

2019 Annual Report of Accomplishments and Results

Northern Marianas Islands
Northern Marianas College

I. Report Overview

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

**1. Executive Summary (Optional)**

Northern Marianas College (NMC), an 1862 land-grant institution that includes the Cooperative Research, Extension, and Education Services (CREES), is located in the United States Commonwealth of the Northern Mariana Islands (CNMI), an archipelago of 14 islands that run parallel to the Marianas Trench. Over 5,000 miles from the continental United States, the CNMI is geographically closer to Asia. Our location in the Western Pacific Ocean has left our islands vulnerable to some of the worst storms in recorded history. On October 24, 2018, Typhoon Yutu, the strongest typhoon to ever hit U.S. soil since 1935, destroyed 3,000 homes, crippled the islands' infrastructure for months, and left thousands of residents dealing with food insecurity, food safety, water shortages, and housing challenges for some months afterwards. Causing an estimated \$854 million in damage to the islands, Yutu also wiped away more than 80% of the College's primary campus, including the CREES main building (the same building that was destroyed in 2015 by Typhoon Soudelor), the newly built Center for Aquaculture & Natural Resources Development, and the agriculture experiment stations on Saipan and Tinian. A few months prior to Typhoon Yutu, Typhoon Mangkut wreaked havoc on the island of Rota, damaging the Rota experiment station.

Despite the catastrophic event, CREES continued to engage partners and stakeholders in meaningful ways by providing capacity development training opportunities for farmers, adults including senior citizens and youth, support community and youth led programs, and provide technical assistance with facilitating and/or convening stakeholders. In addition, NMC-CREES was able to secure \$72,000 of additional funding for 4-H Marianas of which \$20K was for winning 1st place in the National 4-H "Raise Your Hand" campaign.

As a direct result of Agroforestry workshops on Saipan, Tinian, and Rota, 26 new agroforestry plots have been planted resulting in increased food security. The newly established Agroforestry plots include the following plants and trees: cassava, papaya, taro, breadfruit, bananas, dragon fruit, sweet potatoes, okra, mango, coconut, malunggay, star apple, and others. This is a significant increase in agricultural activity in the CNMI.

Nearly two years after Yutu, our islands are still struggling with infrastructure and economic recovery. The already frail CNMI economy has been further exacerbated by the COVID-19 pandemic as tourism is the main economic driver in the islands. Despite these major setbacks in the last several years, including reduced research and extension personnel and unanticipated leadership changes, CREES has been inspired by the resilience of the CNMI community and remains committed to positively impacting agriculture, community development, aquaculture, and nutrition & health for the people of the Northern Mariana Islands through research and extension. This report details the CREES outcomes and impacts during a time of unprecedented challenges in the CNMI.


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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
1. The Merit Review Process	<p>The merit review processes take place for the plan of work development and for scientific and extension proposals. Proposals are subject to a rigorous, internal (CREES program leaders) and external (research scientist from other institutions of higher learning and/or recognized experts) peer review process prior to submission to funding agencies. The process ensures that the proposal has a sound and established scientific basis, that the proposed project adheres and is consistent with the community needs assessment, critical issues in the Institutional Profile or identified by one or more of the local advisory councils, and/or makes a compelling case for addressing an emerging issue. A draft of the proposal to be reviewed is e-mailed to all department faculty for suggestions and comments based on established timelines prior to the face-to-face or virtual review meeting. All available professional research and extension faculty participate in the review. Staff are also welcome to attend. During the review, the following are assessed: 1) the priority of importance of the proposed project based on community need and/or critical issues; 2) the relevance of the proposals; 3) the quality and scientific value of the proposed research or extension activities and 4) the opportunities for cooperation with others, and 5) available resources (a proposed budget must be included). The proposals are then revised to incorporate the suggestions given during the face-to-face/virtual merit review and then finally reviewed by the dean prior to submission.</p>
2. The Scientific Peer Review Process	<p>The scientific peer review process is a part of the merit review process. Please see “merit review process”.</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>1. Actions taken to seek stakeholder input that encouraged their participation with a brief explanation</p>	<p>Stakeholder engagement is a critical component of the development and improvement of programs. As such, the following actions are taken to engage stakeholders and to encourage their participation in the formulation and improvement of programs, projects, and services:</p> <ul style="list-style-type: none"> <li>● Use of print and social media to announce public meetings and listening sessions</li> <li>● Targeted invitation to traditional stakeholder groups</li> <li>● Targeted invitation to non-traditional stakeholder groups</li> <li>● Targeted invitation to traditional stakeholder individuals</li> <li>● Targeted invitation to non-traditional stakeholder individuals</li> <li>● Targeted invitation to selected individuals from general public</li> <li>● Survey of traditional stakeholder groups</li> <li>● Survey of the general public</li> <li>● Survey of selected individuals from the general public</li> </ul>
<p>2. Methods to identify individuals and groups and brief explanation.</p>	<p>CREES has four programs: Agriculture, Aquaculture &amp; Natural Resources, Family, Community, and Youth Development, and Nutrition &amp; Health. Each program has a local advisory council with a diverse group of members from the islands of Saipan, Tinian, and Rota. Local advisory council group members are selected through a key-informant interview process. Key informants recommend individuals from their respective communities, including industry, to advise on current and emerging community needs. Potential advisory council group members are then asked by research and extension personnel if they would be willing to be a member and provide input in group and individual settings. Extension and research personnel also use their knowledge and experience of local industry, farmers, health personnel, and those who actively participate in CREES program areas to recommend individuals for local advisory group membership. Additionally, research and extension faculty, who represent CREES on various councils, committees, and groups, solicit input from stakeholders during each respective groups’ meetings. Focus groups have also been used to identify issues and concerns as well as potential ways to address issues to meet local needs. Program leaders regularly collect input from stakeholders and recipients of program services.</p>

<p>3. Methods for collecting stakeholder input and brief explanation.</p>	<p>Stakeholder input is collected through established frameworks at the department level and through the four programmatic areas through:</p> <ul style="list-style-type: none"> <li>● Meeting with traditional stakeholder individuals</li> <li>● Survey of traditional stakeholder individuals</li> <li>● Meeting with the general public (open meeting advertised to all) Meeting specifically with non-traditional groups</li> <li>● Survey specifically with non-traditional groups</li> <li>● Meeting specifically with non-traditional individuals</li> <li>● Survey specifically with non-traditional individuals</li> <li>● Meeting with invited selected individuals from the general public Survey of selected individuals from the general public</li> <li>● Schools Parents Teachers and Students (PTSA) meetings</li> </ul> <p>Local advisory councils are convened periodically with at least one annual meeting; although some local advisory councils meet quarterly. Department personnel are present at meetings to listen to concerns and recommendations from stakeholders. Minutes of meetings are recorded and summarized for review by department personnel. Online survey results are also used to gauge the community readiness of identified village communities to participate in research and extension programming.</p>
<p>4. A Statement of how the input will be considered and brief explanation of what you learned from your stakeholders.</p>	<p>The input provided by stakeholders from community meetings, focus groups, advisory group meetings, and survey results is considered when planning programs and assessing progress in meeting program objectives and addressing community needs. The minutes or notes garnered from the aforementioned data collection methods are centralized online for all department personnel to access. Stakeholder input (clienteles, government) is used to create yearly plans of work for each of the four program areas: Family, Community, and Youth Development, Nutrition and Health, Aquaculture and Natural Resources, and Agriculture. The yearly plans of work are used as part of the process by department administration to determine prioritization of funds. The feedback garnered from stakeholder input is used to formulate the critical issues in the POW/Institutional Profile.</p>

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IV. Planned Program Table of Contents

No.	Program Name in order of appearance
1.	Agriculture Production Program
2.	Aquaculture and Fisheries Development Program
3.	Family, Community and Youth Development
4.	Nutrition and Health Program

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V. Planned Program Activities and Accomplishments

Please provide information for activities that represent the best work of your institution(s). See Section V of the Guidance for information on what to include in the qualitative outcomes or impact statements. Add additional rows to convey additional accomplishments. You may expand each row as needed.

No.	Title or Activity Description	Outcome/Impact Statement	Planned Program Name/No.
1.	Numerous workshops, hands-on training and meetings have been conducted to increase knowledge, create awareness and develop skills of sustainable agricultural practices and explain strategies to increase agricultural production to farmers, backyard gardeners and school students.	The outreach, extension and education activities have increased knowledge, created awareness and developed skills of 120 farmers and backyard gardeners and various students at five schools. Three schools have established and are successfully maintaining their vegetable gardens. Four workshop participants have started composting on their farms and two workshop participants are utilizing green manure techniques for soil improvement at their farms. Ultimately, these activities have contributed in enhancing food security and developing positive attitudes, zeal for learning techniques and farming aspects and have changed the behavior of the participants. Evaluation of the impacts of these projects is on-going.	Agriculture Production Program
2.	Numerous workshops and trainings have been conducted to increase awareness about invasive species and explain strategies to reduce their spread and impact.	Information and technical assistance have been provided for identification and control of invasive species through integrated pest management (IPM) to 20 workshop participants. Eight farmers and backyard gardeners have been trained in formulation of organic pesticides from neem leaves and they are utilizing the product to control insects and pests on their farms and backyards. Evaluation of the impacts of this project is on-going.	Agriculture Production Program
3.	Reducing the Cost of Recirculating Hydroponics	Fifty-three (53) individuals attended and participated in the workshops, which were held in Saipan, Tinian, and Rota. Results from the pre and post tests administered during the workshops indicated a net gain in knowledge with an average score on the post tests at 80%. Of the fifty-three (53) participants, one has built a recirculating hydroponics system to grow leafy greens and has adopted and incorporated the use of the “one-pump” system technology. Because of previous builds where producers used both air and water pumps to run their aquaponics systems, this and future producers will realize a 50% savings in electrical cost. For example, for an aquaponics producer in the CNMI to run both a low wattage air and water pump, it’ll cost approximately \$25.00/month. By switching to the one-pump system, the energy cost for the same producer will drop by 50% or	Aquaculture and Fisheries Development Program

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		\$12.50/month. Evaluation of the impacts of this project is on-going.	
4.	In-classroom, Live Feed Production Training for Secondary School Students	Fifty-three (53) middle and high school students in all participated in this mini-course on plankton culture over a one-week period during their Easter Break in the spring of 2019. Based on the results of the pre and post-tests administered prior to and at the conclusion of the training, of the seventy (70) students tested, all scored 95% or better on the post test and gained an understanding of the significance of artemia and other zooplanktons in the lifecycle of the seafood that they consume. Evaluation of the impacts of this project is on-going.	Aquaculture and Fisheries Development Program
5.	Captive Forktail Rabbitfish Fingerling Production Seminars	Of the fifty-five (55) attendees in the “Captive, Forktail Rabbitfish, Fingerling Production” Seminars, 89% gained knowledge, via surveys conducted, on the importance of the right broodstock and larval diets and environmental factors to the successful rearing of the rabbitfish larvae. Evaluation of the impacts of this project is on-going.	Aquaculture and Fisheries Development Program
6.	The FCYD program builds the capacity of the community and youth through collaborative efforts with the CNMI Public School System, Indigenous Affairs Office, Tinian Mayor’s Office, Department of Lands and Natural Resources, Washington State University, and 4-H Marianas. Numerous workshops and hands-on training sessions were conducted to enhance the capacity and leadership skills of program participants, partners, and volunteers to assist with program planning and implementation.	<p>Youth Leadership Summit</p> <p>As a result of our efforts, 100% (16 participants) of those trained assisted with the development, organization and facilitation of the 2019 Middle School Youth Leadership Summit. The summit was youth-led with limited assistance from program staff. The outcomes of the 2019 Middle school Youth Leadership Summit were very positive as indicated in participants pre and post-summit responses. 95 participants responded to pre-survey out of which only 35 participants (36.8%) rated their current confidence level as 4 and only 14 participants (14.7%) rated their confidence level as 5 in taking lead on projects and assignments. The participants’ confidence level increased greatly after the youth summit as out of 94 participants’ responses 52 participants (55.3%) rated their confidence level as 4 while the percentage of participants who rated their confidence level as 5 for taking the lead on projects more than doubled (33% as compared to 14.7% in pre-summit survey).</p> <p>In addition, based on the 95 participants that responded to the pre-survey, 32 participants (33.7%) rated their current comfort level in leading a group of their peers as 4 and only 18 participants (18.9%) rated their comfort level as 5. The</p>	Family, Community and Youth Development

		<p>participants' comfort level significantly increased after the youth summit as out of 94 participants who responded 40 (42.6%) rated their comfort level as 4 while the percentage of participants who rated their comfort level as 5 in leading a group of their peers doubled (38.3% as compared to 18.9%).</p> <p>Camp Maga'lahi</p> <p>As a result of our efforts, 100% (23 participants) of those trained assisted with the development, organization, and facilitation of the 2019 4-H Camp Maga'lahi. The two-week summer day camp successfully engaged 60 camp participants ages 7-to 15. Before attending camp, 85% of participants agreed or strongly agreed to admitting their mistakes and taking responsibility for their actions. After attending camp, 93% of participants agreed or strongly agreed to admitting their mistakes and taking responsibility for their actions. 58% of campers agreed or strongly agreed that they felt like they can make a difference in their community prior to attending camp. This percentage increased significantly to 85%. And lastly, 28% of camp participants disagreed or strongly disagreed that they doubt themselves and their ability to succeed. Post camp, the percentage more than doubled to 53% as compared to 28%.</p> <p>Money Management Workshops (Youth &amp; Adults)</p> <p>As a result of our efforts, 100% (10 participants) of those trained assisted with coordinating, recruiting participants and conducting money management workshops. A total of 286 youth and adults successfully completed the Money Management workshops. 100% of youth who completed the youth money management workshops learned practical skills such as budgeting, setting financial goals, and saving a certain percentage of their allowance to fulfill that goal. 100% of adult food stamp recipients who completed the lessons were able to develop a weekly, bi-weekly and monthly family budget. As a result of having completed the program, 99% of participants claimed that they were able to stretch their food stamp dollar to the end of each month. This is significant as families were able to have food last until the next disbursement of food stamp benefits.</p> <p>Total youth engaged: 1,147 Total adults engaged: 1,508</p>	
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7.	<p>Building Volunteer Capacity</p>	<p>Building a skilled volunteer base Sustainable programs within the CNMI require programming efforts to be community/youth driven. By investing in developing the capacity of our local volunteers and community partners, they were able to independently implement programs effectively. Educational programs were youth-led and successfully implemented. These youth volunteers were able to modify lessons and activities to fit the learning needs of program participants and execute their leadership skills by conducting a wide range of training sessions to other volunteers.</p> <p>As a result of our efforts, we managed to train 49 youth and 15 adults to assist with conducting training, workshops, and educational presentations. The program increased the pool of skilled volunteers significantly. These trained volunteers were able to plan, organize, and facilitate various hands-on training in preparation for the 2019 Middle School Youth Leadership Summit, 4-H Camp Maga'lahi, Tinian Summer Youth Camp, and swimming clinics. To date, we have 139 highly skilled 4-H youth and adult volunteers.</p> <p>Additionally, partnering organizations were able to utilize newly gained skills to implement the Leafy Green Vegetable Garden project at the Saipan and Rota Aging Program. The intent of the project was to increase the consumption of leafy green vegetables as well as to increase the physical activity of our elders. 100% of senior citizens participating in the project in Saipan and Rota claimed to have increased their consumption of leafy green vegetables by 60%. 80% of the participants spent 15-20 minutes every other day tending to the garden increasing their activity level by 30%. The Center incorporated the vegetables into their menu whenever possible while participants did the same at home. 100% of program participants would like to see the project continue as they have experienced the benefits of it. According to the participants, incorporating more vegetables into their diet and increasing their activity has boosted their overall energy level.</p> <p>FCYD, in collaboration with the Nutrition Assistance Program (NAP) in Saipan, provides financial management workshops to help food stamp recipients manage their food stamp dollars. Post surveys were conducted after each Money Management workshop. 100% of Adult Money Management Workshop participants claimed to have learned the importance of family budgeting, were able to decide which budgeting system worked best for them, and incorporated</p>	<p>Family, Community and Youth Development Program</p>
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		the skills learned into their practice. As a result of completing the program, 99% of adult food stamp recipients indicated they were able to stretch their food stamp dollar to the end of each month. This is significant as families were able to have food last until the next disbursement of food stamp benefits.	
8.	Creation of the Commonwealth of the Northern Mariana Islands Non-Communicable Disease Task Force & Strategic Plan	<p>NMC CREES collaborated with the Dept. of Public Health Non-Communicable Disease Bureau (NCDB) to initiate the NCD State Task Force. The Task Force was developed to address the burden on non-communicable diseases through a multi-sector approach, with representatives who work in the built environment. The Task Force is composed of seven (7) councils; 1) Nutrition, 2) Physical Activity, 3) Policy, 4) Cancer Prevention, 5) Tobacco Prevention, 6) Behavioral Health, and 7) Clinical Linkage. The councils developed draft frameworks that would be combined to create the CNMI State NCD Strategic Plan. The following projects were done as a result of the NCD Strategic</p> <ol style="list-style-type: none"> <li>1) Backyard Gardening Pilot Project - A collaborative project which was led by the Nutrition Council. Collaborators include: NMC CREES, NCDB, Division of Agriculture, Nutrition Assistance Program, 28 participants took part in the Backyard Gardening Pilot Project. All participants indicated that they increased their knowledge of backyard gardening and 20 participants established backyard gardens to meet food needs.</li> <li>2) Healthy Stores survey - As a first step to increasing healthy and affordable food options, the Nutrition Council surveyed 300 consumers to assess attitudes, behavior, and knowledge of healthy eating among community members and perceptions of the food environment.</li> </ol>	Nutrition & Health Program
9.	Increasing Food Security & Self-Sufficiency through Agroforestry Workshops	Approximately 185 people participated in Agroforestry workshops on Saipan, Tinian, and Rota. To date, 26 new agroforestry plots have been established. All of the plots contain crops for food while 3 contain food, ornamental plants, and medicinal plants. New plots range in size from 30x30 feet to 4,000 square meters. Plots are on farms as well as homesteads. Producers report that they do not need to use pesticides or insecticides and that the plots require significantly less water and labor compared to monocrop farming methods. At least 15 additional plots are in the planning phase. Evaluation of the impacts of this project on increasing food security is on-going.	Nutrition & Health Program

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