholders. Input from community organizations, individual farmers, homeowners, schoolteachers, state legislature, and government agencies represent the many informal and formal sources of stakeholder groups supporting agriculture production and a broad range of community issues. Because of the breadth of experience on other islands in the region, research and Extension professionals identify, characterize, and provide a rational management method for invasive species, new disease outbreaks, and other Guam concerns. Addressing the identified issues and challenges, workgroups and planning teams apply for funding for more in-depth investigations. There are various needs for information and education for youth, families, and the elderly in Guam.</p>

	<ul style="list-style-type: none"> <li>• In-person dialogues</li> <li>• In-person session evaluations</li> <li>• In-person interviews</li> <li>• Web-based dialogues</li> <li>• Web-based metrics analysis</li> <li>• Web-based surveys</li> <li>• Literature reviews</li> <li>• Literature searches</li> <li>• Research partnerships - internal and external</li> </ul> <p>Other methods include:</p> <ul style="list-style-type: none"> <li>• Meet with stakeholder groups regularly.</li> <li>• Meet with stakeholder individuals.</li> <li>• Consultation with educational institutions on island in region.</li> <li>• Meet with non-traditional groups.</li> </ul>
<p><b>4. A statement of how the input will be considered and brief explanation of what you learned from your stakeholders</b></p>	<p>Where appropriate, Extension will align related community needs assessment themes and strategic planning efforts related to priority community issues identified by the UOG-CE&amp;O collaboration. Guam's AES stakeholders are well identified. There are not more than 50 farmers and not more than 200 individuals who supplement their income with agricultural production. Farm and individual input contribute towards setting programming priorities and defining agriculture research projects and interest areas. Ranges from substantial (full-time farmers) to insignificant.</p> <p>Cooperative Extension &amp; Research supports ongoing dialogue on topics not limited to science literacy, food security, environmental threats, and impacts to human population programming with agriculture producers, elected leaders, and consumers. Research-based information as a foundation of education and outreach is critical and needed for all programmatic efforts, but specifically for the Western Pacific in invasive species economic and environmental impact, food production, and water capture and use. Interest in career pathways exploration and workforce development aligned with 4-H life skill development continues to be the anchor for our positive youth programming development initiatives.</p>

**IV. Critical Issues Table of Contents**

<b>No.</b>	<b>Program Name in order of appearance</b>
1.	Youth Development- 4H Youth Development
2.	Family and Consumer Sciences- Health
3.	Food Safety
4.	Human Nutrition- Childhood Obesity
5.	Sustained Agricultural Production Systems-Plant/Pest Efforts
6.	Sustained Agricultural Production Systems-Global Food Security
7.	Sustained Agricultural Production Systems- Protect Resources of Guam
8.	Community Development



## V. Planned Program Activities and Accomplishments

Please provide information for activities that represent the best work of your institution(s). In your outcome or impact statement, please include the following elements (in any order): 1) the issue and its significance (e.g., who cares and why); 2) a brief description of key activities undertaken to achieve the goals and objectives; 3) changes in knowledge, behavior, or condition resulting from the project or program's activities; 4) who benefited and how. Please weave supporting data into the narrative.

No.	Title or Activity Description	Outcome/Impact Statement	Critical Issues/No.
1.	<p><b>Weaving: The Micronesian 4-H Youth Development Initiative</b></p>	<p><b>Issue:</b> The Weaving 4-H Initiative is designed to educate and empower families, youth, and communities to understand how individuals and families can obtain and use resources to enhance positive youth development. Guam youth are faced with a series of issues in drug and alcohol, lack of proper skills for employment, family violence, and erosion of identity. Youth challenges resulting from the COVID-19 community quarantine contributed to emerging issues such as lack of human interaction and truncated youth programming.</p> <p><b>What has been done:</b> Planned 4-H program activities were implemented in sponsored community settings through established collaboration with community and government partners and volunteers to reach youth affected during the COVID-19. Youth programs were modified to address safety concerns to augment the lack of youth interaction and family interaction through juried curriculum activities. The targeted audiences were family and youth using planned online learning and hard copies delivery strategies. 4-H professionals and volunteers conducted learning sessions focused on the following emphasis areas: economic preparedness (resource management, time, money and human capital, youth entrepreneurship), interrelationships between society and households to improve family wellbeing, human development (child, adolescent, adult), and workforce preparation. Staff and volunteers facilitated workshops targeting youth (5-19) to increase awareness and knowledge through camps, school enrichment youth activities, after-school programs, projects, and curricula.</p> <p><b>Results:</b> 4H-Professionals conducted 82 workshops in the areas of Science, Technology, Engineering, Agriculture, and Math (STEAM), Healthy living, Leadership, Cultural Awareness, and Food Sustainability. Other supplemental workshops for the Guam Department of Education@ 54 workshops, Private schools @10 conducted workshops and Weaving of Micronesian Islands workshops@18. A total of 1,230 youth was reached, and</p>	<p><b>Youth Development</b></p>

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		<p>19 life skills activities were implemented. Other program materials include youth educational videos on Helping Hands, Homemade Sanitizer, Personal Finance, Personal Safety, Steps to a Healthy Teens, Youth Finance, Consumer Basics, Freezing Point, Hands-On, Laundry Projects, Canning, STEAM – Science. STEAM – Technology. A total of 5 PowToon videos were created as a new approach to interact with youth.</p> <p><b>Benefit:</b> The 4-H Weaving youth development initiative continues to be the CE&amp;O youth development anchor for sponsoring and facilitating youth programming, planning, and building community collaborations. Family and youth promoted family dynamics, personal growth, nurturing relationships, career pathways, stress management, resiliency, personal safety, and learning new ideas through hands-on learning.</p>	
2.	<b>4-H Challenge</b>	<p><b>Issue:</b> To further engage students to use their current knowledge to solve today's issues, the UOG Charter Day 4-H Challenge was introduced in 2020. The issue was food production and access related to contained fish production.</p> <p><b>What has been done:</b> Six eighth-grade class groups volunteered to be the first participants in 2020. To prepare for the Challenge, 4-H professionals met with the class groups for several weeks before the event to outline the issue and provide the materials to meet the Challenge. With assistance from the Ohio State University 4-H Youth Development program, a video outlined the Challenge of distributing fish chow evenly to all aqua stock in a tank. With specified items, the group had to design mechanisms to meet the Challenge.</p> <p><b>Results:</b> On Charter Day 2020, six teams participated in a challenge to build a mechanism, share their design concept with judges, and answer questions. Eighth graders from Agueda I. Johnston Middle School were awarded Outstanding of The Day by judges.</p> <p><b>Benefit:</b> The showcase of skills in science, engineering, technology, math, communication, and leadership was evident in all participant groups.</p>	<b>Youth Development</b>
3.	<b>Family Resiliency Program- Keys to Embracing Aging</b>	<p><b>Issue:</b> Healthy living through the life span and empowering individuals and families are key aspects of the Family Resiliency Program. CE&amp;O -partnered with the Dept. of Public Health Social Services, Div. of Senior Citizens- assisted individuals and families faced with adversity and conflict through skills building and knowledge acquisition offered via interactive workshops and outreach activities. The COVID-19 Pandemic proved especially challenging to the island, exacting a toll on personal wellbeing, safety, and behavioral health. When the Challenge of COVID-19 required individuals to stay at home, the process of healthy living</p>	<b>Family Education and Consumer Behavior Health</b>

		<p>did not stop. The Family Resiliency Program moved to a digital delivery platform and remote learning that engaged participants at their own pace and discretion. The program utilized an evidenced-based curriculum and best practices.</p> <p><b>What has been done:</b> CE&amp;O workshops utilize evidence-based curricula developed and implemented across the country, then adapted for use in Guam. When the Challenge of COVID-19 required individuals to stay at home, the process of aging did not stop. The Healthy Aging Across the Life Span/ Keys to Embracing Aging workshop moved to a digital delivery to allow participants to engage at their own pace and their discretion. The program's goals are to teach participants that healthy behaviors and choices across the lifespan affect future health, wellbeing, and optimal aging via video and online tutorials. The program also illustrates how lifestyle behaviors and choices are integrated. Given the pandemic, modifications were made to lesson plans to include the teaching of family safety and emergency preparedness and providing participants with disaster preparedness starter kits and personal protective equipment (mask-making).</p> <p><b>Results:</b> Individuals/families (over the age of 18 and senior citizens) comprised the priority population. The benefit of the program included access to healthy aging, disaster planning and personal safety informational/educational materials via online workshops (Keys to Embracing Aging), factsheets/brochures (sheltering in place, coping with COVID-19, face mask sewing tutorial) and supplemental learning products (disaster starter kits and face masks). A total of <b>500</b> recruitment flyers were distributed. A total of <b>36</b> participants were reached through the program. A total of nine educational videos were posted to YouTube (<b>1,059</b> impressions and <b>96</b> views), while <b>91</b> face masks were distributed to individuals. Unfortunately, due to COVID restrictions, a planned CFS summer camp and all in-person workshops were suspended, distribution of emergency bins were postponed until 2021.</p> <p><b>Benefits:</b> The tool kit has initial supplies to address family needs in emergencies and includes information on Extension resources for multiple topics and their access. As individuals and families participate in various Extension programs, supplies are added to the tool kits to prepare for unforeseen circumstances.</p>	
<p>4.</p>	<p><b>Health &amp; Wellness - Prevent T2 and TEXTension</b></p>	<p><b>Issue:</b> The Western Pacific region, which includes Guam, has the highest prevalence of diabetes and impaired glucose tolerance (prediabetes) among 20–to 79-year-old adults across the globe (IDF, 2019). Prediabetes can be reversed to prevent diabetes, and a recent study in Guam revealed that 50% of people with diabetes expressed their desire to have preventive services (Chan, Cho, Tajima, and Shaw, 2013). To date, there is only one CDC-</p>	<p><b>Family Education and Consumer Behavior Health</b></p>

		<p>recognized PreventT2 program that is available in Guam by an insurance company. Prevent T2 is an evidence-based program proven to help people with prediabetes prevent or delay the development of type 2 diabetes. It is part of the National Diabetes Prevention Program, led by the Centers for Disease Control.</p> <p><b>What has been done:</b> Extension &amp; Outreach hired an Extension Associate I in the Consumer and Family Sciences unit to investigate, develop, implement, and evaluate evidence-based approaches to address health disparities in Guam.</p> <p><b>Results:</b> The Extension Associate I immediately commenced research on becoming a CDC-recognized PreventT2 program and how to launch a text messaging program to promote healthy behaviors. After identifying a platform to send mass text messages in Guam, Bulk SMS was purchased. Healthy messages were developed using the transtheoretical model and scheduled twice per month to shape the TEXTension pilot program. The Extension Associate I completed the facilitator training and applied for E&amp;O to become a CDC-recognized program. Consultation with other CDC-recognized PreventT2 programs to identify possible delivery options to implement Prevent T2 took place as a result of pandemic restrictions. Zoom Video Communications was the online platform identified to implement PreventT2, and a subscription was purchased.</p> <p><b>Benefit:</b> Both pilot programs have been developed and a recruitment and implementation plan.</p>	
5.	<b>Our Youth, Our Future</b>	<p><b>Issue:</b> The Our Youth, Our future strategic initiative, the Youth of Extension (YOE) program, was created to address youth needs and community program gaps. Data collected by the 4-H Youth Development Program showcased current youth identified youth issues in Guam. The issues that shaped the Youth of Extension strategic initiative included financial instability, cultural identity/preservation, parental involvement, higher education/life skills, and health. Although 4-H youth identified other youth issues, they fell through the gaps in the community and cooperative extension programs. Extension mentors grouped them into several categories and proposed 5 initiatives to ensure that these issues were addressed. The 5 initiatives included: 5-2-1 Almost None, Cultural Identity, Cultural Foods, and Life Skill: Resource Management.</p> <p><b>What has been done:</b> Shaped by Extension &amp; Outreach youth-reported data and an assessment of available community programs, the YOE program targeted Guam middle and</p>	<b>Family and Consumer Sciences</b>

		<p>high school, students. In the program's initial phase, the youth gained skills and knowledge in project planning to take on community action projects involving cultural identity, life skills, financial management, and cultural foods. Youth participants designed and implemented their projects and evaluated the program under UOG Extension professionals' mentorship to address four key areas: resource management, cultural foods, healthy living (5-2-1-Almost None), and cultural identity. They identified these topics relevant to their lives by developing self-discovery, self-conception, and self-perception.</p> <p><b>Results:</b> Each youth-led project was planned to be presented by the YOE ambassadors (participants) at the first-ever Youth of Extension: Taking Action Conference, which did not occur due to the COVID-19 pandemic. However, this did not stop the youth ambassadors. With Extension professionals' guidance, YOE ambassadors redirected their efforts to a virtual approach to showcase their projects and accomplishments. YOE ambassadors produced a "How-to-Grow" introductory guide and hands-on activity, a peer-to-peer or youth-to-parent model to deliver resource management education, a 5-2-1-Almost Nonsocial marketing toolkit, modified Pacific recipe cards, and "how-to" video, and a cultural identity journal and book for Guam's youth.</p> <p><b>Benefit:</b> Youth of Extension Program targeted Guam middle and high school students; students partaking in YOE became youth ambassadors to help create resources to target &amp; bring awareness to the youth identified issues. Youth ambassadors gained life-long learning skills and took on leadership roles but created resources for peers to address youth issues and are willing contestants to act as peer mentors to recruit more youth and target rising youth issues on the island.</p>	
6.	<b>Community Nutrition Education</b>	<p><b>Issue:</b> Adult obesity prevalence in Guam was 34.3% in 2017 (BRFSS, 2017). The age groups with the highest adult obesity prevalence within each age group in 2017 are the 25-34y (42.8%), 35-44y (41.5%), and 45-54y (39.4%), suggesting that obesity is increasing among younger age groups when compared to the previous year (BRFSS, 2017). Contributing factors to this observation may be that adults 25-34y are the only age group with a decreasing proportion of adults participating in physical activities to meet guidelines from 2013 to 2017 compared to older age groups (BRFSS, 2017). The 25-34y age group has the highest proportion of adults (61.9%) consuming fruit (61.9%) and vegetables (80.8%) one or more times per day – with 65+y age group at 62.6% and 77.5%, respectively; however, this may be due to overconsumption leading to rising obesity prevalence in the 25-34y age group.</p>	<b>Human Nutrition</b>

		<p><b>What has been done:</b> As a result of the pandemic, direct nutrition education workshops and social marketing messaging transitioned to online delivery that was made possible by:</p> <ul style="list-style-type: none"> <li>• Recording of curricula lessons to supplement online synchronous delivery.</li> <li>• Training and conducting virtual delivery of "Live" curricula lessons via virtual meeting platforms (e.g. UOG-CNAS Facebook, Zoom, Teams, etc.).</li> <li>• Converting curricula lesson handouts and materials to digital formats.</li> <li>• Creating digital recording and "Live" cooking, nutrition education, and physical activity demonstrations via virtual meeting platforms (e.g. UOG-CNAS Facebook, Zoom, Teams, etc.).</li> <li>• Developing 5-2-1-Almost None social marketing digital material, such as articles and tip sheets for teachers to utilize as supplemental material for virtual classrooms and for island residents to access while at home.</li> <li>• Developing digital recruitment materials for virtual nutrition education lessons.</li> <li>• Converting entry/exit surveys for all direct nutrition education curricula to digital formats (e.g. M.S. Forms, Qualtrics, Question Pro).</li> </ul> <p><b>Results:</b> Improvements in diet quality, such as incorporating more fruits and vegetables into family meals or drinking less sugary drinks, meal planning, physical activity, and food safety practices, were observed for most adult and older adult participants.</p> <p>All 5-2-1-Almost None social marketing partners disseminated digital material provided to students, families, and stakeholders. Students attending 5-2-1-Almost None partner schools improved their fruit and vegetable intake (3 of 3 schools), decreased screen time (1 of 3 schools), increased their physical activity (3 of 3 schools), decreased their intake of sugary drinks (2 of 3 schools), and are more aware of the Smart Snack school policy (2 of 3 schools). These goals could not have been met without the community partnership that Extension &amp; Outreach CNEP sustains and fosters with 22 community groups and strengthened with 17 outreach events.</p> <p><b>Benefit:</b> Direct education reached 188 adults, 342 children, grades K-12, and 482 preschool children using different delivery learning modes. Indirect education continued throughout the year using live and recorded cooking demonstrations with 1,427 participants of all ages. Similarly, the 5-2-1-Almost None community-wide social marketing campaign in schools, food stores, community groups, and municipalities were promoted online, on-site, and</p>	
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		<p>during mass communication in eight participating 5-2-1-Almost None villages where village residents learn, shop, plant, and play.</p>	
<p><b>7.</b></p>	<p><b>Literacy and Nutrition linked by Culture</b></p>	<p><u><b>Issue:</b></u> The Community Nutrition Education Program (CNEP) enhances healthy living curricula implemented in preschool classrooms by providing culturally relevant material.</p> <p><u><b>What has been done:</b></u> CNEP created local fruit and vegetable flashcards and posters that were added to curriculum kits in response to teacher feedback for culturally relevant and local resources. Leveraging Extension &amp; Outreach partnerships, the University of Guam Press, in partnership with Hafa Adai Printing, donated 8,000 CHamoru children's books to classrooms island-wide. The books are being utilized to supplement the curriculum to facilitate family conversations around food-related traditions, experiences, role-modeling, and family relationships.</p> <p><u><b>Results:</b></u> The CNEP team distributed books to 352 students and 26 teachers in 17 Guam Head Start Program, five Pre-K Gifted and Talented Education (GATE), and four Pre-K classrooms island wide as well as at a hosted workshop for the Family Engagement Conference.</p> <p><u><b>Benefit:</b></u> Published by UOG Press, the titles of the books include • "Si Pedro yan i Hilét Oru na Ko'ko' (Pedro and the Golden Ko'ko')" by Lance Osborn • "Ma Guaiya Yu', si Nâna yan si Tâta (Grandma and Grandpa Love Me)" by Simone and Dana Bollinger • "Guaiyayon na Trongkon Mansanita (The Loveable Mansanita Tree)" by Dolores Camacho • "I Malingu na Pâtgon (The Lost Child)" by Rufina Mendiola.</p>	<p><b>Human Nutrition</b></p>
<p><b>8.</b></p>	<p><b>Continuing Nutrition Education Without Interruption</b></p>	<p><u><b>Issue:</b></u> The COVID-19 Pandemic can be viewed as a disrupter to health education delivery modes. Extension programs supporting Community Nutrition Education Program (CNEP) responded to the Challenge of repositioning workshop delivery formats to minimize the pandemic's effects.</p> <p><u><b>What has been done:</b></u> During this reporting period, CNEP programs transitioned to online delivery. Direct education reached 188 adults, 342 children, grades K-12, and 482 preschool children using different delivery learning modes. Indirect education continued throughout the year using live and recorded cooking demonstrations with 1,427 participants of all ages. Similarly, the 5-2-1-Almost None community-wide social marketing campaign in schools, food stores, community groups, and municipalities were promoted online, on-site, and during mass communication in eight participating 5-2-1-Almost None villages where residents learn, shop, plant, and play.</p>	<p><b>Human Nutrition</b></p>

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		<p><b>Results:</b> These goals could not have been met without community partnerships that Extension &amp; Outreach CNEP sustains and fosters with 22 community groups and strengthened with 17 outreach events. CNEP is well-prepared and adaptable to address emerging issues of healthy living using multiple delivery approaches and maximize community partnerships in compliance with safety protocols and island regulations.</p> <p><b>Benefits:</b> The CNEP programs strategy can be viewed as a positive disruption capitalizing on the opportunity to highlight technology's effectiveness in strengthening the delivery of health education through innovative formats. Increased community collaboration and visibility of these relationships improve the effectiveness of these services and support.</p>	
<p>9.</p>	<p><b>Food Safety and Food Security</b></p>	<p><b>Issue:</b> Two critical issues of food safety and food security are in the community of Guam. First, the frequency of foodborne illness in Guam is higher than that in the United States due to the tropical climate, residents' poor food handling practice, and food vehicles such as fish, seafood, chicken, and ethnic food "kelaguen". Second, few small-scale food manufacturers use local crops to process food products. Seasonal crops are often wasted due to the saturation in the local markets. The island is largely dependent on food imports. Our goal is to protect residents and consumers from foodborne illness and reduce food imports in Guam's community. Our objectives are to provide non-formal education and demonstration to residents and consumers to minimize foodborne illness incidences and increase the processing of safe and wholesome food products using regional crops.</p> <p><b>What has been done:</b> The target audiences include entrepreneurs, food manufacturers, food workers, and food-safety educators, farmers, general consumers, youth, and school children.</p> <p><b>Results:</b> The activities lead to goals and objectives include conducting food safety and food processing workshops; providing training and consultant services; exploring and determining the values of tropical and subtropical plants, fruits, and vegetables; and disseminating scientific-based information in food safety and processing in the community of Guam.</p> <p><b>Benefit:</b> With our many small farms and micro-farms, as well as our business sector, food safety is a significant concern for the Asia Pacific. We are committed to maintaining and strengthening our efforts in providing educational materials development and</p>	<p><b>Food Safety</b></p>



		opportunities, communication coordination, technical assistance, and evaluation assessments of programs on food safety targeting farmers, processors, and vendors in the Western U.S. and its territories.	
10.	<b>Food Systems, Security, and Safety</b>	<p><b>Issue:</b> The shift from traditional staples to processed foods in the Pacific has contributed to food security's fragile state. The increasing reliance on imports to meet the demand for food has influenced the high cost of food and fuel in Guam and the Pacific. Therefore, one-third of the island's population receives food assistance (e.g., SNAP, WIC, TEFAP). Additionally, farms have drastically decreased over the last 30 years, and some would say the reliance on imports overshadows the demand for local produce. Pohnpei has successfully promoted local produce through "Go Local" campaigns that resulted in improved nutrient-dense crops.</p> <p><b>What has been done:</b> To promote local produce in Guam, Extension and Outreach created two (2) Eat Local, Eat Fresh posters that are a compilation of pictures of local produce labeled with both its English and CHamoru names. Most of the local produce featured in the posters were used to create educational aides with the picture and name on one side and the nutrient value and "fun fact" of the local produce on the other side of a 9" x10" card.</p> <p>Ten (10) local produce were selected to create a series of publications, called 5 ways, which identified five different preparations or recipes of each local produce and an abbreviated ingredient list. An archive of recipes utilizing local fruits &amp; vegetables and shelf-stable and commodity food items were developed, and several recipes were made into a short clip.</p> <p><b>Results:</b> The publications (i.e., posters, educational cards, 5 ways series, and recipes) are available digitally and accessible on our Extension &amp; Outreach website or social media platforms. These have become useful resources for Extension partners, especially educators and non-profit organizations. Several partners have featured and cited the posters in cookbooks or their websites. The educational cards have been officially added to a preschool curriculum kit.</p> <p><b>Benefits:</b> This project's collective impact can be measured by monitoring the shift to local produce as the data becomes available.</p>	<b>Global Food Security</b>
11.	<b>Curbside Farm Initiative (CFI)</b>	<p><b>Issue:</b> Revitalizing the islands commercial agriculture industry with the help of the Farmers' Cooperative Association of Guam (FCAG), Government of Guam institutional sales, and the University of Guam (UOG) Cooperative Extension &amp; Outreach (CEO) Agriculture and Natural</p>	<b>Global Food Security</b>

		<p>Resources (ANR) and Expanded Food and Nutrition Education Program (EFNEP). The 2020 COVID-19 health and economic crisis brought about new challenges that agriculture producers and professionals addressed by increasing production to mitigate food insecurity, stabilizing the market with the development of the Curbside Farm Initiative (CFI) and Mixed Local Produce Bag Initiative (MLPBI), and educating the island of the importance of fresh local nutritious agriculture products.</p> <p><b>What has been done:</b> The FCAG CFI and Division of Senior Citizens (DCS) Department of Public Health Social Services (DPHSS) MLPBI provided Island consumers and aging senior citizens who are at home with pre-packaged bags of fresh locally grown produce during the COVID-19 health and economic crisis that led to the shutdown of Guam's economy. The increased island agricultural production and identification of alternative markets benefited Guam's farmers. They solidified the essential roles of the FCAG, UOG CEO ANR EFNEP, and DCS DPHSS in Guam's Covid-19 economy.</p> <p><b>Results:</b> The FCAG sold 1,399 CFI mixed produce bags from their Dededo facility from May-October. The bags went to Guam families in search of fresh nutrient produce provided by local farms. The FCAG also sold and delivered 2,629 MLPBI mixed produce bags in September. The fresh produce went directly to islands aging senior population, home, and desire alternative nutrient options. Throughout the COVID-19 (May-October 2020) crisis, FCAG provided 4,489 produce bags, which equates to 33,745 pounds of fresh locally grown produce to the island of Guam.</p> <p><b>Benefits:</b> Local farmers could sustain agriculture production during the COVID-19 shutdown and increase their local market presence in other programs developed by FCAG and UOG CEO ANR. Every week depending on the products' availability, Guam's island families purchased mixed fruit and vegetable bags, learned how to grow popular Guam vegetable crops, and received recipes on how to cook the local vegetables. The DCS senior clients who are at home and wanted other nutritious options received fresh, locally grown produce to augment their daily lunch program, which DCS DPHSS administers.</p>	
12.	<b>Micro-Plot Production/Consumer and Commercial Production</b>	<p><b>Issue:</b> In Guam, agricultural production is characterized as many small-scale that are at most an acre or smaller (90% of operations). The challenge is making "large-scale production" practices and technology viable for micro-plot and small production farmers. Therefore, harvest and mass storage of product for each operation has not been economically feasible because traditional systems use a lot of energy (a costly resource for Guam producers). Guam's agriculture supply chain is also vulnerable to interruption</p>	<b>Global Food Security</b>

		<p>because of adverse weather conditions in the region, causing import delays of perishable agricultural produce. Food security and storage has also been a challenging issue for local farmers.</p> <p><b>What has been done:</b> CE&amp;O specialists partnered with farmers to explore small-scale cooling for safe storage. CE&amp;O specialists are working to address small-scale farmers' needs to assess the application of this post-harvest handling technology. All efforts contribute to food security, sustainability, and supply efforts.</p> <p><b>Results:</b> An example of using the Extension network of specialists and educators addressing citizens and producers' needs, CE&amp;O is exploring the use of "CoolBot". Building upon work at the University of California-Davis Extension on small space cooling for post-harvest handling and storage identified "CoolBot" as an "addon piece" to a room air conditioner. In small space containment (approximately 20 feet by 20 feet), the "CoolBot" attaches to an air conditioner that can cool the contained space, eliminating the need for major refrigeration units. CE&amp;O is exploring the application, input costs, operation expenses, and viability of small-scale holding space for vegetable and fruit production for the island.</p> <p><b>Benefits:</b> Extending the viability of produce can positively impact food security issues for the island of Guam.</p>	
<p>13.</p>	<p><b>Fruit Tree Vegetable Garden Rings</b></p>	<p><b>Issue:</b> The For the Sustainable Agriculture Plan of Work's Ensure Food Security initiative, Agriculture and Natural Resources (ANR) professionals identified "fruit tree vegetable garden rings" for a programmatic team focus. Fruit tree vegetable garden rings combine several permaculture concepts; plant guilds, sheet mulching, and filter strips, to care for fruit trees during their establishment period with minimum labor. The mulched vegetable garden ring creates a mini-ecosystem that ensures an ideal growing environment for a fruit tree and quick vegetable harvests.</p> <p><b>What has been done:</b> The program established demonstration fruit tree vegetable garden rings in villages, using agriculture paraprofessionals in the Chamorro Land Trust Commission (CLTC) and AmeriCorps during subsistence production workshops for food security. The workshops provided the AmeriCorps and CLTC paraprofessionals with the knowledge, hands-on skills, and resources to promote these concepts to their programs' audiences. Using the New and Veteran Farmer Program curriculum, this production package provides a low labor, limited resource method for food production. This micro</p>	<p><b>Global Food Security</b></p>

		<p>forest-garden approach is ideal for CLTC Agents and AmeriCorps volunteers to promote increased subsistence production in various island settings.</p> <p><b>Results:</b> Leveraging agriculture paraprofessional volunteer trainees, the intent was to enhance CE&amp;O's outreach on subsistence micro forest gardens across the island. Several rings were established in early 2020 during workshops on campus and at the CLTC's Oka Point, Sagan Kotturan Chamorro sites of the Guahan Sustainable Culture and Haya Foundation. These volunteer-maintained rings demonstrate the sustainability of this production method. The advent of a worldwide pandemic has brought new focus and interest in subsistence production.</p> <p><b>Benefits:</b> The multifunctionality of agriculture sustainability through this model approach integrates the many concepts of preserving natural resources and reducing the impact on the environment and health. The establishment of the model initiative should contribute to protecting and supporting sensible, sustainable practices.</p>	
<p>14.</p>	<p><b>Aquaculture</b></p>	<p><b>Issue:</b> There is a renewed interest in Guam to develop fish and shrimp farming in Guam. Guam could benefit from aquaculture in food security and exporting healthy seafood and seed stocks to Asia.</p> <p><b>What has been done:</b> The Guam Aquaculture Development and Training Center (GADTC) within WPTRC has been working on expanding and diversifying aquaculture in Guam. Researchers have introduced high-quality clean-seed shrimp stocks, tilapia, and freshwater prawns and determined feeding regimes that best support larval development and survivability.</p> <p><b>Results:</b> GADTC has evolved to be a certified bio secured facility keeping stocks under strict health surveillance to remain pathogen-free. Results of breakthrough research on genetic regulation of sex change in shrimp have been published in peer-review journals.</p> <p><b>Benefit:</b> The work at GADTC aligns with the Guam-wide initiative fostered by the government and private sector to revamp aquaculture enterprises in Guam and attract foreign investments.</p>	<p><b>Global Food Security</b></p>

<p><b>15.</b></p>	<p><b>Invasive Species</b></p>	<p><b>Issue:</b> Invasive species threaten Guam's natural resources, agriculture, native biological populations, and humans. The rate and intensity of invasions in Guam is one of the greatest in the world.</p> <p><b>What has been done:</b> Projects are underway to address fire ants, greater banded hornet, Varroa mites, aphids, ironwood decline bacteria, and plant invasive species. WPTRC houses the only USDA Biocontrol Quarantine Laboratory at UOG to study beneficial organisms' use to fight invasive pests. Farmers and government agency personnel in Guam and other Micronesian islands are trained in identification and effective control strategies. The coconut rhinoceros beetle is expected to destroy more than 50% of Guam's coconut palms. Different isolates of the <i>Oryctes rhinoceros</i> nudivirus biotype CRB-G are being investigated.</p> <p><b>Results:</b> Environmental-friendly pesticides have been proven to be effective against little fire ant in field experiments. An initiative to find and destroy greater banded hornet nests and develop beehive protection measures is conducted by WPTR Researchers, the Guam Beekeepers Association, and local communities. The <i>Nasutitermes takasagoensis</i> termite is being studied to assess its role as a vector of soil-borne bacteria causing ironwood dieback.</p> <p><b>Benefits:</b> The different research initiatives coupled with subsequent extension work provide potential solutions to ameliorate the impact of invasive species in Guam. Selected varieties of ironwood resistant to be bacterial wilt caused by <i>Ralstonia solanacearum</i> are expected to be available soon for planting in Guam.</p>	<p><b>Sustained Agriculture Production Systems- Plant/Pest Efforts</b></p>
<p><b>16.</b></p>	<p><b>Guam's Crop Protection and Pest Management Program</b></p>	<p><b>Issue:</b> Guam is vulnerable to non-native plant pests and diseases getting a foothold because of its small size, closed environment, lack of natural predators, and high tourist volume.</p> <p><b>What has been done:</b> In response to the critical pest issues, the Plant Health and IPM Center provided informal diagnostic advice to approximately 800 clients and formally processed 225 plant disease samples in the past year.</p> <p><b>Results:</b> The impact of the CPPM EIP Coordination program on Guam's pest diagnostics included enhanced responsiveness to critical pest issues and generation of research and extension capacity.</p> <p><b>Benefit:</b> The EIP directly services Guam's citizenry of 180,000 and indirectly millions in the Western Region. At the University of Guam Charter Day, over 350 students, teachers,</p>	<p><b>Sustained Agriculture Production Systems- Plant/Pest Efforts</b></p>

		<p>farmers, and the general public were educated about IPM, plant disease, plant pests, and the use of stereo microscopes through an all-day interactive display.</p>	
<p><b>17.</b></p>	<p><b>Renewable Resources Extension Act for Guam</b></p>	<p><b>Issue:</b> In response to citizen concerns regarding a large number of dying ironwood trees (<i>Casuarina equisetifolia</i>) on Guam, the decline of ironwood trees includes a tree rotting fungus, two bacteria, three species of termite, and poor landscape practices. In addition to ironwood tree decline, RREA funds were allocated for surveying forest and landscape tree species for the root rot fungus <i>Phellinus noxius</i>.</p> <p><b>What has been done:</b> Surveying forest and landscape tree species for the root rot fungus <i>Phellinus noxius</i>. Established partnerships with the USDA Forest Service, Rocky Mountain Research Station Moscow Forestry Sciences Laboratory, and the University of Hawaii, several pathogens have been identified. This information has led to a modification of RREA stewardship plans for Guam's agroforestry and limestone forest landowners.</p> <p><b>Results:</b> During this reporting period, educational activities have impacted the local and regional levels. An interactive display was set up at the annual University of Guam Charter day activities in March of 2020. Approximately 400 students, teachers, and public members visited the exhibit and were educated on ironwood tree decline and general tree health.</p> <p><b>Benefit:</b> During this reporting period, the number of landowners and managers trained to develop Stewardship Plans was approximately 50. The number of direct contacts who increased awareness of benefits and opportunities was around 500.</p>	<p><b>Sustained Agriculture Production Systems- Plant/Pest Efforts</b></p>
<p><b>18.</b></p>	<p><b>Enabled Gardens</b></p>	<p><b>Issue:</b> Food security and access to fruits and vegetables have been a major concern for Guam's years. Consumers seek options to provide fresh produce for their families, and home gardening is one option to increase Guam's food production. People with limited mobility often have difficulty gardening due to health conditions, such as arthritis. Some other examples include individuals who may face problems bending and stooping or have little arm and hand strength. Another group of the population are wheelchair-bound or uses a walker. Enabled gardens allow individuals with specific challenges to participate in gardening activities and contribute to the food supply on Guam.</p> <p><b>What has been done:</b> Specific to learner-centered activities and the design and use of gardens, a series of 10 fact sheets on "Guam Enable Gardening: Adaptive Gardening" has been published that includes different gardening methods, designs, and technique</p>	<p><b>Sustained Agriculture Production Systems- Plant/Pest Efforts</b></p>

		<p>adaptations for those with limited mobility. The series comprises information on how to start and maintain a garden, types of gardens for enabled gardeners, design an enabled garden, and adaptive tools for those who face barriers that may keep them from gardening in Guam.</p> <p><b>Results:</b> Using established research-based information about gardening basics, such as water demand, plant selection, and management activities, materials were adapted for learners with physical limitations to engage in backyard horticulture fully. With adaptations, more people can participate in family food production for self-sufficiency.</p> <p><b>Benefit:</b> There are many other benefits for enabled gardeners than growing vegetables, fruits, and herbs. Some examples are decreased stress, an increase in physical activities, and a sense of well-being, making for a healthier and more productive subpopulation on Guam.</p>	
<p>19.</p>	<p><b>Plant inventory and monitoring/Climate change mitigation</b></p>	<p><b>Issue:</b> Information on plant abundance and diversity in Guam is limited, and this hinders restoration efforts. Monitoring to assess climate change in time and space is also lacking.</p> <p><b>What has been done:</b> The Guam Plant Extinction Prevention Program (GPEPP) carries out forest inventory and monitoring programs throughout the Pacific Islands. The Guam Forest Biodiversity Inventory project digitizes and catalog biological specimens in UOG's collections. Three state-of-the-art, automatized weather stations, including evaporation pans, were set up at WPTRC Experiment Stations in northern, central, and southern Guam. Surveys of native snails threatened by invasive flatworms and of forest birds are being conducted.</p> <p><b>Results:</b> Data collection and analysis are proceeding well. Artificial intelligence approaches have been developed to determine the incidence and spatial distribution of the coconut rhinoceros beetle in Guam.</p> <p><b>Benefits:</b> Research and extension efforts are setting a foundation to actively advance the much-needed ecological restoration efforts in Guam and Micronesia.</p>	<p><b>Sustained Agricultural Production Systems-Protect Resources of Guam</b></p>
<p>20.</p>	<p><b>Soil conservation and management</b></p>	<p><b>Issue:</b> Soil erosion, land degradation, and depleted soil nutrient pools are serious challenges to sustain natural resources and have productive agriculture systems in Guam.</p> <p><b>What has been done:</b> Replicated experiments are being conducted in two WPTRC Experiment Stations on shallow limestone soils in northern Guam and deep acidic soils in</p>	<p><b>Sustained Agricultural Production Systems-Protect Resources of Guam</b></p>

		<p>Southern Guam. These trials include the application of biochar, fertilizer, and compost in different combinations and rates. Crop yields, soil carbon dynamics, and greenhouse gas emissions are being measured in response to study treatments.</p> <p><b>Results:</b> Findings from studies indicate positive responses to treatments in yields of corn and other crops</p> <p><b>Benefit:</b> The knowledge generated from this research is conveyed to farmers and other stakeholders in Guam and other Micronesia islands. This includes information on real-time optimization of irrigation scheduling in farms.</p>	
<p>21.</p>	<p><b>Knowledge@ Guam Initiative</b></p>	<p><b>Issue:</b> Strengthening of planning capacity continues to be a high-interest area. The Government of Guam continues to fall short in addressing its broad planning roles and responsibilities because of limitations in handling and managing its collective social program delivery priorities. For the most part, government boards and commissions, and councils continue to struggle with strategic planning and plan updates. This issue is seen in the need for addressing data, needs assessments, and policy and operating procedures guidelines. Strengthening these boards' planning capacity, commissions and councils can alleviate the various programs' programming challenges and funding issues under their oversight.</p> <p><b>What has been done:</b> Through both Extension's content and process expertise, planning assistance and evaluation of programs have been extended through various collaborator roles. The latest round of comprehensive planning includes the Government of Guam's-Grow Guam Green (G3) sustainability development agenda. The United Nations 17 SDG goal areas' adoption allows for planning alignment and helping planning teams develop their skill sets and participate in plan development activities. Planning support includes providing technical assistance on planning processes with facilitated dialogue and action plan development.</p> <p><b>Results:</b> Through the G3 sustainability development initiative, Strategic planning and action planning sessions include University of Guam content expertise, and CE&amp;O faculty and staff resources participate in these planning sessions. Increased dialogue between agencies continues.</p>	<p><b>Community Development</b></p>



		<p><b>Benefits:</b> Collaborators and cooperators have increased strategic planning processes and familiarity with various planning tools, and increased confidence in undertaking these planning activities.</p>	
<p>22.</p>	<p><b>I Hale'-ta (Our Roots)</b></p>	<p><b>Issue:</b> The National Science Foundation's (NSF) Louis Stokes Alliance for Minority Participation Program (LSAMP), through the Islands of Opportunity Alliance (IOA-LSAMP) comprised of 11 institutions across the Pacific, is designated to facilitate historically underrepresented students pursuing bachelor's degrees in fields of science, technology, engineering, and math (STEM). The program recruits and supports scholars, recognizing their indigenous perspectives and in their academic pursuits to enter STEM fields.</p> <p><b>What has been done:</b> I Hale'-ta offers cultural immersion, community-building experiences, volunteer opportunities, place-based learning, faculty-guided research, summer internship experiences, academic support, professional development, STEM skills development, peer mentoring and tutoring, and graduate school exploration for all scholars. While only full-time UOG students can be funded, the community-at-large benefits from the learning community through the scholars' volunteer work, mainly supporting K-12 outreach activities. I Hale'-ta scholars and other scholars across the IOA interact with each other and contribute to an ethnographic study on how Pacific Islander worldviews are incorporated into STEM learning by 1) exposing scholars to STEM fields and careers; 2) create a learning community that recognizes and fosters the indigenous perspectives of the scholars; 3) facilitate experiences for scholars to help them be better prepared to enter into STEM fields.</p> <p><b>Results:</b> The pandemic impacted Fanuchånan (Fall) semester with the closure of the campus. The program pivoted from face-to-face research experiences in the laboratories to the design and development of an online module, "Hayi Hao?" (translation from CHamoru "Who are you?") that allowed students to explore the concepts of Community-Based Participatory Research, particularly from indigenous perspectives. Also, through the alliance partnership, I Hale'-ta had one student participate online in a Data Boot Camp with Chaminade University in Hawaii – and earning a Certificate in Coding.</p> <p><b>Benefit:</b> The University of Guam aims to create and foster a learning environment that supports Native Hawaiian and Pacific Islander students through I Hale'-ta (translation from CHamoru "Our Roots"). The program recruits and supports scholars, recognizing their</p>	<p><b>Community Development</b></p>

		<p>indigenous perspectives. Scholars engage in rigorous scientific research that is grounded in the indigenous knowledge and cultural practices.</p>	
<p>23.</p>	<p><b>Western Regional Agricultural Stress Assistance Program (WRASAP)</b></p>	<p><b>Issue:</b> Agriculture is widely known as a high-stress occupation. There are many stressors faced by farmers in the geographically large and culturally diverse Western region, such as unstable finances (high debt loads) and changing commodity markets that is often accompanied with the pressure of multigenerational farm lineage, complex regulation and policy, adverse weather and climate change, and recent COVID-19 related stressors. Migrant farmworkers experience their own set of stressors as well. While the specific stressors vary, the impact of extreme stress in agriculture reveals itself in farmers' and farm workers' high occupational suicide rates. To meet these varied needs requires a network of trusted agencies, familiar with the agricultural needs of their communities and trained in behavioral health, equipped to offer targeted, culturally customized stress reduction support, be it in moments of crisis (call line and suicide prevention trainings) as well as upstream interventions to lessen the impact of compounding stress.</p> <p><b>What has been done:</b> The WRASAP project is a partnership project between the 13 states and 4 territories of the Western Region of the United States. WRASAP intends to make program activities available to all farming populations throughout the region as deemed appropriate, including but not limited to principal farm operators, multi-generational, new, and beginning farmers, ethnic minority farmers and agricultural workers (including Asian/Pacific Islander, Latinx/Latin American indigenous and Native American Nations), aging and veteran farmers, farmers and farmworker with disabilities and 4-H youth.</p> <p><b>Results:</b> During this reporting period, CE&amp;O POC facilitated phase I, which include the planning workgroup requirements to organize and discuss project goals and objectives for Guam, the Commonwealth of the Northern Mariana Islands, and the Federated States of Micronesia. The POC serves as the subaward P.I. and partners with CNMI and FSM for organizing the planning processes, IRB application, and collection of baseline data field efforts in this region.</p> <p><b>Benefit:</b> Baseline data collection portion of this WRSAP project involves assessing the stressors faced by farmers, ranchers, farmworkers, and the stress management topics they are most interested in, and the way they learn. This project primarily targets agricultural workers in Guam, CNMI, and selected FSM states. The researchers and extensionists will evaluate the mental health and stress of agriculture workers. Information collected in this</p>	<p><b>Community Development</b></p>

		survey can develop free educational materials and complimentary outreach programs to help farmers.	
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**CES AND WPTRC ANNUAL REPORT  
FISCAL YEAR 2020**

Table 2. Integrated and Multistate Targets and Allocations, FY2020

	Integrated Activities Hatch	MultiState Extension Activities Smith Lever	Total
Actual Formula	1,239,973.00	1,129,699.00	2,369,672.00
Actual Matching	831,959.00	887,417.00	1,719,376.00
Total Actual Expended	2,071,932.00	2,017,116.00	4,089,048.00

Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous years

Carryover	618,966.00	500,102.00	1,119,068.00
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Total Actual Amount of Professional FTEs

Actual	28.40	34.39	62.79
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