2016 College of Micronesia Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

Agriculture is an important industry for the economic growth and food security of small island communities in Micronesia. The program concentrated on sustainable plant and animal production and their implications on the environment in mountainous islands and low atolls, incorporated small and subsistence farms and commercial agriculture. Emphasis was given on traditional production systems, conservation and development of natural resources, techniques that incorporate traditional practices into contemporary approaches, processing, and marketing of crops and animal products. Production and utilization of local food crops was increased.

Program activities under families, youth and communities childhood obesity, food safety, global food security and hunger, climate change planned programs promoted livelihood skills to families and individuals. Extension activities catered the needs of the Micronesia population by providing healthy and nutritious produce through vegetable gardening in homes and communities; prepared and distributed appropriate extension materials and developed collaborative partnership programs with churches, women's groups and schools.

Research and extension activities continued to improve agriculture and aquaculture productivity and food security, self-sufficiency, and enhancing quality of life. Climate change programs on adaptation continued to address the effects of rising sea level, salt water intrusion, low rainfall that have been devastating on low lying atolls, islands and shoreline on high islands. Salt tolerant species of staple crops and climate smart production practices are being promoted and reinforced. Efforts towards improving the traditional monoculture planting of cassava through intercropping with nutritious and saleable vegetables species and varieties are program components. Cassava and sweet potato varieties are being evaluated for salt tolerance, yields and palatability offered another opportunity for food security and improved nutrition. Because of its low-growth habit, sweet potato is also being promoted as climate proof and typhoon resilience crop. The utilization, processing and development of new products from staple food crops are continued. The introduction and utilization of tissue culture technology resulted in the production of superior plantlets (salt tolerant, disease-free, uniform, and high yielding) in sufficient quantities. In vitro germplasm maintenance of staple root crops and horticulture crops continued to insure genetic conservation of these valuable resources for future generations. This has facilitated the continued supply of planting materials to growers and for in-vitro multiplication of other food crops. Research continued on the identification of salt tolerant species of the predominant staple crops and development of tissue culture protocols for the multiplication of pineapples, black pepper, taro and cassava.

Trainings conducted for individuals, college and highs school students as aquaculture interns. The interns exposed to research activities including growing sea cucumber in the hatchery, spawning, micro-algae culture and larval rearing. The spawning activity yielded thousands of juveniles, and was used in growth development observation and documentation. Over the year more than two hundred high school and college students and other individuals attended training or participated in various aquaculture activities at the hatchery and in the field.

Aquaculture demonstration projects continued to transfer the technical know-how to the Micronesians for alternative source of income towards socio-economic improvement. Efforts were made to initiate and improve site-specific multi-species aquaculture and transfer simple and appropriate feeding technology for targeted aquaculture species to farmers to formulate and prepare their own feeds. Other projects provided stock enhancement to replenish depleted stocks and a project continued to develop technology for farming of sea cucumbers in Micronesia, which will enable the replenishment of sea cucumbers in lagoons and reefs, where they are depleted as a result of over harvesting.

Applied research and extension programs aimed at creating public awareness, adoption of best practices in gardening, building resilience against climate change impacts, home-based livelihood, health and nutrition, and ultimately improving welfare of communities.

Outreach programs continued on issues ranging from food safety and quality, food security, families, youths and communities, water quality, and managing limited natural resources and the environment. Most adult residents are overweight or obese and many of them had suffered from non-communicable diseases (NCDs) complications leading to heavy burdens to families and the state governments, due to high cost of medications and referrals abroad for treatments. The youth development programs provided information to increase knowledge and appreciation of marine and terrestrial flora and fauna. More students are exposed to computers, which provided the opportunity to use the Internet to explore required information. Families, youth and communities provided livelihood skills in sewing, cooking and handicrafts to women, students and other interested individuals. Other programs collaborated with government and non-governmental agencies to change or improve the lifestyle of people to reduce incidence of NCDs and generate incomes especially for disadvantaged families. Communities continuously obtained public awareness campaigns in gardening, nutrition and health, and food safety.

Sustainable agriculture and integrated pest management (IPM) programs provided farmers information on agricultural production practices that protect the fragile island ecosystem integrity and biodiversity. Programs continued on resistant crop varieties and practical biological pest control measures to provide useful tools for stakeholders to combat crop pests and diseases and increase productivity. The use of beneficial organisms was emphasized to reduce pest threats on crops.

Cost-sharing agreement with State Governments continued, whereby extension agents from the agriculture station have been collaborating with the cooperative extension service (CES) staffs. Continuing shortage of necessary human resources and professional staff remained a top priority and several programs and activities toward developing this area were implemented. Research and extension staff were encouraged to continue their education with one staff member completing an AS degree. Some vacant positions have been filled with graduates of 2-year Agriculture and Natural Resources program. Student interns funded under the Resident Instruction in the Insular Areas grants have gained experience working with CES. Other capacity building activities included sustainable agriculture workshops, hands-on on tissue culture and nursery practices, IPM, health and nutrition, and basic sewing attended by farmers, homemakers, youth and adult sectors of the society and the underprivileged.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2016	Extension		Research	
	1862	1890	1862	1890
Plan	40.0	0.0	14.0	0.0
Actual	38.8	0.0	20.2	0.0

II. Merit Review Process

1. The Merit Review Process that was Employed for this year

- Internal University Panel
- External University Panel
- External Non-University Panel
- Expert Peer Review

2. Brief Explanation

Project proposals were developed as a result of meetings and consultation with stakeholders and also based on existing plans of work for research and extension. The proposals were submitted to a publication, merit or scientifically acceptable peer review committees for comments and suggestions. Other special project proposals were subject to peer review within and outside of the colleges by other stakeholders and also subjected to review by advisory committees. Proposals were also posted on websites. Once comments were incorporated into the proposals, the Vice-President of Cooperative Research and Extension then submitted them for review and approval at each college. Final proposals were submitted to the AES or CES Interim Director through the college Presidents for approval.

III. Stakeholder Input

1. Actions taken to seek stakeholder input that encouraged their participation

- 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

Brief explanation.

When meetings were called to discuss research and extension planned activities, stakeholders such as community leaders, farmers, homemakers, traditional leaders and political leaders, were directly involved in the discussions. Many of their suggestions and comments were included in the planned research and extension activities. In some cases, research activities were done in farmers' fields and in so doing farmers participated directly in the implementation of projects. Scheduled meetings were also held in the communities to inform community leaders, farmers, and homemakers, political and traditional leaders about progress being made with research and extension activities. During these meetings, stakeholders were given the opportunity to ask questions, make comments, and share traditional knowledge and even suggested changes or other activities that are more important and relevant to the needs of their communities. Other methods of encouraging stakeholder participation were done through direct meetings and workshops with different sectors of the population to solicit their inputs in identifying priority issues.

2(A). A brief statement of the process that was used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

Brief explanation.

Farmers, homemakers, political, traditional and community leaders were requested to identify names of individuals or groups in their respective communities who should be attending meetings and workshops. Other individuals were those working on similar programs with other agencies and those recommended by peers. Those identified were informed via letter, radio or through personal visits when meetings or trainings were held. Other methods were through strategic planning meetings, interagency collaboration, community associations and direct client contact and needs assessment surveys directly in the field. Meetings or discussions were also held with school authorities, church leaders, parents and the general public on the implementation of community projects.

2(B). A brief statement of the process that was used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- 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.

Some of the methods used for collecting stakeholder input were one-on-one visits conducted in the communities and through discussions and interviews with community leaders. Surveys and field observations in addition to farmers association and other community meetings were also used. Youth programs were developed through discussions with schools, church and community groups and through direct assistance to government agencies such as the Early Childhood Education (ECE) recruitment programs. Stakeholders were directly involved in identifying positions and hiring of new upper level staff. Other methods used were questionnaires, need assessments, Board of Regents reviews, annual retreat, cabinet level meetings and student recruitment campaigns.

3. A statement of how the input will be 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.

During meetings with stakeholders, suggestions, comments and modifications from them were sorted out and those with positive impacts to research and extension project proposals were incorporated. It also helped with planning and prioritization of the next year's planned program activities. The review of strategic action plans, hiring of senior research and administrative positions, and focusing on special projects were also used to collect stakeholder inputs. State agencies assisted in developing programs and focus budgets for activities supported by matching funds through MOAs.

Brief Explanation of what you learned from your Stakeholders

We learned that farmers, homemakers, fishermen, community groups and others are good sources of traditional knowledge which can be considered and used to improve social, agricultural and environmental issues. Entrepreneurs interested in business development lack marketing strategies and training is necessary for them to be successful.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1396075	0	1257796	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	1109267	0	1409383	0
Actual Matching	59371	0	48242	0
Actual All Other	0	0	0	0
Total Actual Expended	1168638	0	1457625	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	1168638	0	946431	0

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Aquaculture
2	Families, Youths & Communities
3	Childhood Obesity
4	Climate Change
5	Food Safety
6	Global Food Security and Hunger
7	Sustainable Energy

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Aquaculture

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
135	Aquatic and Terrestrial Wildlife	12%		10%	
136	Conservation of Biological Diversity	12%		10%	
301	Reproductive Performance of Animals	15%		15%	
302	Nutrient Utilization in Animals	7%		10%	
307	Animal Management Systems	16%		15%	
308	Improved Animal Products (Before Harvest)	7%		10%	
315	Animal Welfare/Well-Being and Protection	12%		10%	
511	New and Improved Non-Food Products and Processes	7%		10%	
608	Community Resource Planning and Development	12%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2016	Extension		Research	
	1862	1890	1862	1890
Plan	5.0	0.0	4.0	0.0
Actual Paid	5.7	0.0	4.4	0.0
Actual Volunteer	0.4	0.0	0.4	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
162959	0	484454	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
8722	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

PCC: A series of larval rearing trials to produce seeds of mangrove crabs, rabbitfish, milkfish and coral grouper were conducted to support the interest in farming these economically important species in Palau. Grow-out trials for rabbitfish and mangrove crabs were demonstrated in floating cages and net enclosure inside the mangroves, respectively. More than 80,000 mangrove crab megalopae, 33,000 rabbitfish fry, 10,000 milkfish fry, 500 fully settled coral grouper juveniles and 1,770 crablets were successfully produced in the hatchery.

CMI: Aquaculture hatchery is under renovation and therefore no research activities carried out. Through presentations, extension services continued in schools and into communities around the RMI on marine conservation, sustainable harvesting (fish and mollusks) and half pearl outreach demonstrations.

COM-FSM: Seven training on sandfish spawning were organized and produced 65,481 juveniles. These trainings improved knowledge and developed skills of participants in sand fish hatchery and farming techniques. Five sea cucumber demonstration farms were established to grow-out sea cucumber juveniles to market size based on the hatchery produced juveniles. Aquaculture extension program focused on outreach and educational activities to enhance knowledge and skills and to promote aquaculture as a way to generate jobs, increase earnings and wages, help ease the tension of over exploitation by restocking the marine resources and contribute to the food security system.

2. Brief description of the target audience

Target audiences include school groups, individuals, fishermen, farmers, and resource owners, private entrepreneurs, businesses, government agencies, and non-governmental organizations. Program continued to work with underprivileged families, students, youths, adults, local governments, community members and traditional leaders.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2016	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	460	1400	925	2500

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2016

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2016	Extension	Research	Total
Actual	1	2	3

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of demonstration farms established.

Year	Actual
2016	9

Output #2

Output Measure

- Number of publications for lay use.

Year	Actual
2016	1

Output #3

Output Measure

- Number of conference paper and publication/presentation.

Year	Actual

2016	3

Output #4

Output Measure

- Expected Professional Journal publications.

Year	Actual
2016	1

Output #5

Output Measure

- Expected Gray Literatures.
  Not reporting on this Output for this Annual Report

Output #6

Output Measure

- Expected publications for lay use.
  Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increase awareness in the communities and prospective and existing industry about sustainable, site-specific, and low energy aquaculture technologies.
2	Adoption of sustainable aquaculture technologies by commercial and community groups.
3	Number of established aquaculture operations.

Outcome #1

1. Outcome Measures

Increase awareness in the communities and prospective and existing industry about sustainable, site-specific, and low energy aquaculture technologies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	724

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
PCC: Community members, existing and prospective farmers and policy makers have limited knowledge in opportunities in sustainable aquaculture technologies like mangrove crabs and marine finfish.

CMI: Limited understanding of any aquaculture project denies quick progress in construction of farms. Constructed farms are maintained and half pearl demonstration performs at a community level for the hope of capturing interested participant.

COM-FSM: Community members, existing and prospective farmers and policy makers have limited knowledge in opportunities in sustainable aquaculture technologies for giant clams, sea cucumbers and pearl oysters for food security and economic benefit.

What has been done
PCC: Seed production and grow-out techniques for mangrove crabs and other aquaculture species were demonstrated in the hatchery, nursery and grow-out facilities. These were also presented in local aquaculture meetings and workshops.

CMI: Dissemination of brochures and presentation covering lifecycle (corals, fish and oysters) conducted at schools and with communities. Fishing activities are carried out after school; weekend and summer time while half pearl demo and training are being continued for motivation.

COM-FSM: Seed production and grow-out techniques in giant clams, sea cucumbers and pearl oysters were demonstrated. Workshops, technical assistance and outreach activities were carried out.

Results
PCC: People become aware that aquaculture plays an important role in solving the declining supply of mangrove crabs and other fish in the state. Local fish farmers learned the proper methods in farming the mangrove crabs and other important aquaculture species.

CMI: Participants expressed willingness to start a farm, utilizing the low energy and high yield half pearl project, mainly in the outer islands.

COM-FSM: Seven hundred thirty four clients had increased knowledge in opportunities in sustainable aquaculture technologies like giant clams, sea cucumbers and pearl oysters for food security and economic benefit.

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
315	Animal Welfare/Well-Being and Protection
511	New and Improved Non-Food Products and Processes
608	Community Resource Planning and Development

Outcome #2

1. Outcome Measures

Adoption of sustainable aquaculture technologies by commercial and community groups.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	17

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

PCC: There is limited interest and lack of engagement in sustainable aquaculture development due to limited technical skills, and demonstrated opportunities. Some existing farmers are losing interest to grow mangrove crab and rabbitfish fish because they experienced limited supply of seedstock and poor survival rates.

CMI: Time consuming and lack of understanding to motivate cause clients to show no interest in owning farms.

COM-FSM: There is limited interest and lack of engagement in sustainable aquaculture development due to limited technical skills, and demonstrated opportunities. Some existing farmers are losing interest to grow rabbitfish because they experienced limited supply. Limited interest and adoption in hatchery based sea cucumber farming technology of seed stock because poor survival rates.

What has been done

PCC: Grow-out techniques for mangrove crabs, rabbitfish, milkfish and grouper in tanks, ponds and cages were demonstrated to existing fish farmers. Production of crablets and fish juveniles was continued and hatchery techniques for these species were also shared to existing hatchery operators.

CMI: Follow-ups and sharing of success stories lead others to inquiring more information on how to start an aquaculture farm by collecting from the wild responsibly and utilizing available materials.

COM-FSM: Hatchery produced seed stock were provided to the farmers. Technical assistance was provided in establishing demonstrations for the grow-out of giant clam, and sea cucumbers.

Results

PCC: Seven existing mangrove crab and fish farmers expressed their interest to continue to grow-out operation by adopting the techniques that were demonstrated to them. A hatchery started to produce juveniles of rabbitfish that provided additional supply of seedstock to the fish farmers.

CMI: Program being continued and provided technical assistance, guidance and training to interested participants.

COM-FSM: Five families have been assisted in starting their own sea cucumber farms based on hatchery produced juveniles.

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)

315	Animal Welfare/Well-Being and Protection
511	New and Improved Non-Food Products and Processes
608	Community Resource Planning and Development

Outcome #3

1. Outcome Measures

Number of established aquaculture operations.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	14

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
PCC: Some mangrove crab and fish farmers stopped growing crabs and rabbitfish due to poor survival rate, limited knowledge and skills and inadequate supply of seedstock.

CMI: Participants lack right tool and the proper skills that are necessary in order to successfully develop more farms.

COM-FSM: Limited number of successful aquaculture operations due to different factors has hampered the development of aquaculture in the region.

What has been done
PCC: Follow-up on-site visits to fish farms were conducted. Hatchery and grow-out techniques for mangrove crabs and fin fishes were demonstrated and clients were given technical advice on how to start an aquaculture project. Production of mangrove crab juveniles and fish fry were continued to provide seeds to the farmers.

CMI: Outer island representatives or participants participated in half pearl training. The half pearl demo outreach in the outer island promised great movement.

COM-FSM: Farms visits were conducted. Hatchery and farming techniques were demonstrated. Mangrove crab juveniles and fish fry and sea cucumber juveniles were provided to new and existing farmers.

Results
PCC: Seven farms continued growing the mangrove crabs and three farms are now growing the rabbitfish in floating net cages. One hatchery is now producing rabbitfish juveniles that provide additional seedstock to the fish farmers.

CMI: There are two new small self-owned reported farms established in different outer islands.

COM-FSM: Fourteen farm operations were established. A hatchery is successfully producing juveniles for farming.

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
315	Animal Welfare/Well-Being and Protection
511	New and Improved Non-Food Products and Processes
608	Community Resource Planning and Development

V(H). Planned Program (External Factors)

External factors which affected outcomes
- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

PCC: Not applicable.

CMI: Different local council partakes in sending their representative to attend training with no clear intention of what their next step will be after the training. Participants did not use learned skills upon return to their home atoll because there was no encouragement from local governments.

COM-FSM: Not applicable.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

PCC: By demonstrating the seed production and grow-out techniques for the mangrove crabs, rabbitfish and other important aquaculture commodities, people became aware about the important role of aquaculture in solving the declining supply of mangrove crabs and other marine finfishes in the state. Local fish farmers learned the proper methods in farming these species that made fish farmers become more interested to continue to grow-out operation. Currently, there are seven farms that continued growing the mangrove crabs and three farms have started growing the rabbitfish in floating net cages. One hatchery is now producing rabbitfish juveniles that provide additional seedstock to the fish farmers.

CMI: knowledge and understanding have been increased among participants. Participants adopted learned techniques and economic development opportunities increased. People are less depending on imported food.

COM-FSM: Feedback from the communities who have been adopting sea cucumber farming has been positive and encouraging. Post evaluation results have shown that those who acquired knowledge, skills and adopted the technology have been undertaking it with confidence, patience and assurance that this would benefit them in the long term. Lessons learnt were also noted to tweak program deliveries to new clients from post evaluation feedback of 2 farmers who dropped out from the previous year.

Key Items of Evaluation

PCC:

- Establishment of hatchery and grow-out demonstration facilities
- Continuation of seed production for important aquaculture species
- Providing technical support to the existing and prospective farmers
- Follow-up visits, hands-on training
- Oral and poster presentation in local aquaculture meetings

CMI:

- Increased knowledge of participants
- Improved understanding among participants
- Increased adoption among participants
- Increase economic opportunities
- Less dependency on imported food

COM-FSM:

- Increased number of Establishment of hatchery and grow-out demonstration facilities
- Increased seed production for important aquaculture species
- Increased request to provide technical support to the existing and prospective farmers
- Increased number of farmers adopting sustainable aquaculture practices
- Follow-up visits, hands-on training
- Presentation of studies in local and International scientific aquaculture meetings
- Extension activities helped in improved knowledge, increased awareness on sustainable aquaculture and its role in conservation, future food security and economic development
- Increased push in the National and State Governments to develop sustainable aquaculture technologies and leading to the establishment of a Micronesian regional

aquaculture network (MASA)

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Families, Youths & Communities

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
403	Waste Disposal, Recycling, and Reuse	5%		10%	
608	Community Resource Planning and Development	23%		20%	
801	Individual and Family Resource Management	17%		10%	
802	Human Development and Family Well-Being	20%		20%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	10%		10%	
806	Youth Development	25%		30%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2016	Extension		Research	
	1862	1890	1862	1890
Plan	9.0	0.0	1.0	0.0
Actual Paid	7.7	0.0	1.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
220138	0	71542	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
11782	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

PCC: PCC was not involved with this planned program this year again due to shortage of staff.

CMI: Outreach presentations on social issues such as teen pregnancy, domestic violence, school dropout, climate change, alcohol abuse, as well as life-skills trainings in fishing, and sports activities were carried out in schools, churches, and local communities. Trainings were also organized on fishing to unemployed, out of school youth, and underprivileged youth.

COM-FSM: Youth programs provided opportunities, educational classes, technical assistance, and demonstrations for youths to learn and gain skills in gardening, cultural arts and crafts, promote volunteerism and civil responsibility, and encourage sport and physical fitness activities. Activities were conducted such as nutrition education class, arts and crafts workshop during the summer by training youths in making handicrafts, gardening, sports and physical exercises, cooking demonstrations, and organized beatification and cleaning efforts in the community.

Participants trained in sewing and made clothes in their homes for sale to local roadside stores, to relatives aboard. Participants sold handicrafts to local and to families abroad. Participants in culinary arts prepared recipes for special celebration such as birthdays, weddings, and reunions. Some participants were employed at local restaurants.

Training organized in entrepreneurship included simple business plan writing skills such as introduction of a business plan, marketing, pricing, cash flow projection, budgeting, and recordkeeping. After completing the initial training, participants become eligible to a FSM-funded program call Youth Entrepreneurship Startup (YES) because their improved knowledge and developed skills. Group counseling and guidance for high school juniors also conducted to prepare them for college, future career and to live up to standard of life. Activities for these components are entrepreneurship, home gardening, carving, nutrition and sewing.

2. Brief description of the target audience

Target audience is youths, students and their families, schools, government agencies, sport agencies and clubs, college students, homemakers, interested community groups and individuals. Target audience also included homemakers, schools, government agencies and students from elementary to college levels. Target audiences for CMI are high school (juniors) and young parents, middle school and high school students, out of school youth, unemployed and underprivileged youth.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2016	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	612	2200	257	500

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2016

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2016	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of training conducted targeting youths.

Year	Actual
2016	25

Output #2

Output Measure

- Number of training conducted targeting families and youths in the communities.

Year	Actual

2016 25

Output #3

Output Measure

- Total number of youth clubs organized.
  Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of youths with increased awareness and understanding of roles and relationship with parents.
2	Number of families adopting interpersonal skills to improve quality of life and harmony in the family.
3	Total number of families and youths benefiting from the use of learned skills.

Outcome #1

1. Outcome Measures

Number of youths with increased awareness and understanding of roles and relationship with parents.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	684

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
CMI: Increased and improved understanding about roles and relationships with parents would help motivate participants to take responsibility at home and in the community. Participants have limited understanding about their roles and relationships with parents.

COM-FSM: Families and youths have limited knowledge and skills and are not able to utilize available resources such as limited income wisely and are not able to improve their livelihoods.

What has been done
CMI: Fishing trainings and outreach presentations were organized for participants. Trainings and presentations were conducted at schools, churches, as well as the communities.

COM-FSM: Arts and crafts program was conducted in the summer to train youths in woodcarvings and handicrafts. Technical assistance and hands-on trainings in vegetable gardening were conducted to youth clubs and schools. To complement the gardening activities cooking demonstrations were conducted to promote consumption of local food and vegetables among youths. Youths were encouraged to attend sports and physical activities. Sports clinics were organized for students and youths to learn guidelines, rules, and techniques in volleyball and table tennis. Presentations and displays were conducted at various public events and at schools to promote cultural knowledge and practices. Sewing and culinary arts including handicraft making from local materials and from recyclables items, such as aluminum cans were conducted to young women in schools and communities. Program staff conducted trainings to high school students on business planning. The YES program was implemented to seven students.

Results

CMI: The organized trainings and outreach activities helped 200 program participants with increased and improved knowledge and understanding about roles and relationships with parents at home.

COM-FSM: A total of 684 adults and youths increased their knowledge and awareness in various hands-on training and learning activities in arts and crafts, gardening, nutrition, and sport activities. Twenty-eight students learned lessons in good nutrition, health and food safety. Seven youth clubs gained hands-on skills on various methods and techniques in growing vegetables. Fifteen youths were trained in how to make handicrafts through woodcarvings.
Aside from learning livelihood skills, participants learned nutrition, gardening skills and business matters like taxation.
A total of 20 youths increased knowledge and skills in entrepreneurship, gardening, sewing and nutrition.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse
608	Community Resource Planning and Development
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
806	Youth Development

Outcome #2

1. Outcome Measures

Number of families adopting interpersonal skills to improve quality of life and harmony in the family.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	447

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
CMI: Presentation on educational information, and training in life-skills for the program participants will help and encourage them in positive role playing. Limited necessary skills and motivation discourages adoption of recommended practices.

COM-FSM: Most program families have limited income and experienced many difficulties as cost of living has been escalating. This is one of the facts that participants did not utilized learned interpersonal and entrepreneurial skills in training.

What has been done
CMI: Outreach activities were organized in schools, churches, and communities on teen pregnancy, school dropout, diabetes, climate change, and social issues to promote adoption of recommended practices. Follow-up activities through sport events were organized to provide additional recommendations, guidance, and data collection.

COM-FSM: Technical assistance and hands on trainings were provided to youth clubs in starting a vegetable garden. Follow-up visits and assistance in marketing their products boosted the participants? interests and motivation. Close monitoring of YES participants and received their monthly sales report and provided encouragement and advises to them.

Results
CMI: Trainings and outreach activities including follow-up visits organized helped 50 program participants take necessary measures to help parents at home. Out of school youth continue to fish to provide for their families additional income and food resources.

COM-FSM: Seven youth clubs have established small gardens and have produced various vegetables not only for home consumption but also for sale. Participants were able to sell garments and handicrafts, which they made to local stores as well as to off-island buyers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse
608	Community Resource Planning and Development
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
806	Youth Development

Outcome #3

1. Outcome Measures

Total number of families and youths benefiting from the use of learned skills.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	154

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
CMI: Educational information and training in life-skills will motivate positive role-playing, which will result in a responsible youth population. Limited employment opportunities are available for youth.

COM-FSM: Families and youths are not utilizing their potentials to generate income to improve livelihood and increase family or individual economic status. Many families were not able to increase their incomes due to lack of initial capital.

What has been done
CMI: Coordinated efforts and planning to help motivate youth have been implemented. Outreach and follow-up activities continued to provide additional recommendations and guidance, and collection of data.

COM-FSM: Program staffs conducted follow-up visits to families and youths who participated in previous training programs to encourage, assess progress and provided technical assistance and recommendation as needed.

Results
CMI: Results of organized activities are evident that youth are adopting positive role-playing at home. Organized trainings, outreach activities, resulted in 4% decrease in unemployment in two communities.

COM-FSM: Some enterprising women made clothes sold in local roadside stores. Others linked with relatives and friends to sale their products off-islands and elsewhere. One of the participants was able to earn additional income of $1,800 in a year, and it is a good deal for a part time activity. Another earned $530.00 in 6 months, and the third one earned $70 in the first month.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse
608	Community Resource Planning and Development
801	Individual and Family Resource Management

802	Human Development and Family Well-Being
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

CMI: Not applicable.

COM-FSM: Outreach activities to neighboring islands were postponed during heavy rains, big waves and bad weather. Program activity is also postponed or cancelled when there is funeral in the target areas. Availability of surface transportation including high cost of fuel also hampered plans and visit schedules to off-shore and outer islands.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

CMI: Organized outreach activities have increased and improved knowledge and understanding of 200 program participants about appropriate roles and relationships with parents. Outreach activities included follow-up visits that helped 50 program members assumed responsibilities at their homes.

COM-FSM: As indicated by interviews and observations, youth programs have improved behavior and condition of participants. Youths and young parents are sewing good products, practicing carving techniques and generating income for their families. Parents and youths are working together gearing toward a positive relationship and improved livelihood.

Key Items of Evaluation

CMI:

- Increased knowledge of participants
- Improved understanding among participants
- Increased change in behavior among participants
- Decreased number of dropout
- Decrease number of unemployed youth

COM-FSM:

- Increased income and improved family well-being
- Reduced domestic violence, teen pregnancies and suicides

- Encouraged youths to become contributing member of family and society

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Childhood Obesity

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
703	Nutrition Education and Behavior	25%		25%	
704	Nutrition and Hunger in the Population	25%		25%	
724	Healthy Lifestyle	25%		25%	
802	Human Development and Family Well-Being	25%		25%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2016	Extension		Research	
	1862	1890	1862	1890
Plan	4.0	0.0	1.5	0.0
Actual Paid	4.1	0.0	1.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
117216	0	75896	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
6274	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

PCC: PCC was not involved with this planned program this year again due to shortage of staff.

CMI: Outreach activities such as cooking demonstrations, healthy eating, nutrition lessons including data collection for body measurements were carried out in schools for kindergarten to four grade students and mothers, parents, school administration and staff in various school communities. Trainings were organized on healthy food cooking demonstrations to food handlers and youth.

COM-FSM: This program planned and implemented education activities in the schools and communities especially for mothers with children aged 0 to 5 years. It promoted healthy lifestyles through providing information about nutrition, health, physical education, and appropriate indigenous knowledge and practices. It also focused on awareness about non-communicable diseases and the implications on family health and wellbeing, healthy lifestyle with emphasis on healthy diet and physical exercise. It developed proper meal planning, home and school gardening. It also worked with school administrators to cook and serve local food in their school lunch programs.

2. Brief description of the target audience

CMI: Target audience includes kindergarten to four grade students and mothers, parents, youth, teachers, food handlers, local food vendors, and church members.

COM-FSM: Targeted audiences include mothers with children aged 0 to 5 years old, homemakers, women groups, elementary school teachers and students, parents of the Early Childhood Education (ECE) and public health workers.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2016	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1584	2950	1081	2550

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year:	2016
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2016	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of conference papers and publications on childhood obesity.
  Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Number of trainings conducted on childhood obesity and physical activity.

Year	Actual
2016	10

Output #3

Output Measure

- Number of extension publications on childhood obesity and physical activity.
  Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Number of training conducted on proper diet and physical activity.

Year	Actual
2016	10

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of persons with increased knowledge in healthy food choices and physical activity.
2	Number of program participants adopting recommended practices on healthy food choices and physical activity.
3	Reduction in the number of obese children.

Outcome #1

1. Outcome Measures

Number of persons with increased knowledge in healthy food choices and physical activity.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	1770

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
CMI: Increased and improved knowledge about healthy food choices and physical activity would provide participants choices for better food selection and healthy living. Participants have limited knowledge about benefits and importance of eating healthy food and physical exercises.

COM-FSM: Public including parents of obese children lack appropriate knowledge in nutrition, health, physical activities and healthy food preparation.

What has been done
CMI: Basic nutrition and health lessons were conducted for participants at scheduled outreach events. Workshops, training and outreach activities were organized in schools as well in communities.

COM-FSM: Awareness programs were conducted in the communities. Presentations dealt on nutrition, health, healthy cooking and physical activities. Cooking demonstrations emphasized using local produce, less salt, sugar and fats.

Results
CMI: Organized trainings and outreach activities helped 210 program participants with increased and improved knowledge and understanding about importance of healthy food and physically activeness.

COM-FSM: One thousand five hundred sixty adult participants increased knowledge on balanced diet, health, healthy cooking, and the benefits of physical activities. Their y awareness has been increased about the health complications resulting from childhood obesity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle
802	Human Development and Family Well-Being

Outcome #2

1. Outcome Measures

Number of program participants adopting recommended practices on healthy food choices and physical activity.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	557

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
CMI: Healthy food selection and daily physical activities among program participants will help participants for adoption healthy choices and lifestyle. However, very limited participants are adopting eating healthy food and doing physical exercises.

COM-FSM: A majority of the population in the Federated States of Micronesia is either overweight or obese. This is a phenomenon that has raised so much concern by families, health service, and other social groups. The main cause of the health vulnerability is lack of exercise compounded by improper meals.

What has been done
CMI: Outreach activities were organized in schools as well in communities on healthy cooking and physical exercises to increase adoption. Follow-up activities were organized to provide additional recommendations and guidance, and collocation of data.

COM-FSM: This program planned and implemented education activities in the schools and communities especially for mothers with children aged 0 to 5 years. It promoted healthy lifestyles

through providing information about nutrition, health, physical education, and appropriate indigenous knowledge and practices. It mainly focused mostly on awareness about non-communicable diseases and the implications on family health and wellbeing, healthy lifestyle with emphasis on healthy diet and physical exercise, proper meal planning, home and school gardening. It also worked with school administrators to cook and serve local food in their school lunch programs.

Results
CMI: Organized trainings and outreach activities including follow-up visits helped 60 program participants for adoption of healthy food choices and stay physically active. Schools also introduced daily exercise activities for students.

COM-FSM: More than 500 program participants increased knowledge on balanced diet, health, healthy cooking, and the benefits of physical activities. Their awareness and understanding have been increased about the health complications resulting from childhood obesity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle
802	Human Development and Family Well-Being

Outcome #3

1. Outcome Measures

Reduction in the number of obese children.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	72

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

CMI: Healthy food choices and physically active lifestyle in children will help enhance learning, which ultimately will result in healthy young population. Most of children are obese and less active.

COM-FSM: Limited reduction in childhood obesity was attributed to dependence on imported convenience processed foods; no dieting, overeating, preparing unbalanced diets and lack of physical activities.

What has been done
CMI: Coordinated efforts, and planning to reduce the childhood obesity have been implemented. Outreach and follow-up activities are being continued to provide additional recommendations and guidance and collocation of data.

COM-FSM: Follow up visits, one-on- one intervention and discussions, interviewing, nutrition surveys and observing families likely to meet obesity problems were conducted.

Results
CMI: Results of organized activities are evident that families are adopting new healthy lifestyles for children and utilizing appropriate amount of vegetables and fruits in children's meal. Organized trainings, outreach activities including adoption resulted in 5% decrease in childhood obesity in two targeted schools.

COM-FSM: Seventy-two families have reduced childhood obesity problems because of their developed healthy eating habits and increased physical activities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle
802	Human Development and Family Well-Being

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

CMI: Not applicable

COM-FSM: Program delivery was either delayed or cancelled due to inclement weather, conflicts in community activities such as funerals in the communities, and transportation non-availability.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

CMI: Organized outreach activities have increased and improved knowledge and understanding of 210 program participants about healthy eating and importance of physically activeness. Also these outreach activities including follow-up visits helped 60 program participants for adoption of healthy food choices and stay physically active. Two schools also introduced daily exercise activities for students. Results of all organized activities are evident that families are adopting new healthy lifestyles for children and utilizing appropriate amount of vegetables and fruits in children's meal. Organized trainings, outreach activities including adoption resulted in 5% decrease in childhood obesity in two targeted schools.

COM-FSM: Participants knowledge has been increased on balanced diet, health, healthy cooking and the benefits of physical activities not only they used local produce from their gardens but also preferred t healthy food not junk food. They performed regular physical activities including gardening. Almost 4.6 % reduction in childhood obesity among participants.

Key Items of Evaluation

CMI:

- Increased knowledge of participants
- Improved understanding among participants
- Increased adoption among participants
- Decrease obesity in participants

COM-FSM:

- Increased knowledge on balanced diet, health, healthy cooking and benefits of physical activities
- Used local produce from their gardens
- Preferred t healthy food to junk food
- Conducted physical activities including gardening
- 4.6 % reduced childhood obesity among participants

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Climate Change

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
111	Conservation and Efficient Use of Water	15%		10%	
112	Watershed Protection and Management	5%		5%	
125	Agroforestry	7%		10%	
131	Alternative Uses of Land	7%		10%	
132	Weather and Climate	15%		10%	
133	Pollution Prevention and Mitigation	12%		5%	
134	Outdoor Recreation	7%		10%	
135	Aquatic and Terrestrial Wildlife	10%		15%	
136	Conservation of Biological Diversity	7%		10%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	5%		5%	
315	Animal Welfare/Well-Being and Protection	5%		5%	
605	Natural Resource and Environmental Economics	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2016	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	3.0	0.0
Actual Paid	4.7	0.0	4.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
134370	0	112841	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
7192	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

PCC: Salt water intrusion into taro patches made it unsuitable for taro production. Salt water intrusion was prevented by raising levels of the dike and construction of secondary dike inside the taro patch to hold and contain fresh water. Twenty three taro varieties were evaluated for tolerance or susceptibility to saline soil conditions and three varieties were identified to be salt tolerant and distributed to salt water affected farmers. Farmers and communities affected by salt water intrusion were assisted in planting root and vegetable crops.

CMI: Outreach activities such as demonstration on hydrogen sulfide testing, water treatment by using bleach, boiling, and proper hand washing, quality of water during drought, and inundation to vulnerable communities during the reporting period. Atolls and islands were severely affected as a result of drought and salt water intrusions to their land, houses and farms. Climate change challenges and impacts were minimized by dispatching reverse osmosis (RO) units to the affected communities.

COM-FSM: Environmental problems associated with climate variability, sea level rise, coastal flooding, loss of biodiversity, saltwater intrusion and lack of freshwater, soil degradation, and problems related to energy 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. Climate risk management focused on community-based adaptation that can enhance the adaptive capacity by improving food and water security, livelihood development activities and sustainability. Awareness activities were conducted to impart knowledge on climate change effects, various adaptation strategies to be adopted at the local level. Information on soil waste management, composting, promotion of agroforestry practices and use of salt tolerant crops were emphasized during training activities.

2. Brief description of the target audience

PCC: Target beneficiaries of climate change programs are extension agents, agriculture students and professionals, federal, state and national agencies, conference publications, and scientific journals including farmers, students, parents, state and federal government officials and private individuals.

CMI: Targeted audiences were students, teachers, parents, youth, and community members, that drought and sea inundation affected their water sources.

COM-FSM: Island communities, farmers, students, agricultural professionals, community leaders, atoll population, governmental and non-governmental agencies, national and international donors.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2016	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1006	1600	792	1600

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2016

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2016	Extension	Research	Total
Actual	0	1	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of awareness training conducted.

Year	Actual
2016	19

Output #2

Output Measure

- Number of salt-tolerant crops/plants developed and distributed.

Year	Actual

2016	2

Output #3

Output Measure

- Number of people who adopted sustainable food production technologies.

Year	Actual
2016	2

Output #4

Output Measure

- Increased staple food crop production.

Year	Actual
2016	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of persons with increased awareness on impact and how to mitigate climate change in Micronesian life.
2	Number of program participants adopting sustainable food production technologies.
3	Number of persons who increased staple food crop production.

Outcome #1

1. Outcome Measures

Number of persons with increased awareness on impact and how to mitigate climate change in Micronesian life.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	1374

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
PCC: Limited knowledge about farming practices is adversely affected by impacts of climate change such as frequent typhoons, excessive rainfall, increased flooding and soil erosion, sea level rise salt water intrusion and soil salinity.

CMI: Challenges of climate change continue to affect people's wellbeing. Contaminations to their drinking water have affected people livelihoods.

COM-FSM: The population lack climate change education and planning program to manage risks associated with climate variability. The situation is more acute for the low coral atolls; however, inhabitants on high volcanic islands lack knowledge on how to cope with the changing weather conditions.

What has been done
PCC: Workshops and demonstrations were conducted to increase awareness of farmers on the effects of sea level rise, salt water intrusion, frequent typhoons and excessive rainfall on farming and food production. Adaptation measures were demonstrated to reduce the impact of climate changes

CMI: People who were affected were trained on how to keep the quality of their water safe.

COM-FSM: Awareness trainings were conducted to impart knowledge on climate change impacts, climate variability, ENSO phenomena, soil waste management practices, alternative crop production practices and use of salt tolerant crops.

Results

PCC: Four hundred sixty four farmers have increased their knowledge on how to manage impacts of climate change. Increased taro production was obtained from planting materials of salt tolerant taro varieties distributed to farmers, and these farmer?s taro patches were affected by sea level rise and salt water intrusion. Farmers were also assisted by distributing seeds and seedlings of vegetable planting materials.

CMI: organized training and outreach activities that will help participants increase and improve knowledge and understanding about important of clean and safe drinking water.

COM-FSM: Communities, both on the coral atolls and on the high islands are now aware of risks associated with climate variability and actions to be taken and methods to be adopted at the local level to reduce climate change risks.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
125	Agroforestry
131	Alternative Uses of Land
132	Weather and Climate
133	Pollution Prevention and Mitigation
134	Outdoor Recreation
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
315	Animal Welfare/Well-Being and Protection
605	Natural Resource and Environmental Economics

Outcome #2

1. Outcome Measures

Number of program participants adopting sustainable food production technologies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	794

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
PCC: Climate change impacts such as frequent typhoons, storm surges, sea level rise and salt water intrusion into taro patches have adversely affected farming and food production in Palau.

CMI: Clean water among the program participants will help participants for healthy choices and lifestyle. Participants lack the knowledge to adopt sustainably by proper utilization of water resources.

COM-FSM: Low lying areas in the atolls are susceptible to sea level rise and saltwater intrusion that calls for appropriate steps to protect their crops, however, in most cases adoption is limited due to lack of resources.

What has been done
PCC: Farmers affected by impacts of climate change were assisted in land preparation and were provided with planting materials of salt tolerant root crops as well as vegetable seeds and seedlings.

CMI: Outreach activities were organized and conducted in the schools, as well as the communities on clean and safe drinking water.

COM-FSM: Technical assistance and demonstration including the use of alternative crop production practices such as container gardening utilizing local materials and raised were promoted along with use of salt tolerant crops.

Results
PCC: Several farmers who were assisted in planting root and vegetable crops were able to grow their own food supply for their families and for their communities.

CMI: Clean water among the program participants helped the participants for selection of healthy choices and lifestyle.

COM-FSM: About 330 atoll community members are growing various crops using raised bed or container gardening methods to grow crops. They manage solid wastes efficiently to make compost to improve soil health. Communities also use salt tolerant crops to grow in low lying areas.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
125	Agroforestry

131	Alternative Uses of Land
132	Weather and Climate
133	Pollution Prevention and Mitigation
134	Outdoor Recreation
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
315	Animal Welfare/Well-Being and Protection
605	Natural Resource and Environmental Economics

Outcome #3

1. Outcome Measures

Number of persons who increased staple food crop production.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	206

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
PCC: Severe impacts of climate change due to frequent typhoons, saltwater intrusion, soil salinity, excessive rainfall; increased flooding and soil erosion greatly affect staple food production.

CMI: Healthy and clean drinking water will help reduce the sickness, which is a water borne disease in Majuro.

COM-FSM: None to report.

What has been done
PCC: Salt tolerant taro varieties were distributed to 206 farmers whose taro patches were greatly affected by sea level rise and salt water intrusion. Vegetable seeds and seedlings were also distributed for farmers to grow these crops in upland areas for reliable source of food.

CMI: Coordinating and working along with other partners in planning on reducing water borne diseases. Outreach and follow -up activities are being continued to provide additional recommendation and collection of data.

COM-FSM: None to report.

Results

PCC: Communities affected and experienced sea level rise and salt water intrusion were assured of resilience to climate change by planting salt tolerant taro varieties and vegetable crops thus ensuring food production.

CMI: Activities organized helped families and community members for adoption the methods of testing and maintaining safe drinking water. Number of safe drinking water catchments has increase greatly.

COM-FSM: None to report.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
125	Agroforestry
131	Alternative Uses of Land
132	Weather and Climate
133	Pollution Prevention and Mitigation
134	Outdoor Recreation
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
315	Animal Welfare/Well-Being and Protection
605	Natural Resource and Environmental Economics

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Competing Public priorities

Brief Explanation

PCC: Not applicable.

CMI: Not applicable.

COM-FSM: High costs of fuels and rental for motor boats and extreme weather condition affected visits to island communities accessible by boat.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

PCC: Resilience to impacts of climate change is ensured by the immediate replanting of salt tolerant taro and vegetable crops to ensure food supply in the communities that have experienced strong typhoons, sea level rise, salt water intrusion, excessive rainfall and flooding.

CMI: Outreach activities were organized and conducted in the schools, as well as the communities on clean and safe drinking water. Clean water among the program participants helped the participants for the selection of healthy choices and lifestyle.

COM-FSM: Awareness training programs helped atoll communities to gain fresh knowledge about climate risks associated with ENSO phenomena amplified by the climate change. Trainings on composting and solid waste management to helped to reduce generation of waste going into the environment, thus protecting coastline from pollution. Introduction of salt tolerant species helped to grow crops in low lying areas inundated with saltwater.

Key Items of Evaluation

PCC:

- Identified and distributed salt tolerant taro varieties, seeds and planting materials
- Identified and distributed salt tolerant seeds varieties and planting materials
- Salt tolerant crops introduced

CMI:

- Increased knowledge of participants
- Improved awareness of understanding how to maintain safe drinking water
- Well prepared to mitigate shoreline erosions
- Increased understanding of participants

COM-FSM:

- Better methods for managing soil wastes
- Salt tolerant crops introduced
- Alternative modes of crop production to bypass soil salinity

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Food Safety

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
703	Nutrition Education and Behavior	20%		20%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	20%		20%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	20%		20%	
724	Healthy Lifestyle	40%		40%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2016	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	1.0	0.0
Actual Paid	3.9	0.0	1.1	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
111499	0	78003	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
5968	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

PCC: Eight Food Safety trainings were conducted for food handlers on proper food handling such as practicing good personal hygiene, cooking foods adequately, avoiding cross contamination, keeping food at safe temperature, and avoiding food from unsafe sources. Adoption of knowledge and skills obtained led to a reduction in food and water-borne illnesses.

CMI: Food demonstrations and lessons were conducted on safe food handling, bacterial contaminations, food allergies to students and mothers, parents, school administration and staff in various school communities. Follow-up visits were conducted for data collection and to provide additional information. Adoption of recommended and safe practices was also promoted to reduce food-borne and water-borne illnesses among targeted audiences.

COM-FSM: Conducted presentations and demonstrations on safe food preparation, handling, storage, usage, hygienic condition, and how to prevent food and water-borne illnesses. Conducted presentations, trainings, provide technical advice and hygiene in kitchens and sanitary handling during meal preparation, and distributed information on food safety and healthy lifestyle issues.

2. Brief description of the target audience

PCC: Target audience was food handlers, entrepreneurs, housewives, school children, school cooks, and restaurant employees.

CMI: Target audience includes students and mothers, parents, youth, teachers, food handlers, local food vendors, and church members.

COM-FSM: Families living in rural and remote areas, homemakers, school cooks, school teachers, students, community groups, community leaders, government and non-governmental agencies, families with special need children, and special interest group such as women-in-farming, food stands and stores were also targeted.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2016	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1157	1400	733	1600

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2016

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2016	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of community workshops on food safety conducted.

Year	Actual
2016	58

Output #2

Output Measure

- Number of program participants with increased knowldege and practices after completing educational programs.

Year	Actual
2016	1314

Output #3

Output Measure

- Number of extension publications on food safety.

Year	Actual
2016	11

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of program participants who increase awareness of food safety issues.
2	Number of program participants adopting recommended practices after completing educational programs.
3	Reduced incidences of food-borne and water-borne illnesses.

Outcome #1

1. Outcome Measures

Number of program participants who increase awareness of food safety issues.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	1545

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
PCC: Food handlers were not well informed on proper food handling behaviors to prevent food borne diseases.

CMI: Increased and improved knowledge of participants about food safety would provide best ways of proper food handling and cooking practices. Participants have no facts about the cause of sickness because of bacterial contamination in foods.

COM-FSM: Limited knowledge on food safety and healthy lifestyle, food handling, storage, processing and preparation led to cases of water and food-borne illnesses.

What has been done
PCC: Eight food safety trainings were conducted for 231 participants on practicing personal hygiene, cooking foods adequately, avoiding cross-contamination, keeping food at safe temperature, and avoiding food from unsafe source.

CMI: Educational materials, and hands on information were distributed during outreach activities in schools as well in communities. Follow-up activities were organized to provide additional recommendations and guidance, and collection of data.

COM-FSM: Presentations and demonstrations were conducted to homemakers, school children, and food handlers in food establishments. Advice on hygiene in kitchens and sanitary handling and storage of food were program components.

Results

PCC: Key food handling behaviors such as practicing personal hygiene, cooking foods adequately, avoiding cross-contamination, keeping food at safe temperature, and avoiding food from unsafe source were adequately understood by 231 participants of food safety classes.

CMI: Increased knowledge and improved understanding on food safety handling of 100 participants.

COM-FSM: Total of 1314 participants improved knowledge on appropriate food safety and healthy lifestyle.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
724	Healthy Lifestyle

Outcome #2

1. Outcome Measures

Number of program participants adopting recommended practices after completing educational programs.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	551

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
PCC: Food handlers are not practicing proper food handling techniques to prevent food and water borne diseases.

CMI: Appropriate and safe practices for food handling would provide opportunities to reduce food and water-borne illnesses. Participants have limited knowledge about food safety and proper

handling of food.

COM-FSM: Low rate among participants in adopting food safety and healthy lifestyle guidelines resulted in food-borne illnesses.

What has been done
PCC: Food handlers were taught proper food handling techniques in food safety classes. Topics included were proper food handling such as practicing good personal hygiene, cooking foods adequately, avoiding cross contamination, keeping food at safe temperature, and avoiding food from unsafe source.

CMI: Provided trainings and awareness on how to wash hands properly, and safe food handling, food allergies to mothers, parents, school administration and staff in various school communities. Training and outreach activities conducted for targeted audience to develop skills about safe food handling. Educational materials were distributed to provide additional information through social media.

COM-FSM: Conducted demonstrations, distribution of printed training materials, presentation or lectures, follow-up visits and applied practical practices on food safety and healthy lifestyle guidelines in the communities.

Results
PCC: Two hundred thirty one participants of food safety classes have adopted behaviors in proper food handling such as practicing good personal hygiene, cooking foods adequately, avoiding cross contamination, keeping food at safe temperature, and avoiding food from unsafe source leading to a reduction in food and water borne illnesses.

CMI: Sixty participants have improved knowledge on food safety, and developed their understanding about how to prevent food contaminations, and food allergy.

COM-FSM: More than five hundred program participants adopted one or more food safety practices including personal hygiene, cleanliness of kitchens and utensils, sanitary meal preparation, and proper food storage.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
724	Healthy Lifestyle

Outcome #3

1. Outcome Measures

Reduced incidences of food-borne and water-borne illnesses.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	713

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
PCC: Food handlers and consumers do not practice proper food handling procedures resulting in outbreaks in food-borne illnesses that occur in the community due to warm temperature and humidity.

CMI: Safe food handling practices and understanding about how to prevent contamination will help to reduce food and water-borne illnesses. High incidents of high food and water-borne illnesses are reported.

COM-FSM: Safe food handling, proper sanitation and personal hygiene can prevent food and water-borne illnesses. Most participants do not have adequate resources for sanitation in the kitchen and were not able to benefit from this program.

What has been done
PCC: Two hundred thirty one food handlers were taught on how to avoid food borne illnesses through proper food safety practices.

CMI: Trainings on clean and safe water and food have been conducted in various communities. Adoption of recommended practices was encouraged to prevent food and water-borne illnesses.

COM-FSM: Public awareness and adoption of safe food handling and storage were promoted. Program participants were encouraged to practice to prevent cross contamination by washing hands, utensils to prevent contamination. Children learned proper hand washing with soap and water before meals.

Results

PCC: There was no incidence of foodborne illnesses in Palau in the reporting period due to the awareness communicated during food safety classes among food handlers.

CMI: Conducted outreach activities reduced incidents of water and food-borne illnesses in 20% percentage of participants.

COM-FSM: Almost 500 participants admitted that water and food-borne illnesses decreased in their families as a direct result of proper hygienic and sanitary practices. Management of food and food products in roadside food stands and stores greatly improved.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
724	Healthy Lifestyle

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Government Regulations
- Competing Public priorities

Brief Explanation

PCC: Facilities for proper food storage and cleaning are not always available in many homes resulting in unsafe food handling environment.

CMI: Not applicable.

COM-FSM: Delayed road improvement affected safe supply of drinking water and clean supplies of local produce due to mud and dust. Heavy rains and floods and high fuel costs restrict visits to island communities. Lack of refrigerators in majority of homes shortened storage of foods.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

PCC: Participants have understood and practiced proper food safety techniques as shown in their pre and post-tests.

CMI: Food and water-borne diseases are major issues that impacted the livelihoods of the people. With continued and increased outreach activities, people have adopted and increased their knowledge and therefore have carried out the preventive measures that improved their health and wellbeing. Sixty participants have improved knowledge on food safety, and developed their understanding about how to prevent food contaminations, and

food allergy. Conducted outreach activities reduced incidents of water and food-borne illnesses in percentage of participants.

COM-FSM: Local stores cease to sell unsafe and old food products and only fresh products are being sold and home makers, families practiced sanitary habits of preparing and storing cooked food.

Key Items of Evaluation

PCC:

- Food safety training materials such as DVDs on proper food handling shown to participants

CMI:

- Increased participant's knowledge about safe food handling
- Improved participants understanding about food and water-borne illnesses
- Reduced incidents of food and water-borne illnesses
- Skills of participants developed about how to prevent food contamination

COM-FSM:

- Increased sanitation and cleanliness in the kitchen
- Maintenance of hygienic practices by food handlers in food preparation increased
- Reduced incidence of water-borne and food-borne illnesses

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Global Food Security and Hunger

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		10%	
112	Watershed Protection and Management	10%		10%	
136	Conservation of Biological Diversity	10%		10%	
202	Plant Genetic Resources	10%		10%	
204	Plant Product Quality and Utility (Preharvest)	10%		10%	
205	Plant Management Systems	10%		10%	
212	Pathogens and Nematodes Affecting Plants	5%		5%	
216	Integrated Pest Management Systems	10%		10%	
315	Animal Welfare/Well-Being and Protection	5%		5%	
502	New and Improved Food Products	10%		10%	
601	Economics of Agricultural Production and Farm Management	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2016	Extension		Research	
	1862	1890	1862	1890
Plan	16.0	0.0	6.0	0.0
Actual Paid	12.7	0.0	8.2	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
363085	0	586647	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
19433	0	48242	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

PCC: Mass propagation and conservation of taro, cassava and sweet potato continue to be a major activity. Thus it has become a reliable source of planting materials for food security for people of Republic of Palau (ROP). A total of 5,876 planting materials of taro, cassava, sweet potato, banana, pineapple and fruit trees have been distributed to 152 farmers. In addition, 58 table top vegetable gardens of nappa cabbage were distributed to homebound patients to augment their food supply. Urban vegetable gardening was also promoted in 30 households in Koror and 30 farmers were trained on vegetable production and utilization.

CMI: Republic of the Marshall Islands (RMI) is relaying much on imported food and non-communicable diseases (NCDs) are prevalent. There is limited supply of locally produced crops and there is not enough knowledge and skills among the island people on how to do farming or gardening effectively. Technical assistance was given for several projects: atoll urban gardening, composting, and sustainable vegetable production. Different ways of conveying knowledge and skill were done using trainings, demonstrations (including cooking), school gardening projects, World Food Day and other annual occasions. Other things done were distribution of seedlings and pallet garden setup for people with either or both NCD and low income.

COM-FSM: Food insecurity takes an enormous toll in economy of the Federated States of Micronesia (FSM) and it has adverse consequences for the livelihoods and economic capabilities of vulnerable island population. Small farms and traditional agricultural systems are a part of the solution by contributing to food security in addition to climate change adaptation and various ecosystem services. Smallholder farmers who produce a variety of crops can continually harvest crops not only for the family's own consumption but also potentially for income generation at the market. Therefore, providing disease-free seedlings of salt tolerant crops, appropriate outreach, technical assistance and education efforts is crucial to help the community to ensure food security in a changing climate.
On-site and off-site recommendations are continued and technical assistance, support and outreach publications were provided to farmers on appropriate farming techniques and practices. In Vitro multiplication of salt tolerant crops, plantlets acclimatization, seedling preparation and distribution are being continued. Technical advice provided on locally suitable farming practices. Technical assistance provided to farmers in establishing poultry and swine production.
Workshops conducted on food production and food processing focusing on value-added products. Conducted awareness program targeting schools, community groups, local food producers, individuals, youths and families to improve skills, generate income and to improve health status. Demonstrations were held on food production systems from field to kitchen. Evaluations made during follow up visits to measure program impacts.

2. Brief description of the target audience

PCC: Our target audiences are scientists, extension agents, agriculture students and professionals, federal, state and national agencies, conference publications, and scientific journals. Farmers, students, parents, state and federal government officials and private individuals are also beneficiaries of our extension programs.

CMI: Farmers, people with NCDs, schools, landowners and government leaders including outer islands.

COM-FSM: Extension staffs, agricultural professionals, agriculture students, federal, state and national agencies, conference publications, and scientists, youth, farmers, producers and exporters of the state, extension colleagues, and other members of the community who are involved in the agriculture sector are target audiences for extension activities. Internships are being provided to college agriculture students.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2016	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	3357	10900	2020	4600

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year:	2016
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2016	Extension	Research	Total
Actual	13	4	17

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of demonstration farms established.

Year	Actual
2016	218

Output #2

Output Measure

- Number of publications for lay use.

Year	Actual
2016	19

Output #3

Output Measure

- Number of conference papers and publications/presentations.

Year	Actual
2016	5

Output #4

Output Measure

- Expected professional journal publications

Year	Actual
2016	1

Output #5

Output Measure

- Expected gray literature.

Year	Actual
2016	1

Output #6

Output Measure

- Expected publications for lay use

Year	Actual
2016	10

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of persons with increased knowledge on appropriate production and processing technologies.
2	Number of program participants adopting recommended practices.
3	Number of established farms producing, utilizing, and/or selling produce and products.

Outcome #1

1. Outcome Measures

Number of persons with increased knowledge on appropriate production and processing technologies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	3523

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
PCC: Limited knowledge about best management practices is the main bottleneck in ensuring farm productivity and food security. High yielding planting materials and techniques to prepare new food products and prolong shelf life is essential to increase productivity and food security.

CMI: Unfamiliarity with sustainable farming practices like composting and proper way of using green manure for vegetable production and urban gardening.

COM-FSM: Food insecurity takes an enormous toll in economy of Micronesia and it has adverse consequences for the livelihoods and economic capabilities of vulnerable island population. Limited knowledge among island populations about farming, food processing, food security, and management practices.

What has been done
PCC: Workshops were conducted and information on new varieties of crops, best management practices, biocontrol agents and publications were disseminated. Thirty persons were trained on vegetable production and utilization.

CMI: There were approximately 3000 seedlings or plants were distributed. Small and urban gardening demonstrations were conducted in students? dorm, villages and household backyards. Farm visits and one-on-one coaching for farmers were also done. Sustainable approaches were applied by using locally available organic materials for fertilization. Raising chicken and swine were also encouraged and technical assistance continued directly and collaboratively.

COM-FSM: Conducted demonstrations, workshops, outreach and hands-on trainings in various agricultural production systems and processing practices and management, staple food crops,

vegetable, poultry and swine production.

Results
PCC: Participants of the vegetable production and utilization training were able improve their knowledge and understating to ensure food and nutritional security for their families and constituents in the community.

CMI: Participants trained have increased their knowledge and recommended the program to others.

COM-FSM: Outreach and hands-on trainings have increased knowledge of 3,059 participants and created awareness in crop production, processing practices and management, staple food crops, vegetable, poultry and swine production.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
112	Watershed Protection and Management
136	Conservation of Biological Diversity
202	Plant Genetic Resources
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems
315	Animal Welfare/Well-Being and Protection
502	New and Improved Food Products
601	Economics of Agricultural Production and Farm Management

Outcome #2

1. Outcome Measures

Number of program participants adopting recommended practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	972

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
PCC: Limited planting materials and information about growing crops and control of pests and diseases greatly affect farm productivity. Farm produce can be stored in better ways to increase shelf life and enhance food security.

CMI: Adoption of recommended practices will increase agriculture production. Participants are not motivated to continue sustainable farming practices learned from trainings and demonstrations.

COM-FSM: Increased food production in home gardens and backyards can supplement income and ensure food security. Despite outreach efforts, there is limited adoption of sustainable farming practices due to lack of motivation and limited supplies.

What has been done
PCC: Disease-free and high yielding planting materials were distributed to farmers to increase productivity. Trainings on various technologies on growing and utilization of root and vegetable crops were conducted to ensure proper and healthy food consumption.

CMI: Trainings and demonstrations including cooking were carried out to new farmers and families as well as students with little space around homes. Training on animal production and composting methods also was initiated, for continued sustainability of the food crops and livestock.

COM-FSM: Technical assistance and hands-on trainings organized for schools, communities, women groups, individual, and youth in soil management, nursery production, crop production and management and animal husbandry. Follow-up visits were conducted to encourage participants.

Results
PCC: Food production and supply has been enhanced by improved yield of farmers who are growing disease-free and high-yielding planting materials of root crops and using biocontrol agents to control pests of crops. Participants of trainings were able to prepare new recipes and preserve foods.

CMI: Most farmers, households and other stakeholders continued to do the programs that were introduced. There are increased numbers of families that established urban gardening methods in the urban area. Students who took part in the training are now in the college program taking agriculture class to supplement what they already have previously.

COM-FSM: Extension activities helped 972 program participants to achieve sustainable food production goals by adopting recommended soil management, nursery production, food processing, crop production and management and animal husbandry practices. Ultimately extension activities changed the behavior of the participants.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
112	Watershed Protection and Management
136	Conservation of Biological Diversity
202	Plant Genetic Resources
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems
315	Animal Welfare/Well-Being and Protection
502	New and Improved Food Products
601	Economics of Agricultural Production and Farm Management

Outcome #3

1. Outcome Measures

Number of established farms producing, utilizing, and/or selling produce and products.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	245

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

PCC: Best management practices should be adopted by farmers to improve productivity. Families should be capable of preparing new food products from their produce for food security.

CMI: Establishment of new small scale farms will contribute to achieve food security. Participants are not motivated to continue sustainable farming practices learned from trainings and demonstrations.

COM-FSM: Communities need to be more competitive in reducing costs to sustain production. Crop and livestock productions were limited due to limited established sustainable agricultural farms.

What has been done
PCC: Proper cultural management and use of high yielding and quality planting materials were adopted by farmers. Participants acquired new skills and prepared new products learned from the trainings conducted.

CMI: Follow up and continued supports through giving assistance were given to all the participants to encourage adoption. More cooking demonstrations on how to use the local crops they are producing was also conducted. Provided trainings in schools about vegetable gardens and recommended practices to established vegetable gardens. Follow up visits were conducted to provide technical assistance or additional information.

COM-FSM: Technical assistance provided to farmers in establishing and expanding farming activities for crop, poultry and swine production. In addition to technical assistance programs, communities were provided with production and marketing trainings.

Results
PCC: Twenty demonstration farms showcasing best management practices such as use of disease-free and high yielding planting materials, adequate fertilization and use of biocontrol agents led to high productivity of root crops. Families prepared and have new recipes from their produce for food security.

CMI: Local people are consuming more vegetables in their diet. Participants are establishing new agricultural farms for various crops including vegetable production. More people could cook and incorporate vegetable with the meat for cooking.

COM-FSM: Participants were able to establish sustainable agricultural farms and 225 participant farmers are producing, selling and exporting their farm produce. Ultimately extension activities have changed economic condition of the participants.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
112	Watershed Protection and Management
136	Conservation of Biological Diversity
202	Plant Genetic Resources
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems
315	Animal Welfare/Well-Being and Protection
502	New and Improved Food Products
601	Economics of Agricultural Production and Farm Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

PCC: Not applicable.

CMI: Shipment of the garden materials from one island to another is crucial for the development of small scale vegetable gardens and compost demonstrations. Weather conditions, transportations, and traditional leaders are key factors that postpone the implementation of the projects.

COM-FSM: Establishments of demonstration plots in atolls and distant islands were affected by inclement weather, irregular availability of transportation and high fuel costs.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

PCC: The root crops germplasm collection has been a reliable source of high yielding varieties of taro, sweet potato and cassava to increase productivity. Biocontrol agents have effectively controlled pests of taro and cassava. Participants in the food utilization trainings were very eager to prepare new food recipes they have learned.

CMI: Atoll soil condition makes the implementation of the project harder. Saline and sandy condition of the soil discourages soil fertility. Lack of water supply (well water and catchment) is another important challenge. People were not so encouraged or inspired when it comes to farming due to this atoll condition, not to mention the occurrence of plants' pests and diseases. The results showed a smaller, but a positive value. Increasing the outcome for next fiscal year by keeping the methods that are working will be done.

COM-FSM: Outreach activities are showing positive results and participant farmers are showing increased interest in developing agricultural farms. The extension activities have improved knowledge, created awareness and developed skills of participants in sustainable agriculture systems. Ultimately extension activities have developed positive attitudes, zeal for learning techniques and farming aspects, and have changed the behavior and economic condition of the participants.

Key Items of Evaluation

PCC:

- Disease free and high yielding varieties of root and vegetable crops available
- Biocontrol agents have been successful in controlling pests of root crops and invasive weeds
- Families are now able to prepare new food recipes from their produce for food security

CMI:

- Increased number of farmers
- Increased number of agricultural farms
- Increased focus on composting, green manure, integrated pest management and exploring more on salt tolerant crops and local animal feed production

COM-FSM:

- Increased germplasm types,
- Increased seedling production,
- Increased number of farmers,
- Increased number of agricultural farms,
- Import substitution
- Adopted best practices and technologies resulting in increased yields, reduced inputs, increased efficiency, increased economic return, and conservation of resources,
- Presented results of research and extension project during scientific conferences and meetings,
- Published publications related with the projects,
- Fresh produce donated to vulnerable populations for consumption,
- Extension activities resulted in improved knowledge, created awareness and developed skills of the participants in sustainable agriculture systems

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Sustainable Energy

☐ Reporting on this Program

Reason for not reporting

There is no one to do the program because we have very limited staff.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2016	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	0.0
Actual Paid	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

No planned activity.

2. Brief description of the target audience

No planned activity so no target audience.

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2016	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2016

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2016	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

Outcome #1

1. **Outcome Measures**

{No Data Entered}

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

VI. National Outcomes and Indicators

1. NIFA Selected Outcomes and Indicators

Childhood Obesity (Outcome 1, Indicator 1.c)	
0	Number of children and youth who reported eating more of healthy foods.
Climate Change (Outcome 1, Indicator 4)	
0	Number of new crop varieties, animal breeds, and genotypes whit climate adaptive traits.
Global Food Security and Hunger (Outcome 1, Indicator 4.a)	
0	Number of participants adopting best practices and technologies resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources.
Global Food Security and Hunger (Outcome 2, Indicator 1)	
0	Number of new or improved innovations developed for food enterprises.
Food Safety (Outcome 1, Indicator 1)	
0	Number of viable technologies developed or modified for the detection and
Sustainable Energy (Outcome 3, Indicator 2)	
0	Number of farmers who adopted a dedicated bioenergy crop
Sustainable Energy (Outcome 3, Indicator 4)	
0	Tons of feedstocks delivered.