2017 College of Micronesia Combined Research and Extension Annual Report of Accomplishments and Results

Status: Accepted

Date Accepted: 06/13/2018

I. Report Overview

1. Executive Summary

Programs on mitigation and adaptation continued as the effects of climate change have been devastating on food security and food safety in the communities. Salt tolerant species of staple crops and climate smart production practices are being reinforced. Efforts towards improving the present monoculture planting of cassava through intercropping with nutritious and saleable vegetables were carried out. Sweet potato varieties were evaluated for yields and palatability offered another opportunity for food security and improved nutrition. Research and extension activities promoted agricultural productivity and food security, self-sufficiency, and enhancing quality of life. The utilization, processing and development of new products from staple food crops that are acceptable to the native population and in local markets continued. Trials on taro and tapioca varieties for their suitability to grow under atoll conditions continued. The micro propagation of elite (disease-free and high yielding) varieties that will improve the quality and quantity of certain crop varieties for food security were ongoing. Continued germplasm maintenance of staple root crops has insured 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. In-vitro and in-vivo studies of taro, sweet potato, and cassava are on-going as is efforts to identify tissue culture protocols for the multiplication of pineapples and black pepper. The control of the environmental impact of swine production continued with the promotion of a modified deep-litter and composting system for small-scale farmers.

Aquaculture demonstration projects continued to transfer the technical know-how to 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 continuation of a project to develop the technology for the farming of sea cucumbers in the FSM to enable the replenishment of lagoons and reefs depleted as a result of over harvesting.

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 were overweight or obese and many of them had suffered from NCD 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 as an introduction and information gathering. Sustainable agriculture and 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.

Multi-state and multi-institutional efforts continued through the Center for Tropical and Subtropical Aquaculture (CTSA) on aquaculture projects with the University of Hawaii. A cost-sharing agreement with Pohnpei State Government continued, whereby extension agents from the Agriculture Station have been

collaborating with Pohnpei CES staffs. The 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. 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 CRE services. Other capacity building activities included sustainable agriculture workshops, tissue culture and nursery practice, IPM, health and nutrition, and basic sewing attended by farmers, homemakers, the youth and adult sectors of the society and the underprivileged.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	43.0	0.0	20.0	0.0
Actual	37.8	0.0	22.0	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

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/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.

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.

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/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.

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.

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.

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/discussions were also held with school authorities, church leaders, parents and the general public on the implementation of community projects.

Brief Explanation of what you learned from your Stakeholders

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/discussions were also held with school authorities, church leaders, parents and the general public on the implementation of community projects.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{No Data Entered}	{No Data Entered}	{No Data Entered}	{No Data Entered}

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	909239	0	1201091	0
Actual Matching	165539	0	13242	0
Actual All Other	0	0	0	0
Total Actual Expended	1074778	0	1214333	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	909239	0	759844	0

V. Planned Program Table of Content

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	10%		10%	
136	Conservation of Biological Diversity	10%		10%	
301	Reproductive Performance of Animals	15%		15%	
302	Nutrient Utilization in Animals	10%		10%	
307	Animal Management Systems	15%		15%	
308	Improved Animal Products (Before Harvest)	10%		10%	
315	Animal Welfare/Well-Being and Protection	10%		10%	
511	New and Improved Non-Food Products and Processes	10%		10%	
608	Community Resource Planning and Development	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	5.0	0.0	4.0	0.0
Actual Paid	6.6	0.0	3.4	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**
158756	0	400635	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
28904	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

Program activities included establishing site-specific techniques in the protocols of hatchery, nursery and grow-out culture of targeted aquaculture species; to formulate a nutritionally balanced and economical feed for the nursery and grow-out culture; to demonstrate the economic viability of different techniques of grow-out culture of the targeted aquaculture species; to develop human resources for supporting and maintaining these industries; to develop business models and to promote local interest and participation in these industries; to demonstrate production and improve quality; to develop training and educational methods for local Micronesians; stake holder input research designing; experimental trial initiation, experimental monitoring and data collection, and data interpretation and analysis; dissemination of findings to existing and prospective farmers and individuals; promotion of new and site-specific technologies to outer-island communities; initiation of these small scale projects in outer island communities; frequent monitoring, data collection and evaluation of these projects; to develop hatchery , nursery and grow-out technologies for resource enhancement; replenishment of depleted stocks; and to test the efficiency of alternate or replacement feeds for specific aquaculture species.

2. Brief description of the target audience

Community fishermen, government officials, elementary, high school and college students, researchers and extension agents, international and regional organizations, commercial businesses, foreign investors, NGOs and local residents.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1246	1261	950	1525

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

Patent Applications Submitted

Year: 2017

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	3	1	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of farms established.

Year	Actual
2017	11

Output #2

Output Measure

- Number of publications for lay use.

Year	Actual
2017	6

Output #3

Output Measure

- Number of conference paper and publication/presentation.

Year	Actual

2017	7

Output #4

Output Measure

- Expected Professional Journal publications.

Year	Actual
2017	3

Output #5

Output Measure

- Expected Gray Literatures.

Year	Actual
2017	5

Output #6

Output Measure

- Expected publications for lay use.

Year	Actual
2017	5

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of persons with increased awareness in the communities and prospective and existing industry about sustainable, site-specific, and hatchery based aquaculture technologies.
2	Number of persons adopting hatchery based sustainable aquaculture technologies.
3	Number of aquaculture operations generating income.

Outcome #1

1. Outcome Measures

Number of persons with increased awareness in the communities and prospective and existing industry about sustainable, site-specific, and hatchery based aquaculture technologies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	2196

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

PCC: Some people are not aware about the importance of aquaculture and some existing and prospective farmers have limited knowledge and skills on the seed production and grow-out of mangrove crabs and other important aquaculture species.
CMI: Lack of knowledge to properly manage an aquaculture farm continues to show negative outcome and unsuccessful production economically.
COM-FSM: Communities have limited knowledge, skills and opportunities in sustainable aquaculture technology.

What has been done

PCC: Individual and group tours were accommodated at PCC hatchery. Aquarium displays were presented during national events. Stock enhancement for mangrove crabs was conducted. Production and grow-out techniques for mangrove crabs and other aquaculture species were demonstrated.
CMI: Continued training on three islands and four communities on the main island were carried out capturing the proper methods of half pearl development and management. Information on sustainable fishing methods were presented to schools, communities as well as out of school youths.
COM-FSM: Community members were educated on aquaculture opportunities. Sea cucumber hatchery production was demonstrated. Discussions and presentations were conducted in the communities on sea cucumber, giant clams, and grouper production.

Results

PCC: People became aware that aquaculture could provide a good alternative source of food and income. They also learned how to enhance the wild population of mangrove crabs and experienced the actual operation in the hatchery and grow-out farms.
CMI: New clients also expressed willingness to start a farm, utilizing the low energy and high yield half pearl project, on two communities on an atoll.
COM-FSM: Several thousands of juvenile transferred to the grow-out farms. Successful hatchery production of sea cucumber juveniles was demonstrated with communities agreed to participate in the nursery and grow-out of sea cucumber and provided needed areas.

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

Number of persons adopting hatchery based sustainable aquaculture technologies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	1035

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

PCC: Techniques to produce rabbitfish, mangrove crabs and milkfish fries and juveniles have been developed and established at PCC Hatchery. Existing hatcheries and their technicians need to adopt the technologies to establish a diversified aquaculture industry in the country.
CMI: Lack of knowledge to properly manage an aquaculture farm continued to show negative outcome and unsuccessful production economically.
COM-FSM: Technology transfer of a hatchery?based sea cucumber, the sandfish particular, has been a major concern to Micronesians by advancing towards developing sustainable economic models in Micronesia.

What has been done
PCC: Hands-on training on the larval rearing and nursery of rabbitfish, mangrove crab and milkfish were conducted at PCC hatchery and technicians from existing hatcheries and interested individuals were invited to attend.
CMI: Visitations and sharing of effective approaches help others to adopt the necessary skills that were not earlier comprehended and achieved.
COM-FSM: Several trainings conducted to achieve immediate technology transfer of existing hatchery methods into hatchery program. The hatchery and subsequent juvenile grow-out techniques needed modification to suit the project logistics and feeding strategy during larval and juvenile phase development.

Results
PCC: Trainees learned how to maintain and grow natural feed like algae and rotifers, monitor the spawning and collect eggs and take care of larvae until they become ready for stocking in the grow-out farms.
CMI: New clients also expressed willingness to start a farm, utilizing the low energy and high yield half pearl project, on two communities on an atoll.
COM-FSM: Aqua staffs received training conducted by consultant to obtain 10,000 juvenile per spawning run. Training gave good opportunity for staff to improve spawning techniques with new methods to produce mass juvenile numbers.

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 aquaculture operations generating income.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	23

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
PCC: There is a number existing aquaculture farmers in Palau who are engaged on rabbitfish, milkfish and mangrove crab farming but most of them are not able to optimize their production because of limited source of seeds for stocking and lack of technical skills in hatchery and grow-out operation.
CMI: Lack of interest, motivation and dedication complicate opportunities to have a successful and sustainable aquaculture farm.
COM-FSM: Aquaculture staff needed more training to ensure enhanced opportunity to adopt technical skills and in various aspects of growing large number of sea cucumber juvenile and adults.

What has been done
PCC: Hands-on training on seed production of mangrove crab, rabbitfish and milkfish were conducted. On-site visits and technical discussions with farmers were done. Hatchery production was continued and farmers were provided with their seed requirements.
CMI: Visitations and sharing of effective approaches help others to adopt the necessary skills that were not earlier comprehended and achieved.
COM-FSM: Aquaculture staff needed more training to ensure enhanced opportunity to adopt technical skills and in various aspects of growing large number of sea cucumber juvenile and adults.

Results
PCC: Farmers were able to stock their farms with locally produced fries and juveniles. They were able to grow their fish and crabs until they reached marketable size.

CMI: There is an increased in the number of clients that established their own farm. Ongoing technical assistance and guidance and training were provided to interested participants.
COM-FSM: Two individuals who completed the trainings are utilizing skills they learned as they were hired to work with the aquaculture unit.

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
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

PCC: Farmers were able to stock their farms with locally produced fries and juveniles. They were able to grow their fish and crabs until they reached marketable size.
CMI: Developing new farms in an atoll close to the capitol will generate new revenues for the local government, farm owners and create new job opportunities.
COM-FSM: Poacher and natural disaster-strong current were distracting farms.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

PCC: By conducting a series of trainings, aquaculture exhibits, tour at PCC hatchery and demonstrating the seed production and grow-out techniques for the mangrove crabs, rabbitfish and milkfish, people became aware about the importance of aquaculture in attaining food security and providing additional source of income in the country. Local fish farmers learned the proper methods in farming these species that made fish farmers become more interested to continue their grow-out operation. Currently, there are five

farms that continued growing the mangrove crabs and we are expecting that more farmers will be interested into growing rabbitfish in floating net cages. One hatchery now continues producing rabbitfish juveniles that provides additional seed stock to the fish farmers.
CMI: Without the cooperation and collaboration among stakeholders, valuable projects that would have generated incomes and bring livelihoods for the people will not be successful and prosperous.
COM-FSM: Positive community feedbacks encouraging to Trainees and inhabitants. Their acquired skills and knowledge fostered confidence and assurance in sea cucumber activities.

Key Items of Evaluation

PCC: Trainings conducted on grow out techniques for mangrove crabs, rabbitfish and milk fish have led to farmers stocking their farms with locally produced fries and juveniles. Thus they were able to grow their fish to marketable size.
CMI: Increased knowledge of participants; improved understanding among participants; increased adoption among participants; Increase economic opportunities; and create job opportunities.
COM-FSM: The sand fish hatchery technology refined and improved by experience from previous years. The hatchery produced 3,275 juveniles from several spawning this year. For example, one large cage for bottom culture has been established and expanse near the area to release anew produced sea cucumber.

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	10%		10%	
608	Community Resource Planning and Development	20%		20%	
801	Individual and Family Resource Management	10%		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	30%		30%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	9.0	0.0	1.0	0.0
Actual Paid	6.0	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**
144324	0	54595	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
26276	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

Cultural arts and crafts training sessions targeting adults and youths were conducted in the communities. Youths were encouraged to participate in various community programs such as beautification, gardening, and World Clean Up Day. Life skills, sports and physical fitness are components of youth programs. Children will also be encouraged to participate in civic activities and be involved more actively in the political process. Volunteers will be recruited to serve as liaisons between the colleges and their respective communities and will assist as clientele recruiters. Other volunteers from collaborating agencies in Micronesia will serve as resource persons, mentors and youth leaders in youth development programs, and lecturers where their expertise is needed. Training people with relevant income-generating and entrepreneurial skills such as sewing, gardening, weaving, making handicrafts, and cooking. These activities will utilize their potential through income generation activities will improve their financial status and improve their family or individual economic stability, and therefore lead to an improved quality of life. Counseling and mentoring about good moral character development and literacy will be provided.

2. Brief description of the target audience

Families, youths and communities all over Micronesia.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	986	1432	2870	4731

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

Patent Applications Submitted

Year:	2017
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	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
2017	44

Output #2

Output Measure

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

Year	Actual
2017	24

Output #3

Output Measure

- Total number of youth clubs, men's group, or women's groups activities organized.

Year	Actual
2017	42

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

Outcome #1

1. Outcome Measures

Number of youths with increased knowledge in social and moral skills.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	2268

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
CMI: Both parents and children need to improve their knowledge and accept the family norm and obligations for peaceful and good relationships.
COM-FSM: Limited knowledge and skills to utilize available resources to improve livelihood of clients and participants through programs activities thus making clients/participants productive members of the society

What has been done
CMI: Continued trainings and presentations were organized in schools, churches, as well as in the communities. Organized fishing trainings and outreach presentations were also conducted.
COM-FSM: Gardening projects, workshops conducted on best practices in good nutrition, personal hygiene and food safety, training on Arts and Crafts, sewing, promotion of cultural knowledge and practices, youth drop-outs had refresher courses in basic math, English and science to be admitted back in schools and entrepreneurship training on basic business plans were carried out during the year

Results
CMI: Organized trainings and outreach activities like in previous years helped program participants with increased and improved knowledge as well as understanding about roles and relationships with each other.
COM-FSM: Total of 2,468 clients/participants engaged in various programs with increased knowledge, skills, awareness and understanding.

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 and/or youths adopting entrepreneurial skills.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	1500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
CMI: Bad influence affects the spiritual and social well-being of participants. Limited necessary skills and motivation discourages adoption of recommended practices.
COM-FSM: Training in sewing and handicraft making from locally available materials such pandanus and coconut leaves, seashells and recyclable solid materials were used. Through technical assistance and hands-on trainings were given to clients/participants in vegetable production, healthy cooking, aluminum recycling, beautification, and entrepreneurship trainings on basic business plans. Further tutoring of trained school dropouts was also made available.

What has been done
CMI: Continued outreach activities were organized in schools, churches, and communities on family unity, 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: Drop-out youths refreshed in math, science and English were admitted back to their respective schools. Participants acquired gardening, sewing and handicraft skills were able to have extra incomes to improve and support families? livelihood.

Results
CMI: Like in previous years, organized trainings and outreach activities including follow-up visits helped 200 program participants take necessary measures to help parents at home. Out of school youths provided their families with additional income and food resources from fishing.
COM-FSM: Total of 404 clients/participants improved skills, adopted business planning, sewing, gardening, nutrition, weaving, and arts and craft.

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

Number of community groups or associations 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
2017	257

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

CMI: Educational information and training in life-skills will motivate children to actively participate in whatever roles they play and responsibilities they have. Lack of employment opportunities impacted the lifestyle of youths.
COM-FSM: Limited knowledge and skills to utilize available resources to improve livelihood of clients and participants through programs activities thus making clients/participants productive members of the society.

What has been done
CMI: Coordinated efforts and planning helps motivated the youth to seek job opportunities. Outreach and follow-up activities continued to provide additional recommendations and guidance.
COM-FSM: Conducted trainings, demonstrations, hands-on to Family, Youth and Community groups on vegetable production, healthy cooking, aluminum recycling, beautification, and entrepreneurship trainings on basic business plans. Further tutoring of trained school drop-outs was also made available.

Results
CMI: Organized trainings, outreach activities, resulted in 6% decrease in unemployment in four communities.
COM-FSM: Total of 257 clients/participants improved skills, adopted business planning, sewing, gardening, nutrition, weaving, and arts and craft.

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
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

CMI: With new and improved technologies, we can see more youths focusing more on many of the social media and other information technologies that affect their lifestyles.
COM-FSM: Scheduling and planning is the major challenge to overcome in order to be able to effectively deliver the program to remote communities. Additionally, program activities were postponed due to funerals or community events. Bad weather, non-available water transportation and high fuel costs affected the scheduling of the planned community activities

V(I). Planned Program (Evaluation Studies)

Evaluation Results

CMI: Organized outreach activities have increased and improved knowledge and understanding of 300 program participants about appropriate roles and relationships with parents. Outreach activities included follow-up visits that helped 150 program participants adopted new responsibilities at home.
COM-FSM: Results of interviews and observations, youth programs have improved behavior and condition of participants. Youths and young parents sewed good products, practiced carving and weaving techniques and generated income for their families. The Public school relayed on CRE training program and assisted more students, especially males to enter into the training course.

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 youths; Increase knowledge of fishing techniques; Properly trained to fish for sustain livelihoods.
COM-FSM: Drop-out youths refreshed in math, science and English were admitted back to their respective schools. Participants acquired gardening, sewing and handicraft skills were able to have extra incomes to improve and support families' livelihood.

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: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	4.0	0.0	1.5	0.0
Actual Paid	2.3	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**
55324	0	54595	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
10072	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

The program has reduced childhood obesity through technical assistance and trainings, physical activities, educating parents, teachers, and children on healthy food consumption and active living, teaching physical activities and movement, healthy living in Micronesia , and physical fitness.

Work with leadership and policy makers to develop policies to serve healthy food in schools and communities, and to incorporate agriculture and physical fitness in the curriculum.
Work in collaboration with youth services, Departments of Education, agriculture and Health Services, and non-government organizations (NGOS) to develop and implement programs.

2. Brief description of the target audience

The target audiences included children, teachers, parents, school administrators, policy makers, and others.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	2131	4495	4477	3305

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

Patent Applications Submitted

Year:	2017
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	2	1	3

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of conference papers and extension publications on childhood obesity and physical activity.

Year	Actual
2017	12

Output #2

Output Measure

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

Year	Actual
2017	33

Output #3

Output Measure

- Number of extension publications on childhood obesity, proper diet and physical activity.

Year	Actual
2017	13

Output #4

Output Measure

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

Year	Actual
2017	28

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of clients 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 clients 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
2017	2358

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Participants have no facts about the importance of eating healthy food and physical exercises. There are an increased number of obese children reported at the department of health and human services.
COM-FSM: Limited knowledge in healthy food choices is a prevailing issue in the communities. Food choice is based on least expensive and easy to cook food, e.g. rice. The situation is compounded with lack of awareness with respect to health implications due to lack of physical exercise.

What has been done
PCC:
CMI: Workshops, trainings and outreach activities were organized in schools as well as in the communities. Ongoing knowledge sharing and basic nutrition and health lessons were conducted for participants at scheduled outreach events.
COM-FSM: Developed intervention materials and conducted trainings to address limited knowledge in healthy food choices and physical exercise. Conducted presentations and demonstrations on healthy food choices and physical activities.

Results
PCC: PCC WAS NOT INVOLVED!
CMI: Organized trainings and outreach activities helped more than 300 program participants with increased and improved knowledge and understanding about importance of healthy food and physically fitness.
COM-FSM: Total of 2358

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
2017	1053

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
CMI: Limited knowledge of eating healthy food and physical exercises. Participants lack the necessary basic skills and therefore needs proper training and guidance.
COM-FSM: Developed intervention materials and conducted trainings to address limited knowledge in healthy food choices and physical exercise. Conducted presentations and demonstrations on healthy food choices and physical activities.

What has been done
PCC:
CMI: Staff continued outreach activities to adults and youths in schools and in the communities.
COM-FSM: Developed intervention materials and conducted trainings to address limited knowledge in healthy food choices and physical exercise. Conducted presentations and demonstrations on healthy food choices and physical activities.

Results

PCC:
CMI: Program staffs were able to reach more than 100 program participants who adopted healthy food choices and stay physically active. Schools also introduced daily exercise activities for students.
COM-FSM: Total of 2358 clients with increased knowledge on healthy food choices and 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

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
2017	599

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
CMI: Continued extension activities targeting parents and schools that were not assisted through lessons relating to childhood obesity. Increase number of children with obesity due to unhealthy diet and inactive lifestyles.
COM-FSM: Conducted cooking demonstrations and hands-on during trainings, workshops, group and individual visits, and follow up visits on health benefits derived from local fruits and vegetables and possible complications from poor lifestyles.

What has been done

PCC:
CMI: Coordinated efforts with different clients to reduce childhood obesity. Outreach and follow-up activities continued from last year to provide additional recommendations and guidance, and collection of data.
COM-FSM: Conducted cooking demonstrations and hands-on during trainings, workshops, group and individual visits, and follow up visits on health benefits derived from local fruits and vegetables and possible complications from poor lifestyles.

Results
PCC:
CMI: Results of organized activities are evident in that families are continuing to adopt new healthy lifestyles for children and utilizing appropriate amount of vegetables and fruits in children's meals.
COM-FSM: Total of 851 program participants adopted recommended practices on healthy food choices and 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
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

PCC: Not Involved
CMI: Implementation of planned program continued to encountered unanticipated challenges of climate change, transportation and isolation of islands that are separated by huge ocean.
COM-FSM: Conduct presentations and demonstrations during follow up, group and individual visits. A structured survey was sent out to program participants to gather inputs and to ascertain programs are suitable and are currently meeting needs in the communities. Initial result of survey indicated clients are satisfied with program content and delivery.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

PCC:
CMI: Continued to organize outreach activities to different communities have again increased and improved knowledge and understanding to more than 300 program participants about healthy eating and importance of physically activeness.
COM-FSM: Continue to evaluate program impacts through surveys and observations, follow up to determine increased awareness about health benefits of eating regularly fruits and vegetables and physical activities, increased selection of food with less salt, fats and sugar and increased number of participants doing home gardening.

Key Items of Evaluation

PCC:
CMI: Increased knowledge of participants; Improved understanding among participants; Increased adoption among participants; Decreased obesity in participants; and Increased number of clients.
COM-FSM: Continue to evaluate program impacts through surveys and observations, follow up to determine increased awareness about health benefits of eating regularly fruits and vegetables and physical activities, increased selection of food with less salt, fats and sugar and increased number of participants doing home gardening.

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	10%		10%	
112	Watershed Protection and Management	5%		5%	
125	Agroforestry	10%		10%	
131	Alternative Uses of Land	10%		10%	
132	Weather and Climate	10%		10%	
133	Pollution Prevention and Mitigation	5%		5%	
135	Aquatic and Terrestrial Wildlife	10%		10%	
136	Conservation of Biological Diversity	15%		15%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	10%		10%	
315	Animal Welfare/Well-Being and Protection	10%		10%	
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: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	3.0	0.0
Actual Paid	5.1	0.0	1.8	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**
122675	0	98271	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
22335	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

1. Provided awareness programs on climate change adaptation

1. Collaborated with government and non-governmental organizations on climate change adaptation efforts

1. Demonstrate cultivation of certain crops suitable to grow under atoll condition
2. Provide training to island communities on climate-smart agriculture, breed and techniques

1. Distribution of salt tolerant planting materials for staple crops

1. Assist with appropriate animal care and management

1. Disseminate results/findings of successful food production systems to other islands

1. Frequent monitoring, data collection and evaluation on climate change project sites

2. Brief description of the target audience

Target audiences are all communities throughout Micronesia and local, state and national governments, the private sectors, and other organizations.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1054	2863	975	3240

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

Patent Applications Submitted

Year: 2017

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	2	0	2

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of people with increased awareness and knowledge about climate change and adaptation.

Year	Actual
2017	2345

Output #2

Output Measure

- Number of people who adopted adaptation practices .

Year	Actual
2017	1539

Output #3

Output Measure

- Number of people with improved preparedness toward climate change impacts including capacity to produce and preserve food.

Year	Actual
2017	947

Output #4

Output Measure

- Increased staple food crop production.

Year	Actual
2017	360

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of persons with increased awareness and knowledge of climate change adaptation and mitigation.
2	Number of program participants who adopted adaption and mitigation practices.
3	Number of persons with improved preparedness toward climate change impacts including capacity to produce and preserve foods.

Outcome #1

1. Outcome Measures

Number of persons with increased awareness and knowledge of climate change adaptation and mitigation.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	2290

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
PCC: There is limited knowledge on how climate change impacts such as sea level rise, salt water intrusion and salinity, frequent typhoons, excessive rainfall, increased flooding and soil erosion, affect farming practices.
CMI: Continued challenges of climate change have affected people's livelihoods and wellbeing. Water quality sources continued to be a challenge for all communities.
COM-FSM: People in highlands, low-lying areas and atolls lack knowledge and planning to face the challenges of climate change to food source, health and properties.

What has been done
PCC: Publications were developed and distributed during community meetings and workshops 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. Mitigation and adaptation measures were demonstrated to reduce the impact of climate change.
CMI: Communities affected by sea level rise and further inundation of sea water to their water and food sources continued to receive training and guidance regarding mitigation strategies, especially replanting of local and salt tolerant food crops.
COM-FSM: Community meetings and demonstrations were conducted to prepare people for the impacts of climate change. Securing food sources through salt tolerant crops, gardening and proper solid waste management and reforestation of forest were emphasized to participants.

Results
PCC: Total of 486 participants with increased awareness and knowledge of climate change adaptation and mitigation.

CMI: Continue organizations of trainings and outreach activities helped participants increased and improved knowledge and understanding of the importance of climate change issues and how to alleviate impacts.
COM-FSM: Community meetings and demonstrations were conducted to prepare people for the impacts of climate change. Securing food sources through salt tolerant crops, gardening and proper solid waste management and reforestation of forest were emphasized to participants.

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
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 who adopted adaption and mitigation practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	1978

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: Participants lack the knowledge to adopt sustainably the proper utilization of water resources, especially on food crops.
COM-FSM: People in highlands, low-lying areas and atolls lack knowledge and planning to face the challenges of climate change to food source, health and properties

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 continued to be organized and carried out at schools, as well as in the communities that were not reached before on sustainable management of salt resistance food crops as well as clean and safe drinking water.
COM-FSM: Community meetings and demonstrations were conducted to prepare people for the impacts of climate change. Securing food sources through salt tolerant crops, gardening and proper solid waste management and reforestation of forest were emphasized to participants.

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: Salt resistant food crops were planted and clean water was distributed to households.
COM-FSM: Total of 625 program participants attended.

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
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 with improved preparedness toward climate change impacts including capacity to produce and preserve foods.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	767

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: Available salt resistant and nutritious healthy food with clean drinking water will help reduce sickness that continues to endanger the livelihood of the less fortunate individuals.
COM-FSM: People in highlands, low-lying areas and atolls lack knowledge and planning to face the challenges of climate change to food source, health and properties.

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: Continued implementation and working along with other partners to communities that were not reached earlier in planning enough food crops as well as training to reduce water and food borne diseases. Outreach and follow up activities continued to carry out and provided additional recommendation and collection of data.
COM-FSM: Community meetings and demonstrations were conducted to prepare people for the impacts of climate change. Securing food sources through salt tolerant crops, gardening and proper solid waste management and reforestation of forest were emphasized to participants.

Results
PCC: Communities who experienced and were affected by 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: Like in previous year, outcomes with organized activities are evident that families and community members are adopting the approaches shared to them. Especially, on salt resistance crops as well as the methods of testing drinking water. The number of safe drinking water catchments has increased greatly. The number of salt resistant crops has been planted around participant?s quarters.
COM-FSM: Total of 360 persons with improved preparedness toward climate change impacts including capacity to produce and preserve foods.

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
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
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

PCC: Weather conditions in Palau continue to be very unpredictable. La Nina seems to be prevailing in spite of the predicted El Nino for 2017, thus affecting the planned activities.
CMI: Continued challenges of unpredictable weather conditions impacted the implementation of planned and scheduled activities.
COM-FSM: Bad weather, cultural events especially funerals, availability of water transportation and high fuel costs affected planned program activities.

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 climate change, salt resistance crops as well as clean and safe drinking water. Clean water and healthier and nutritious food among the program participants will help participants.
COM-FSM: Participants knew securing their food sources and preserving their food for facing impacts of climate change. Barren land must be reforested to prevent soil erosion and water contamination and motivated participants protected and preserved the resources for future generations.

Key Items of Evaluation

PCC: Severe impacts of climate change affecting food production are strong typhoons and salt water intrusion into taro patches.
Identification and distribution of salt tolerant taro varieties , seeds and planting materials of other crops is an essential remedial measure to ensure increased food production in the affected areas.
CMI: Increase knowledge of participants; Improve awareness of understanding how to maintain safe drinking water; Well prepared to mitigate shoreline erosions; Increase knowledge and skills on salt resistance crops; Increase understanding of participants; Improved survival skills; and Healthier lifestyles
COM-FSM: Key items of evaluation include: Reduction of environmental pollution from composting of biodegradable solid wastes; increased preparedness of people in facing climate change impacts; and increased food production and processing activities

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: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	1.0	0.0
Actual Paid	2.9	0.0	1.5	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**
69756	0	81893	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
12700	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

Training programs on safe food production, preparation, handling, storage and use was conducted to school children, housewives, school cooks, food handlers, chefs and others.

2. Brief description of the target audience

Target audience included school children , food handlers and producers, chefs, school cooks, housewives, food and grocery establishments in all communities throughout Micronesia and local, state and national governments, the private sectors, and other organizations.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	978	1200	1300	956

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

Patent Applications Submitted

Year:	2017
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of persons attending training activities on food safety.

Year	Actual
2017	2026

Output #2

Output Measure

- Number of persons with increased knowledge and practices after completing educational programs.

Year	Actual
2017	1029

Output #3

Output Measure

- Number of research and extension publications on food safety.

Year	Actual
2017	18

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of persons with increased 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 persons with increased 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
2017	1672

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: WAS NOT INVOLVED.
COM-FSM: Many families and individuals in the communities lack the basic information on best practices in food handling, storage, preservation, processing and preparation. This can lead to cases of food-borne illnesses.

What has been done
PCC: Seven food safety trainings were conducted to 205 participants on practicing personal hygiene, cooking foods adequately, avoiding cross-contamination, keeping food at safe temperature, and avoiding food from unsafe source.
CMI:
COM-FSM: Conducted trainings on sanitary handling during food preparation, storage and preservation. Food selection is also important and was also part of the teaching package in the food safety training. CRE is collaborating with similar agencies such as Health Services and Department of Education in conducting food safety trainings

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 205 participants of Food Safety Classes.
CMI:
COM-FSM: 3,718 clients increased awareness and knowledge on food safety issues.

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
2017	991

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:
COM-FSM: People are unaware of food safety issues.

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:
COM-FSM: Many families and individuals in the communities lack the basic information on best practices in food handling, storage, preservation, processing and preparation. This can lead to

cases of food-borne illnesses.

Results
PCC: Two hundred five 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:
COM-FSM: Conducted trainings on sanitary handling during food preparation, storage and preservation. Food selection is also important and was also part of the teaching package in the food safety training. CRE is collaborating with similar agencies such as Health Services and Department of Education in conducting food safety training.

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
2017	675

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:
COM-FSM: Conducted trainings on sanitary handling during food preparation, storage and preservation. Food selection is also important and was also part of the teaching package in the food safety training. CRE is collaborating with similar agencies such as Health Services and Department of Education in conducting food safety training.

What has been done
PCC: Two hundred five food handlers were taught on how to avoid food borne illnesses through proper food safety practices.
CMI:
COM-FSM: Conducted trainings on sanitary handling during food preparation, storage and preservation. Food selection is also important and was also part of the teaching package in the food safety training. CRE is collaborating with similar agencies such as Health Services and Department of Education in conducting food safety trainings

Results
PCC: There was no incidence of foodborne illnesses in Palau due to the conduct of food safety classes among food handlers.
CMI:
COM-FSM: Total of 426 participants reduced incidences of food-borne and water-borne illnesses.

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
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

PCC: Facilities for proper food storage and cleaning are not always available in many homes resulting in unsafe food handling environment.
CMI:
COM-FSM: Large population within FSM still depended on water catchment and had no refrigerators for food storage. Water quality had to be monitored regularly for bacterial contamination.

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:
COM-FSM: Participants learned about safe handling of food to avoid water- and food borne-diseases. They washed their hands, food and utensils before cooking and stored properly their leftover food.

Key Items of Evaluation

PCC: Food safety training materials such as DVDs on proper food handling need to be shown to participants.
CMI:
COM-FSM: Evaluations from surveys on food behavior checklist, observations, question and answer. Significant reduction of water-and-food-borne diseases among families of participants.

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: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	16.0	0.0	6.0	0.0
Actual Paid	14.9	0.0	13.3	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**
358404	0	511102	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
65252	0	13242	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

Research and Extension integrated activities included field trials to test and evaluate crop varieties, cultivation methods and ways to improve soil fertility. Extension activities on livestock will include utilizing excess local produce as feeds and how to improve management and bloodline. Other research activities will include tissue culture to develop efficient and reproducible micropropagation protocols and establish cultures of collected germplasm. Work in this area will include development of reliable micropropagation protocols and nursery management systems to produce elite seedlings for distribution and to conserve germplasm in vitro for future use.

Research-based extension materials will be developed and distributed among the farming communities to increase awareness and generate interest in agricultural systems. Workshops, group discussions, demonstrations, farm-visits and field days/fairs are other components of this program. Researchers will produce elite and disease-free seedlings through tissue culture and nursery techniques.

Trainings and demonstrations will be organized on food technology and food processing to increase shelf life of farm products and add value to agricultural produce thereby addressing food security issues.

2. Brief description of the target audience

Both crop, livestock and fish farmers, potential farmers, researchers and extension agents, homemakers and students.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	3200	5390	1883	2300

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

Patent Applications Submitted

Year: 2017

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	3	4	7

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Expected on-farm demonstrations.

Year	Actual
2017	51

Output #2

Output Measure

- Expected processing demonstrations.

Year	Actual
2017	25

Output #3

Output Measure

- Number of publications for lay use.

Year	Actual

2017	17

Output #4

Output Measure

- Number of conference papers and publications/presentations

Year	Actual
2017	13

Output #5

Output Measure

- Expected professional journal publications.

Year	Actual
2017	5

Output #6

Output Measure

- Expected gray literatures

Year	Actual
2017	15

Output #7

Output Measure

- Expected publications for lay use

Year	Actual
2017	15

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 technologies.
2	Number of persons with increased knowledge on appropriate processing technologies.
3	Number of persons adopting recommended practices.
4	Number of established farms producing/utilizing/selling produces and products.
5	Number of established businesses utilizing developed/processing tecnologies

Outcome #1

1. Outcome Measures

Number of persons with increased knowledge on appropriate production technologies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	3141

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

PCC: Limited knowledge on new technologies to enhance crop and livestock production continued to be a 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: Continued training on sustainable farming practices like composting and proper ways of using green manure for vegetable production and urban gardening passed on to new clients. Farmers, gardeners, students, teachers, homemakers, youth, local policy makers, extension agents, community leaders, government and non-government staff were the target audience.
COM-FSM: Limited knowledge and skills in modern agriculture technologies, and management practices were the bottle-neck in crop and livestock production in the communities, farmers and individuals.

What has been done

PCC: Trainings were conducted and information on new technologies on Hydroponics Vegetable Production, technologies of Livestock Production were disseminated and farmers were trained on proper handling and application of pesticides. Books on crop production and food processing technologies were disseminated to farmers and communities during fairs and conferences.
CMI: Training and brochures distributions were done in schools and in the communities. Distribution of seedlings/plants (local spinach, water spinach, Chinese cabbage, eggplants, mooring, breadfruit, pandanus, sweet potatoes, melons, squash, cucumber and tomatoes) to different communities continued to be very successful.
COM-FSM: Conducted trainings, workshops, demonstrations, presentations, and farmers meetings in the communities, farmers, individual and schools on modern agriculture technologies, and management practices to improve climate-smart vegetable crop production systems and best

practices in poultry and swine management.

Results
PCC: Farmers were able to improve crop productivity using Hydroponics technology, best management practices and livestock management practices that have been disseminated during the trainings and workshops conducted. Farmers were able to utilize their harvest to ensure food and nutritional security for their families and constituents in the community.
CMI: As was done last year, more participants that gone through trainings have increased their knowledge and continued to recommend to others.
COM-FSM: Total of 3004 persons with increased knowledge on appropriate production technologies in crop and livestock 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 persons with increased knowledge on appropriate processing technologies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	2520

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

PCC: Farmers lack knowledge on how to prolong the storage and shelf life of their produce to make them last longer and to ensure food security

CMI: Few farms were recorded and data collections were not properly maintained and keep tract off.

COM-FSM: Limited knowledge and skills in modern agriculture technologies, and management practices and infrastructures were the bottle-neck in product processing in the communities, farmers and individuals

What has been done

PCC: Trainings have been conducted on food processing technologies. In addition, books have been written, published and disseminated to local constituents

CMI: Trainings were carried out by partners such as Department of Agriculture, Taiwan Agriculture Technical Mission and experts coming from donor countries. Farmers adopted recommended practices and have increased production and made available of extra produces. Some farmers were observed to have higher sales of some varieties of crops. Trainings and demonstrations (including cooking) continued to carry out to new farmers and families as well as students with little space around their homes. Data and records of crops and other produce were well maintained and kept at the Taiwan Mission and Resources and Development.

COM-FSM: Conducted trainings, workshops, demonstrations, presentations, and farmers meetings in the communities, farmers, individual and schools on modern agriculture technologies, and management practices to improve climate-smart vegetable crop production systems and best practices in poultry and swine management.

Results

PCC: Trainings have been conducted on food processing technologies. In addition, books have been written, published and disseminated to local constituents

CMI: Trainings were carried out by partners such as Department of Agriculture, Taiwan Agriculture Technical Mission and experts coming from donor countries. Farmers adopted recommended practices and have increased production and made available of extra produces. Some farmers were observed to have higher sales of some varieties of crops. Trainings and demonstrations (including cooking) continued to carry out to new farmers and families as well as students with little space around their homes. Data and records of crops and other produce were well maintained and kept at the Taiwan Mission and Resources and Development.

COM-FSM: Conducted trainings, workshops, demonstrations, presentations, and farmers meetings in the communities, farmers, individual and schools on modern agriculture technologies, and management practices to improve climate-smart vegetable crop production systems and best practices in poultry and swine management.

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 persons adopting recommended practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	2422

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
PCC: Limited knowledge on new technologies to enhance crop and livestock production continued to be a 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: Continued training on sustainable farming practices like composting and proper ways of using green manure for vegetable production and urban gardening passed on to new clients. Farmers, gardeners, students, teachers, homemakers, youth, local policy makers, extension agents, community leaders, government and non-government staff were the target audience.
COM-FSM: Limited knowledge and skills in modern agriculture technologies, and management

practices were the bottle-neck in crop and livestock production in the communities, farmers and individuals.

What has been done

PCC: Trainings were conducted and information on new technologies on Hydroponics Vegetable Production, technologies of Livestock Production were disseminated and farmers were trained on proper handling and application of pesticides. Books on crop production and food processing technologies were disseminated to farmers and communities during fairs and conferences.
CMI: Training and brochures distributions were done in schools and in the communities. Distribution of seedlings/plants (local spinach, water spinach, Chinese cabbage, eggplants, mooring, breadfruit, pandanus, sweet potatoes, melons, squash, cucumber and tomatoes) to different communities continued to be very successful.
COM-FSM: Conducted trainings, workshops, demonstrations, presentations, and farmers meetings in the communities, farmers, individual and schools on modern agriculture technologies, and management practices to improve climate-smart vegetable crop production systems and best practices in poultry and swine management.

Results

PCC: Farmers were able to improve crop productivity using Hydroponics technology, best management practices and livestock management practices that have been disseminated during the trainings and workshops conducted. Farmers were able to utilize their harvest to ensure food and nutritional security for their families and constituents in the community.
CMI: As was done last year, more participants that gone through trainings have increased their knowledge and continued to recommend to others.
COM-FSM: Total of 3004 persons with increased knowledge on appropriate production technologies in crop and livestock 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 #4

1. Outcome Measures

Number of established farms producing/utilizing/selling produces and products.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	67

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
PCC: Farmers lack knowledge on how to prolong the storage and shelf life of their produce to make them last longer and to ensure food security
CMI: Few farms were recorded and data collections were not properly maintained and keep tract off.
COM-FSM: Limited knowledge and skills in modern agriculture technologies, and management practices and infrastructures were the bottle-neck in product processing in the communities, farmers and individuals

What has been done
PCC: Trainings have been conducted on food processing technologies. In addition, books have been written, published and disseminated to local constituents
CMI: Trainings were carried out by partners such as Department of Agriculture, Taiwan Agriculture Technical Mission and experts coming from donor countries. Farmers adopted recommended practices and have increased production and made available of extra produces. Some farmers were observed to have higher sales of some varieties of crops. Trainings and demonstrations (including cooking) continued to carry out to new farmers and families as well as students with little space around their homes. Data and records of crops and other produce were well maintained and kept at the Taiwan Mission and Resources and Development.
COM-FSM: Conducted trainings, workshops, demonstrations, presentations, and farmers meetings in the communities, farmers, individual and schools on modern agriculture technologies, and management practices to improve climate-smart vegetable crop production systems and best practices in poultry and swine management.

Results
PCC: Farmers and housewives are now capable of making new food products from taro, cassava, sweet potato, banana, coconut and fish.
CMI: Most farmers, households and other stakeholders continued to apply the methods that were introduced. There are an increased number of family?s established urban gardening methods in the urban area. Like in previous years, students who took part in the agriculture training are now in the college programs, taking agriculture and nutrition classes to supplement what they already have learnt previously.
COM-FSM: Total of 2461 persons with increased knowledge on appropriate product processing technologies in agriculture sector.

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 #5

1. Outcome Measures

Number of established businesses utilizing developed/processing tecnologies

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year **Actual**

2017 76

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

PCC: Limited knowledge, information and resources about growing crops, control of pests and diseases, proper pesticide application and livestock technologies greatly affect adoption of proper technologies to improve farm productivity. Farm produce can be stored in better ways to increase shelf life and enhance food security.
CMI: Fewer farms established to supply the demand of the communities with enough nutritious and healthy products. No interest and motivation to continue sustainable farming practices.
COM-FSM: Limited knowledge and skills in modern agriculture technologies, proper infrastructures and management practices were the bottle-neck in crop and livestock production in the communities, farmers and individuals.

What has been done

PCC: Farmers have been provided with proper knowledge, skills, planting materials , and resources to enhance adoption of technologies to improve farm productivity and income. New food products have been prepared and produced from food processing technologies learned thus enhancing food security.
CMI: Training on proper management and new ways of organic composting were offered to the clients. Continued cooking demonstrations on how to use the local crops producing from their own farms was also conducted. Follow up visits were conducted to provide technical assistance or additional information are ongoing.
COM-FSM: Conducted trainings, workshops, demonstrations, presentations, and farmers meetings in the communities, farmers, individual and schools on modern agriculture technologies, and management practices to improve climate-smart vegetable crop production systems and best practices in poultry and swine management.

Results

PCC: Farmers have adopted hydroponic crop production technologies of growing crops like nappe and tomatoes. Adoption and utilization of new high yielding varieties have enhanced productivity and profitability of their farm enterprises. A wide variety of new food products have been prepared and produced based on the new food processing technologies adopted.
CMI: Several farms were established at several locations and people were observed to be actively participating in the work.
COM-FSM: Total of 921 persons adopting recommended practices in crop and livestock productions.

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
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

PCC: Unpredictable weather conditions affect the growth and yield of crops. Furthermore, migration of the population to the urban centers has lessened the opportunities for food production for the populace, thus lowering the food production capacity for food security of the country.
CMI: Shipment of the gardening 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 planned projects. This statement is still valid to be used during this reporting period.
COM-FSM: Weather extremes, funerals, and traditional functions had been challenges faced to conduct trainings and program activities in the communities.

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, yam and cassava to increase productivity and food security.
Hydroponics technology has been effectively utilized to produce nappa and tomatoes.
Participants in the food utilization trainings were very eager to prepare new food recipes they had 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.
COM-FSM: For the program to be fully effective, outreach awareness and follow-ups must be embedded in each programs activity. Additionally, results of evaluation before and after

the program showed that participants have understood farm management practices as shown in pre and post-tests.

Key Items of Evaluation

PCC: Disease free and high yielding varieties of root and vegetable crops are essential to successful crop production to enhance food security.
Hydroponics technology has been utilized to enhance food production, and families are now able to prepare new food recipes from their produce for food security.
CMI: More sustainable activities will be done by focusing more on composting, green manure, integrated pest management and exploring more on salt tolerant crops and local animal feed production to encourage livestock production to alleviate problems related to global food security and hunger.
COM-FSM: The contents of the program must be address with the government leaders at local, state, and national level so that it would be part of wider priority within FSM economic development plan. Additionally, a need to increase number of agricultural farms/gardens, and increase diversification of fruit and vegetable production and processing through "Eating the Rainbow" slogan.

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.