

College of Micronesia Combined Research and Extension Plan of Work 2020-2024

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I. Plan Overview

1. Executive Summary

The College of Micronesia land grant program (COM-LG) Plan of Work is an integrated approach to address the critical issues of strategic importance to the entire Micronesian region. Identified issues are very broad, which requires that the different counties 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 counties. All critical issues are identified and developed based on stakeholders' input and are consistent with economic, social and ecological priorities identified by the various counties through their Economic Development Plans or similar sector development plans. Programs to address the critical issues will be implemented in six counties as well as communities in remote and isolated locations to reach people from all walks of life, including the underprivileged and underrepresented.

The geographic region served by the COM-LGP covers six counties 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 181,000.

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 the land area of this nation is only 271 square miles, there are 2,700 square miles of lagoons.

The Republic of the Marshall Islands (RMI) is a county consists of two north-to-south chains of islands. Altogether it consists of 30 atolls each made up of many islets and 5 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) is a county consists of a cluster of 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 to the volcanic island of Babeldaob.

The agriculture and aquaculture programs in the six counties 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 strong cultural identity and a healthy environment. The COM-LG program will continue to play an active role in the economic and social development of the six counties. It conducts applied research and develops appropriate and effective extension programs, teaching materials and methods targeting clients in these small island communities.

The identification of critical issues and trends from which programs are developed involves the input of stakeholders and observations and findings of staff and from partners and collaborating agencies. Government studies, reports and publications are also used to track trends and the identification of 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, Republic of Palau's Compact of Free Association with the U.S. Government continues. The Compact II with the FSM and RMI is one of the issues that will have a major impact on standards of living in Micronesia in the coming years. Other important trends include: internal migration and resulting pressures on land and the environment; family financial resources and social services; increasing cost of living; increasing out-migration of both young and adult Micronesians to adjacent U.S. population centers in search of economic opportunities; rising sea level as a result of global warming, and other natural phenomena such as El Niño and La Niña that have disastrous effects on small island counties; and increasing social pressures brought on by rapid unsustainable development and declining cultural values, leading to children, youth and family problems.

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, land grant program emphasizes the preservation and protection of Micronesia's natural environment. This response is vital requiring concerted efforts toward raising awareness that the long-term quality of life is dependent on a healthy natural environment. Micronesians should continue to use traditional methods of farming augmented by scientific knowledge to be empowered and to engage in improved agriculture and aquaculture production systems that will have long lasting positive impacts in their communities.

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

In the coming years, 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) obesity – a growing health problem.

Lack of local food production and food insecurity

Agriculture is an important industry for the economic growth 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 the environment in Micronesian islands, including atolls. Emphasis will be placed on traditional food production systems, conservation and development of natural resources, techniques that incorporate traditional practices into contemporary approaches, processing, and marketing of both crops and animal products.

Traditional smallholder systems are the main source of food and income for the island communities. Improving them is critical to attain poverty reduction targets and food security objectives. Preserving and enhancing food security requires agricultural production systems to change in the direction of higher productivity and also, essentially, lower output variability in the face of climate risks. In order to stabilize the output and income, production systems must become more resilient, i.e. more capable of performing well in the face of 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 the use of these resources and inputs for production. Appropriate extension intervention in innovative climate-friendly strategies will be implemented 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, especially 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 livestock, a number of constraints include improved bloodline, lack of affordable feedstuff, diseases and lack of appropriate knowledge in animal husbandry.

The Economic Development Plans of Palau, Marshall Islands, and the FSM call for market-oriented sustainable agriculture with emphasis on 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 for the export market. The introduction of tissue culture technology will result in the production of superior plantlets (disease free, uniform, high yielding) in sufficient quantities. Developing banana farms and other crops of production capability beyond subsistence is necessary to achieve the export goal aimed at economic development. 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, postharvest handling practices, and processing will also be addressed.

There is an urgent need to increase local food production to ensure an adequate supply of food to meet food security needs, income generation and to support the tourism industry. From stakeholder input analysis, it is evident that some of the following issues are directly or indirectly contributing to the decline in local food production: lack of available arable

land due to low soil fertility; low wages and negative image of farming; lack of agricultural loans and crop insurance; lack of infrastructure such as decent roads, electricity and storage facilities 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; rapid population growth; lack of agricultural 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 research and extension activities to address this issue will be aimed at helping subsistence and commercial farmers increase yields and maintain sustainability. Training and outreach activities will cater island communities with healthy and nutritious produce through vegetable gardening in homegardens and communities. To increase the effectiveness, these activities will be carried out in collaboration with relevant stakeholders and local partners.

Sustainable aquaculture development

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

Rapid influx of tourists in some islands in Micronesia and high demand for high valued seafood commodities like grouper, rabbitfish, mangrove crabs, sea cucumber, spiny lobsters and shrimps resulted in a virtual depletion of stock from the wild due to overfishing. Governments have issued restrictions on harvesting some of these aquatic species during their peak spawning periods for fear of depleting stock. The establishment of techniques for spawning, larval and nursery rearing rabbitfish, mangrove crab, milkfish, grouper, sea cucumber, and other targeted aquaculture species will provide the necessary juveniles of these species for grow-out operations.

Black-lip pearl oyster farming offers excellent potential for sustainable economic development. Micronesian nations are far behind the South Pacific nations, particularly French Polynesia, that annually exports over US \$120 million worth of cultured black pearls. This is mainly due to the fact that there are not enough black-lip pearl oysters that could be collected and maintained in a hatchery-based pearl industry. In the FSM, COM land grant has trained local technicians in the hatchery, ocean grow-out and pearl cultivation. They now become core technicians to train local people as well as supporting research and extension projects for local pearl farming and pearl related products' business development.

There is also a strong desire to develop revenue generating local industries based on available natural resources and to restock reefs where natural marine populations have declined. Hence, focus is on site-specific sustainable hatchery-based farming of sea cucumber (sandfish), mangrove crab, rabbitfish and other commercially important food and ornamental finfish and shellfish, mainly for commercial aquaculture development and stock enhancement.

The establishment of projects and programs for pearl oyster, mangrove crab, milkfish, grouper, rabbit fish, sea cucumber and other targeted aquaculture species in Micronesia will create opportunities for local communities to engage in and generate alternate/supplementary income via sustainable aquaculture practices. It will also create employment opportunities and will generate foreign trade through exports and thereby improve the socioeconomic condition of the people 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 were supported by a very intricate but strong and sustainable socioeconomic system that kept them together and permitted them to share and help one another. Unfortunately, this traditional support system breaks down and results in family and youth friction and misunderstanding, which creates social problems. A shift from 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. Teenage pregnancy is increasing that usually results in complications during parturition and low birth weight and undernourished children. 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 of concern. With an increased demand of services by local population, challenged economy, youths' attitude or behavior, island governments face a 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 tradition. Such programs will eventually bring opportunities for income generation, entrepreneurial skills, and moral value formation.

With the change from subsistence to a cash economy, many people expect compensation for their activities and volunteerism is not preferred by youths. Micronesian family system used to be a closely knitted institution, in which members shared with one another. 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 each other. It will also provide information and skills to inspire them to become law-abiding citizens and contributing members of society and to 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 important for the success of family, youth, and community development endeavors.

Climate change challenges in Micronesia

Changing climate and extreme weather events associated with regional ENSO phenomena brings unprecedented challenges to the small island nations and low-lying atolls in Micronesia. Environmental problems associated with 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 climate change effects are disproportionately borne by the island communities. Negative effects are already happening that gravely undermine the efforts of these nations to achieve sustainable development. Climate change has devastating effects on local communities in terms of food security, environment, human, plant and animal health. Climate change impacts threaten the survival and the sovereignty of Marshall Islands nation and its people. It is a cross-cutting development issue as it affects every aspect of the Marshallese way of life and livelihoods. Climate change impacts exacerbate existing cultural and socio-economic vulnerabilities. These impacts threaten the security of this nation. To this end, the people must collectively build and strengthen Marshall Islands' resilience to combat climate change.

The climate-poverty puzzle is one of the intractable problems limiting the development of island communities and the uptake of agricultural innovations. Impacts of climate change add to the problem and hinder the efforts to successfully achieve the Sustainable Development Goals. Climate risk management focused on community-based adaptation (by involving all stakeholders and partners) and implemented through 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 island communities, which is mostly rural and scattered throughout the small islands and low-lying coral atolls, are seriously at risk and vulnerable. These atolls and the low-lying areas of volcanic islands are affected by saltwater intrusion. Communities are at risk in terms of achieving food security as rising temperature and changes in rainfall pattern takes the toll on the staple crops. Communities must take necessary actions in response to these global impacts and find sustainable methods of farming crops. 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, making some degree of adaptation is essential. Small island agriculture systems are highly vulnerable affecting food security, livelihoods and economic prosperity. Enhancing adaptive capacity of local communities 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 at all times require a planned and managed approach to protect existing natural resources and to improve the sustainability of current agricultural practices. 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 tropical humid environment in Micronesia renders high incidence of foodborne and waterborne diseases. Food

contamination and resulting foodborne illnesses is a growing concern. Food safety plays a key role in explaining the continuing upward trend in the deteriorating health condition of many people in Micronesian islands. Identified vehicles indicate that 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. This often results in many individuals and households consuming unsafe processed and contaminated foods. Frequency of foodborne illnesses continue to rise and people and local governments are facing daunting task of meeting ever-rising medical costs related to hospitalization. The COM-LG program aims to address this issue to improve the safety and quality of locally made food products.

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

Obesity – a growing health problem

A recent Maternal and Child Health – Health Information Systems data from UNICEF indicate a sharp increase in childhood obesity in Micronesia. Nationally the percentage of children ages 2–5 years with a body mass index (BMI) >85th percentile has risen from 7.4% in 2011 to 24.8% in 2012. A 2017 Lancet study has warned that more kids will be obese or overweight than underweight by 2022. Currently, the number of obese children between age 5 and 19 is 10 times higher than in 1975. Based on the 2016 data, Palau has 35.5 % obese children, Marshall Islands has 31.2% and the FSM has 25.2% obese children. Many health agencies agree that there are several risk factors for obesity, including eating high calorie and low-nutrient foods and beverages; not getting enough exercise; sedentary lifestyle, and medication use. 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 preparation of healthy meals. Limited availability of fresh produce or cost of healthy nutritious food is an important 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 healthier lifestyle choices, obesity can be prevented at an early age. Extension activities of COM-LG will focus on activities to promote the well-being of children through providing information about nutrition, health, physical education, and appropriate indigenous knowledge and practices. This program will promote school gardening and home and community gardening activities to encourage and increase consumption of local fruits and vegetables among students and adults with activities such as proper meal planning to address obesity. Easy access to fresh vegetables and fruits will encourage school administrators and chefs to use and serve local food for school lunch programs.

2. FTE Estimates

Year	1862 Extension	1862 Research
2020	44.0	41.0
2021	44.0	41.0
2022	44.0	41.0
2023	44.0	41.0
2024	44.0	41.0

II. Merit / Peer Review Process

The current standard procedure for review of 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 make 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 continues to review plans of work and proposals as they relate 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 priorities of the governments 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 needs of the clients as identified by the agents through stakeholder surveys and meetings. Other main 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 in 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 needs of the communities and their fragile ecosystems. A project proposal goes to the internal review team and external experts who also specialize in the field of the proposed project. Once the comments and suggestions of the reviewers 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 that catered to participants from the various organizations, both public and private, who collaborate and cooperate in our programs. Needs assessments were conducted throughout Micronesia in conjunction with assessments of other related programs funded by the governments, and regional and international organizations. Interviews with government officials, traditional and church leaders, farmers' groups, NGOs and community-based organizations were conducted and solicitation for inputs occurred. Direct written invitations were given to elected officials at the local, state, and national levels and through announcements that were placed in the local newspapers and aired over the local radio stations 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 are our stakeholders, having been classified or identified as representatives from rural communities that consist mostly of subsistence farmers and fishermen 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 input was 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 will be 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 clientele who have successfully adopted recommended practices will be considered and modified to redirect research and extension program outputs. Likewise, negative experiences from clientele will also be considered in the modification of approaches. Entrepreneurs who have adopted food processing techniques or developed products can give important 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 will always be 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 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