

# College of Micronesia Combined Research and Extension Plan of Work 2022-2026

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## I. Plan Overview

### 1. Executive Summary

The College of Micronesia land grant (COM-LG) program Plan of Work is an integrated approach to address the critical issues of strategic importance to the entire Micronesian region. Identified problems are broad, which requires that the different areas in Micronesia develop research and extension programs that address short-term, intermediate, and long-term critical issues, needs, and problems that are unique to each of the areas. The COM-LG identified and developed critical issues based on stakeholders' inputs consistent with economic, social, and ecological priorities identified by the three nations (the Republic of Marshall Islands, Federated States of Micronesia, and the Republic of Palau) through their Economic Development Plans or similar sector development plans. To address the critical issues, COM-LG will implement programs in six sites (across three island nations) and remote locations to reach people from all walks of life, including women and the underrepresented.

The geographic region served by the COM-LG program covers six sites across three island nations and over 2 million square miles, an area larger than the continental United States. The region is inhabited by a heterogeneous mixture of people from diverse cultural groups with different customs, traditions, and languages. The total population is approximately 190,614 as per the 2019 data.

Four of the extension counties in the Federated States of Micronesia (FSM) are Yap, Chuuk, Pohnpei, and Kosrae. These counties include 607 islands and atolls, 65 of which are inhabited, spread across an ocean area of more than one million square miles. Although this nation's land area is only 271 square miles, there are 2,700 square miles of lagoons.

The Republic of the Marshall Islands (RMI) consists of two north-to-south chains of islands. Altogether it consists of 30 atolls, each made up of many islets and five coral islands. The coral atolls rise not more than 25 feet above sea level and on an average less than 1,000 feet in width. The island group lies on the eastern edge of Micronesia, 2,100 miles southwest of Honolulu.

The Republic of Palau (ROP) consists of a cluster of more than 343 islands in the southwest corner of the region, roughly 500 miles southeast of the Philippines. These islands range from the hundreds of small limestone Rock Islands and isolated atolls to the volcanic island of Babeldaob.

The agriculture and aquaculture programs in the six sites are mostly subsistence in nature. The continuing challenge is to build a viable economy and ensure a constantly improving quality of life in Micronesia while maintaining a strong cultural identity and a healthy environment. The COM-LG program will continue to play an active role in three island nations' economic and social development. It conducts applied research and provides appropriate extension programs targeting clients from these small island communities.

Identifying critical issues and trends from which programs are developed involves the input of stakeholders, observations, and staff findings, and from partners and collaborating agencies. Government studies, reports, and publications are also reviewed periodically to track trends and identify regionally relevant critical issues. The extension of the economic provisions of the Compact of Free Association funding in the FSM and the RMI in 2004 provided these two countries with alternative scenarios for achieving economic growth and self-reliance in the next 20 years. Also, ROP's Compact of Free Association with the US Government continues. This international agreement and governing relationships of free associations between the United States and the three sovereign nations significantly impact its citizens' living standards. Other significant trends include internal migration, out-migration of both young and adult Micronesians to the adjacent US population centers in search of economic opportunities, impacts from climate variability and change, and increasing social pressures brought on by rapid, unsustainable development, brain drain, and demographic changes leading to declining cultural values, children, youth, and family issues.

The COM-LG program supports sustainable systems that improve and advance agricultural, human capacity, community, and natural resource development. The sustainable systems must be economically viable, environmentally sensitive, socially acceptable, culturally appropriate, and technologically feasible. In addressing the wide range of issues identified by stakeholders, the COM-LG program emphasizes the preservation and protection of Micronesia's natural and cultural environment. This response is vital, requiring concerted efforts toward raising awareness that the long-term quality of life is dependent on a healthy natural and social environment. Micronesians should integrate traditional farming methods with scientifically sound agricultural practices that empower and engage community members in sustainable agriculture and aquaculture production systems that will have long-lasting positive impacts on their islands and the region.

Obesity, malnutrition, diabetes, food, and waterborne diseases are also daunting problems in Micronesia. Outreach programs will emphasize the need for a sustainable food production system, balanced diets, value-added products, food processing, proper food handling, and maintaining clean water sources to reduce food and waterborne diseases. Other problems such as social issues, family planning, school dropouts, joblessness, alcoholism, and tobacco use will also be addressed through appropriate extension programs.

In the coming years, the land grant program will address the following six critical issues: i) Lack of local food production and food insecurity, ii) Sustainable aquaculture development, iii) Youth and family issues in the communities, iv) Climate change challenges in Micronesia, v) High incidence of food and waterborne illnesses, and vi) Childhood obesity.

Partner colleges of the three nations will initiate new extension programs in NIFA Reporting System to address issues pertinent to their jurisdictions while targeting to achieve the overall goal of the entire Micronesian region's critical issues.

#### Lack of local food production and food insecurity

Agriculture is an important activity for sustainable economic development and food security of small island communities in Micronesia. This program will address various issues in sustainable plant and animal production systems and their implications on Micronesian islands' environment, including atolls. Emphasis will be placed on traditional food production systems, conservation of natural resources, techniques that integrate traditional practices with contemporary approaches, processing and marketing of both crops and animal products.

Traditional smallholder systems are the primary source of food and income for the island communities. Improving them is critical to attaining poverty reduction targets and food security objectives. Preserving and enhancing food security requires agricultural production systems to change towards higher productivity and efficiency to lower output variability in the face of climate risks. Production systems must become more resilient to stabilize the output and income for performing well during disruptive events. More productive and resilient agriculture requires transformations in the management of natural resources (e.g., land, water, soil nutrients, and genetic resources) and higher efficiency in using these resources and inputs for production. The COM-LG will implement appropriate extension intervention in innovative climate-friendly strategies to provide island communities with needed skills to develop and sustain small farm enterprises for food security and income.

Micronesian islands have an economically detrimental reliance on imported foodstuff, mainly starch (rice, flour), fruits, vegetables, and animal products. The increase in the demand and consumption of imported foods has led to an overall decline in local food production. Production of food crops and livestock are high economic development priorities of all governments and local animal and crop producers. For crops such as banana, taro, cassava, and sweet potato, limitations are in the availability of disease-free and elite seedlings. For the livestock sector, few constraints exist, such as lack of improved bloodline, lack of affordable feedstuff, diseases, and lack of appropriate animal husbandry knowledge.

The Economic Development Plans of ROP, FSM, and RMI call for market-oriented sustainable agriculture emphasizing food security, self-sufficiency, import-substitution, accessibility, and export markets. The increase in local food production will create surpluses that can be converted into value-added products for local use and the export market. The introduction of tissue culture technology will result in superior plant production (disease-free, uniform, high-yielding) in sufficient quantities. New techniques/methods of rapid crop propagation and production technologies of staple and cash crops will be pursued. Other relevant issues and problems in crop production, such as soil fertility, integrated pest management, marketing, cultivation methods, post-harvest handling practices, and processing, will also be addressed.

There is an urgent need to increase local food production to ensure an adequate food supply to meet food security needs,

income generation, and support the tourism industry. From stakeholder input analysis, it is evident that some of the issues are directly or indirectly contributing to the decline in local food production. These include lack of available arable land, low wages and negative image of farming, lack of agricultural loans and crop insurance, lack of infrastructure especially in remote areas, competition between local and imported produce, lack of marketing information and centralized marketing, increased incidence of pests and diseases in agricultural commodities, unstable supply of local produce, lack of agriculture professionals, limited skills and knowledge of producers in adopting advanced methods for farming, poultry, and livestock production, and excessive dependence on foreign labor.

The COM-LG's research and extension activities to address this issue will help subsistence, and commercial farmers increase yields and maintain sustainability. Training and outreach activities will cater to island communities with healthy and nutritious produce through vegetable gardening in homegardens and communities. Research and extension activities will be carried out in collaboration with relevant stakeholders and partners.

#### Sustainable aquaculture development

The abundant and biodiverse coral reefs in Micronesia provide habitat for robust fish populations and other marine forms supporting subsistence and commercial fisheries. Most importantly, the pristine marine environment and availability of potential broodstock from the wild provide opportunities for developing multispecies aquaculture in the islands. Recently, there has been a growing emphasis on the sustainable development of marine resources to meet future economic needs, provide self-sufficiency, and develop food and economic security of small island communities, thereby ensuring self-sustainability.

Increased demand for high-valued seafood commodities like giant clam, lobster, shrimp, mangrove crab, sea cucumber, rabbitfish, and grouper resulted in virtual depletion of stock from the wild due to overfishing. Governments placed restrictions on harvesting some of these aquatic species during their peak spawning periods for fear of depleting supply. The establishment of spawning techniques, larval and nursery rearing mangrove crab, sea cucumber, milkfish, rabbitfish, grouper, and other targeted aquaculture species will provide the necessary juveniles of these species for commercial grow-out operations.

Black-lip pearl oyster farming (round pearl production) offers excellent potential for sustainable economic development. Micronesian nations are far behind the South Pacific nations, particularly French Polynesia, mainly because in Micronesia, except a few atolls, there are not enough black-lip pearl oysters that could be collected from the wild. Hence, the industry is dependent on hatchery-based pearl oyster production. The COM-LG program has trained local technicians in the hatchery, nursery, ocean grow-out management, and other aspects of pearl farming. Besides, COM-LG has trained and will continue to train local technicians on half pearl production for standalone income generation or supplementary income generation with round pearl farming. These trained staff will become core technicians to train local people and participate in COM-LG's research and extension projects for local half pearl farming and half pearl based products' business development.

There is also a strong desire to develop revenue-generating local industries based on available natural resources and restock reefs where wild marine populations have declined. Hence, the focus is on site-specific sustainable hatchery-based production of juveniles for farming sea cucumbers (sandfish, white teat, etc.), mangrove crabs, rabbitfishes, groupers, giant clams, and other commercially important food and ornamental finfish and shellfish for commercial aquaculture development and stock enhancement.

The establishment of projects and programs for pearl oysters, giant clams, mangrove crab, sea cucumber, milkfish, rabbitfish, grouper, and other targeted aquaculture species will create opportunities for local communities to engage in and generate income via sustainable aquaculture practices. It will also create employment opportunities and generate revenue through exports and improve people's socioeconomic conditions in these small islands. These efforts will also strengthen local and regional aquaculture research and development programs.

#### Youth and family issues in the communities

Traditionally, local communities, families, and youth are supported by a very intricate but strong and sustainable socioeconomic system that kept them together and permitted them to share and help one another with pooled resources. Unfortunately, this traditional support system breaks down when non-traditional programs take over communal

responsibilities. The segregation and assignment of duties with little community input reduce youth and family interaction and learning. Furthermore, passive learning models reduce youth attachment to community and family. This reduction in direct communication and shared activities results in a lack of personal identity and respect for the elderly population with cultural knowledge. A shift from community subsistence to a cash economy results in the erosion of the extended family structure that otherwise gives moral and financial support to all family members. Unplanned teenage pregnancy and lack of support and education for the pregnant teen usually result in complications during childbirth and malnourished children. The increasing rate of youth suicide, domestic violence, and physical and sexual abuse of children, drug and alcohol abuse, school dropout, and unemployment are also social problems. With an increased demand for services by the local population, challenging economy, youths' attitude or behavior, island governments face the daunting task of providing essential services, including community development and employment opportunities. These social problems need to be addressed with programs and effective strategies to restore and preserve the Micronesian culture and traditions. Such programs will eventually bring opportunities for income generation, entrepreneurial skills, and moral value improvement.

With the change from subsistence to a cash economy, many people expect compensation for their activities, and youths do not prefer volunteerism. The traditional Micronesian Island family system exists as a tightly knitted institution in which members share resources. Nowadays, this orderliness is declining. Hence, programs under this issue will address the rapid social and economic changes affecting communities, families, and youth to instill the values of love, respect, sharing, and caring for each other. It will also provide information and skills to inspire them to become law-abiding citizens, contribute to society, and cultivate respect for societal norms and values. The 4-H program will continue to serve youth by providing educational workshops in acquiring knowledge and developing lifelong skills, forming positive adult relationships and leadership experiences. Leadership and volunteerism, civic, economic, and cultural skill programs are essential for the family, youth, and community development endeavors.

#### Climate change challenges in Micronesia

Changing climate and extreme weather events associated with regional ENSO phenomena bring unprecedented challenges to the small island nations and low-lying atolls in Micronesia. Environmental problems related to climate variability, sea level rise, coastal flooding, loss of biodiversity, saltwater intrusion, and lack of freshwater and soil degradation converge to place the Micronesian islands, especially the atoll islets and other coastal settings at the forefront of climate change. The island communities disproportionately bear the climate change impacts. Adverse effects are already happening that gravely undermine these nations' efforts to achieve sustainable development goals.

Climate change has devastating effects on local communities regarding food security, environment, human, plant, and animal health. The impacts threaten the survival and the sovereignty of Micronesian island nations and their people. Climate change is a cross-cutting development issue as it affects every aspect of island communities and their livelihoods. These impacts exacerbate existing cultural and socioeconomic vulnerabilities and threaten the security of these nations. To this end, the people must collectively build and strengthen resilience to combat climate change.

The climate-poverty puzzle is one of the intractable problems limiting island communities' development and uptake of agricultural innovations. Impacts of climate change add to the problem and hinder the efforts to achieve Sustainable Development Goals successfully. Climate risk management focused on community-based adaptation (involving all stakeholders and partners), and implementing effective climate-smart agriculture strategies can enhance the adaptive capacity by improving food and water security, livelihood development activities, and sustainability. With rising sea level, the communities, scattered throughout the small islands and low-lying coral atolls, are at risk and vulnerable. These atolls and the low-lying areas of volcanic islands are negatively affected by saltwater intrusion due to sea level rise. Communities are at risk of achieving food security as rising temperatures and rainfall patterns destroy the staple crops. Communities must take necessary actions in response to these global impacts and find sustainable methods of farming. Appropriate extension intervention in innovative climate-smart agriculture strategy to maintain natural resources will help local communities to learn and adopt required skills to improve adaptive capacity. Coping with climate variability today will inevitably pave the way for adapting to climate change tomorrow.

Many of the projected climate change impacts on the island communities are now unavoidable; adaptation measures are essential. Small island agriculture systems are highly vulnerable, affecting food security, livelihoods, and economic prosperity. Enhancing local communities' adaptive capacity is critical to food and nutrition security goals in the long run. Developing locally suitable climate-resilient food systems is unexplored in research and practice. Ensuring that people have continuous access to nutritious food always requires a planned and managed approach to protect existing natural

resources and improve current agricultural practices sustainability. Adaptation to climate variability and extreme events serves as a basis for reducing vulnerability to long-term climate change.

#### High incidence of food and waterborne illnesses

The humid tropical environment in Micronesia renders a high incidence of foodborne and waterborne diseases. Food contamination and resulting foodborne illnesses is a growing concern. Food safety plays a crucial role in explaining the continuing upward trend in many people's deteriorating health conditions in Micronesian islands. Identified vehicles indicate that the high frequency of foodborne illness is attributed to the lack of food safety knowledge and poor food handling practices, including improper storage temperature and time, inadequate cooking, and the use of unsafe food sources. These often result in many individuals and households consuming unsafely processed and contaminated foods. The frequency of foodborne illnesses continues to rise, and people and local governments face the daunting task of meeting ever-rising medical costs related to hospitalization. The COM-LG program aims to address this issue to improve locally made food products' safety and quality.

The food safety program will provide education and training to target audience to increase knowledge and skills, ensure safe food preparation, food handling, food storage, adopt best practices, improve quality and safety of food products, and reduce the incidence of foodborne and waterborne illnesses. The target audience includes food producers and handlers, chefs, school cooks, homemakers, food and grocery establishments, community members, and school children. The program activities are expected to change the target audience's knowledge, attitude, and behavior in food handling practices and process safe and healthy food products. It will also strengthen existing collaborations on programs that provide information to stakeholders on healthy lifestyles and consumption of safe and healthy foods.

#### Childhood obesity

Irrespective of income grouping or geographical location, small island developing states share similar environmental, economic, and nutritional vulnerabilities. According to the World Health Organization (WHO), about 30% of children in the Pacific Islands between 5 and 9 are obese. Small island developing states import large amounts of primarily ultra-processed foods and sugar-sweetened beverages, contributing to the high and increasing prevalence of obesity. Being overweight in childhood and adolescence is associated with greater risk and earlier onset of chronic disorders such as type 2 diabetes. Obesity also has adverse psychosocial consequences and lowers educational attainment.

The 2019 'Atlas of Childhood Obesity' shows (based on 2017 data) that in ROP, 40% of children (aged 5-9) and 30.4% of adolescents (aged 10-19) are obese. Whereas in the RMI and the FSM, the corresponding figures are 35.3% and 28.9% (aged 5-9) and 25.3% and 19.8% (aged 10-19), respectively. Without substantial interventions to prevent and treat childhood obesity, the number of school-age children and adolescents living with obesity is predicted to rise from current estimates to about 25% to 30% by 2030.

Most children lack knowledge or information about healthy food choices, eating habits, and the risk of limited physical activities. Furthermore, their families also need training in the preparation of healthy meals. Limited availability of fresh produce or the cost of healthy nutritious food is an essential factor that influences food choices. Replacing traditional foods with imported, processed food and lifestyle changes due to excessive use of vehicles, improved transportation systems, and availability of mechanized appliances have also contributed to the high prevalence of obesity and related health problems in all age groups. The trend predicts a generation of children and adolescents growing up obese and at greater risk of lifestyle diseases.

With the knowledge of healthy lifestyle choices, obesity can be prevented at an early age. Extension activities of COM- LG will focus on promoting children's well-being through active programs and providing information about nutrition, health, physical education, and appropriate indigenous knowledge and practices. This program will promote sports and exercise activities, school, home, and community gardening activities to encourage and increase local fruits and vegetables among students with activities such as proper meal planning to address obesity. Easy access to fresh vegetables and fruits will enable school administrators and chefs to use and serve local food for school lunch programs.

## 2. FTE Estimates

Year	1862 Extension	1862 Research
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2022	42.0	32.0
2023	42.0	32.0
2024	42.0	32.0
2025	42.0	32.0
2026	42.0	32.0

## II. Merit / Peer Review Process

The current standard procedure for reviewing program proposals begins with an internal review process by a team comprised of researchers, subject area specialists, extension agents, and collaborating agencies. The review team edits and makes suggestions on the program/project proposal before it is finalized. Once finalized, the program/proposal goes through another review process with College administrators, the local College Board of Regents, through the College of Micronesia administrator, and finally through the COM Board of Regents before it is sent to the USDA or non-USDA funding agency.

Advisory or review committees established at the three colleges continue to review plans of work and proposals related to agriculture, family and consumer science, and community economic development needs of the three nations under the College of Micronesia system. Advisory/review committees of partner colleges review programs based on the governments' priorities and non-governmental organizations. The COM Board of Regents and the local Board of Regents at the three colleges are involved in these reviews, as they are also members of these advisory committees. The administrations of COM and the three local colleges and faculty serve on these committees as resource persons. All attempts will be made to include a broad-based advisory group, which represents multi-institutional and multi-disciplinary efforts.

Extension programs to address the critical issues will be established based on the clients' needs as identified by the agents through stakeholder surveys and meetings. Other primary sources of guidance are direct inputs from the stakeholders, the state and national development plans, and policies. Collaboration with NGOs and other government agencies and sharing of ideas also facilitates these efforts.

A Scientific Peer Review process has been in use for research and integrated proposals. The peer review team includes administrators, researchers, and extension staff. They review proposals for their technical merit and potential impact and relevancy to the communities' needs and fragile ecosystems. A project proposal goes to the internal review team and external experts who also specialize in the proposed project. Once the reviewers' comments and suggestions are included in the final project proposal, it goes through the college administrators to the AES/CRE Director at COM Central Office for final endorsement and submission to the NIFA for approval.

## III. Stakeholder Input

### 1. Actions to Seek

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of selected individuals from the general public

Strategic issues were identified at the county level, catering to participants from various public and private organizations who collaborate and cooperate in our programs. Needs assessments were conducted throughout Micronesia and review other related programs funded by the governments and regional and international organizations. Interviews with

government officials, traditional and church leaders, farmer's groups, NGOs, and community-based organizations were conducted, and inputs were solicited. Direct invitations were given to elected officials at the local, state, and national levels through local newspapers or radio announcements in both English and local vernacular.

## **2. Methods to Identify**

- Use advisory committees
- Use internal focus groups
- Use external focus groups
- Open listening sessions
- Needs assessments
- Use surveys

A major segment of the Micronesian population is our stakeholders, having been classified or identified as representatives from rural communities mainly consisting of subsistence farmers and fishers who live well below the poverty level and are considered under-represented and under-served. Stakeholders are the same clientele of local and state governments. Our programs are extended to supplement existing programs and are conducted separately or with governments and regional organizations. Sponsored programs also engage individuals and organizations in which collaboration and networking have been established.

With assistance from political and traditional leaders in the communities, individuals were identified as stakeholders, and their valued inputs were also solicited.

## **3. Methods to Collect**

- Meeting with traditional stakeholder groups
- Survey of traditional stakeholder groups
- Meeting with traditional stakeholder individuals
- Survey of traditional stakeholder individuals
- Meeting with invited selected individuals from the general public
- Survey of selected individuals from the general public

Brief explanation

This is accomplished through meetings and discussions with government, traditional and church leaders and meetings with farmers, homemakers, community leaders and students.

## **4. How Considered**

- In the budget process
- To identify emerging issues
- Redirect extension programs
- Redirect research programs
- In the staff hiring process
- In the action plans
- To set priorities

Brief explanation

Inputs from clienteles who have successfully adopted recommended practices are considered to redirect research and extension program outputs. Likewise, negative experiences from clienteles are also considered, and appropriate modifications are made. Entrepreneurs who have adopted food processing techniques or developed products give essential suggestions in the extension and research programs on product development of local foods such as root crops, breadfruit, fish, coconuts, and bananas. Advice, ideas, concerns, and needs of political, traditional, and community leaders have also been considered.

## IV. Critical Issues

### 1 Lack of local food production and food insecurity

#### Description:

Food security in Micronesia has worsened significantly in the last few decades because of falling local production per capita, poor growth in the agriculture sector, and increased and costly dependence on food imports. Micronesian islands have an economically detrimental reliance on imported foodstuff, especially fruits, vegetables, and animal products. The increase in demand and consumption of imported foods has led to an overall decline in local food production and a simultaneous impact on food security. Improving traditional agricultural systems and focusing on local food production and processing methods is critical to reducing poverty and meeting overall food security objectives. Enhancing food security requires traditional agricultural and livestock production systems to change to higher productivity while maintaining environmental integrity. Also, few constraints such as lack of improved bloodlines, lack of affordable feed, diseases, and limited knowledge and local capacity in animal husbandry occur in the livestock sector. There is an urgent need to increase local food production and improve processing methods to ensure an adequate supply for the current and future demand, create income-generating opportunities, and meet food security objectives.

Extension programs will focus on appropriate interventions in innovative environmentally friendly strategies to provide island communities with needed skills to develop and sustain small farm enterprises for food security and income. Extension programs will also address the urgent need to increase local food production to meet food security needs, income generation and reduce dependence on imported foods. The increase in local food production will create surpluses that can be converted into value-added products for local use and the export market. Production of superior, disease-free plants will enhance local crop production.

**Term:** Long

#### Science Emphasis Areas

Sustainable Agricultural Production Systems

### 2 Sustainable aquaculture development

#### Description:

The natural population of economically important coastal fishery resources in Micronesia has declined over the years due to over-harvesting, destruction of natural habitats, and climate change impacts. There is an urgent need to restock the reefs and waters where wild populations of these resources have declined. The development of hatchery-based aquaculture production has been considered as a solution to address these issues. However, sustainable aquaculture development in this region has been slow due to many limitations such as lack of knowledge, skills, workforce, lack of financial support, non-availability or a reliable supply of seeds, and other critical inputs. A greater emphasis on establishing sustainable aquaculture development of marine resources is needed to provide self-sufficiency and enhance small island communities' food and economic security. Furthermore, the development of site-specific sustainable hatchery-based aquaculture of economically important species will significantly strengthen the current and future stock enhancement strategies and contribute to commercial aquaculture development.

Outreach programs will focus on different aquaculture species, including seaweeds, pearl oysters, edible oysters, giant clams, mangrove crabs, shrimps, lobsters, sea cucumber, milkfish, rabbitfish, and grouper. The establishment of site-specific hatchery techniques for the species mentioned above will help stock enhancement programs for these species and pave the way to improve people's socioeconomic condition in these small islands by creating income-generating and employment opportunities.

**Term:** Long

#### Science Emphasis Areas

Sustainable Agricultural Production Systems

### **3 Youth and family issues in the communities**

#### **Description:**

Traditionally, Micronesia relied on an extended family system to ensure the basic welfare of its citizens. However, due to Western lifestyles' influence, the shift from subsistence to a cash economy, changing aspirations and priorities has weakened the extended family structure. Today, Micronesian families face challenges in maintaining smooth relationships owing to outside influences and threats. Youth are particularly vulnerable to peer-pressures, leading to substance abuses, teen pregnancies, petty crimes, and school dropouts. Meeting various families' needs for education, regular healthy meals, and other necessities often stresses parents with meager incomes to maintain pleasant family relationships that lead to domestic violence and suicide.

Under the youth program, activities will address the needs of vulnerable families and individuals. After-school programs and refresher courses will be conducted for at-risk students and school dropouts to maintain their school attendance and encourage school re-admission. At-risk families, individuals, and prison inmates will have regular counseling sessions to make the right decisions in their lives. The staff will conduct arts and crafts training to revive traditional skills, restore cultural identities, and increase economic opportunities. Youth and families will be trained in livelihood skills such as sewing, handicraft making, and preparing saleable food products. This program aims to promote an environment conducive for families and youth to develop and nurture sustainable lives with opportunities to maintain strong relationships and welfare through these activities.

**Term:** Long

#### **Science Emphasis Areas**

Family & Consumer Sciences  
Youth Development

### **4 Climate change challenges in Micronesia**

#### **Description:**

The changing climate threatens small island communities in many ways. The climate-poverty puzzle is one of the difficult problems limiting island communities' development and uptake of agriculture innovations. Impacts of climate change add to the problem and hinder the efforts to achieve Sustainable Development Goals successfully. Island communities must take necessary actions in response to these global issues and find sustainable methods of farming. Enhancing local communities' adaptive capacity is critical to food and nutrition security goals in the long run. Appropriate extension intervention in innovative climate-smart agriculture strategies will help local communities to learn and adopt required skills to improve adaptive capacity. Coping with climate variability today will inevitably pave the way for adapting to climate change tomorrow.

Ensuring that people have continuous access to nutritious food always requires a well-planned and managed approach to protect existing natural resources and improve the sustainability of current agricultural practices incorporating climate-smart agriculture practices. Outreach and extension programs focused on climate-smart methods such as agroforestry, soil management, crop diversification, integrated crop-livestock systems, water conservation, alternative crop production methods, etc., will enable communities to adopt site-specific agricultural production technologies and practices. This approach will address adaptation and builds resilience to climate change-related shocks.

**Term:** Long

#### **Science Emphasis Areas**

Environmental Systems

### **5 High incidence of food and waterborne illnesses**

#### **Description:**

Illness and death caused by contaminated water and food are a constant threat to public health and a significant impediment to socioeconomic development in Micronesia. The high incidence of food and waterborne illnesses is

attributed to the lack of food safety knowledge and poor food handling practices, including improper storage temperature and time, inadequate cooking, and the use of unsafe food sources. These often result in many individuals and households consuming unsafely processed and contaminated foods. The frequency of foodborne illnesses continues to rise, and people and local governments face the daunting task of meeting ever-rising medical costs related to hospitalization.

Outreach and extension programs will help local communities learn and adopt required skills to prevent food and waterborne illnesses. The program will focus on education and training based on scientific knowledge to increase knowledge and skills in safe food preparation, handling, and storage, adopt best practices, improve quality and safety of food products, and reduce food and waterborne illnesses. The program activities will improve the target audience's knowledge, attitude, and behavior in food handling practices and processing safe and healthy food products that will reduce the incidence of food and waterborne illnesses.

**Term:** Long

**Science Emphasis Areas**

Family & Consumer Sciences  
Food Safety

## **6 Childhood Obesity**

**Description:**

Childhood obesity continues to be a significant health problem across the Micronesian region. The 2019 'Atlas of Childhood Obesity' shows (based on 2017 data) that in ROP, 40% of children (aged 5-9) and 30.4% of adolescents (aged 10-19) are obese. Whereas in the RMI and the FSM, the corresponding figures are 35.3% and 28.9 (aged 5-9) and 25.3% and 19.8% (aged 10-19), respectively. Without substantial interventions to prevent and treat childhood obesity, the number of school-age children and adolescents living with obesity is predicted to rise from current estimates to about 25% to 30% by 2030. Modernization, dietary changes, and dependence on imported food products, and lack of physical activity contribute to obesity. Children lack sufficient knowledge about healthy food choices, eating habits, and the risk of limited physical activities. Limited availability of fresh produce or the cost of healthy nutritious food is an essential factor that influences food choices. Presently Micronesians are among the top 10 obese countries in the world. Therefore, it is crucial to develop and promote programs and activities to address this issue.

This program will promote awareness of how to reduce obesity through health and nutrition education activities, emphasizing the consumption of healthy local foods (high fiber foods) and physical activities. School gardening programs and utilization of local foods in school meal programs will be encouraged. Home gardening, urban gardening, and community gardening will be promoted. Appropriate extension interventions will increase local foods' consumption, proper meal planning, and increased physical activities among children and adolescents to address obesity.

**Term:** Long

**Science Emphasis Areas**

Family & Consumer Sciences  
Human Nutrition