2007 Annual Report
College of Micronesia

I. Report Overview

1. Enter an Executive Summary for your Fiscal Year 2007 Report (6400 characters).

At the College of Micronesia, programs were implemented through the Department of Cooperative Research and Extension (CRE) at the three partner colleges: College of the Marshall Islands (CMI), College of Micronesia – FSM (COM-FSM), and Palau Community College (PCC). Integrated research and extension programs in FY 2007 continued to address economic, social, and ecological issues that are critically important to the people in small island communities in Micronesia. Programs provided were the continuation of past efforts in disseminating new knowledge and technologies to sustain and improve the quality of life of all Micronesian citizens in the Republic of Palau (ROP), Federated States of Micronesia (FSM), and Republic of the Marshall Islands (RMI).

With a mostly rural population that lives on mostly low-lying coral atolls, Micronesian farming of both crops and livestock were mostly on a subsistence nature. Research and development activities to promote agricultural productivity, self-sufficiency, provide for food security, and enhance quality of life were implemented. The potential of simplified hydroponics to improve health and the economy, and utilization, processing and development of new products from banana, taro, breadfruit and cassava that are acceptable to the native population and in local markets are ongoing projects. The trials on taro varieties (Cyrtosperma spp. & Colocasia spp.) for their suitability to grow under atoll conditions and the trials on banana varieties resistant to the black leaf streak (BLS) and other diseases and the micro propagation of elite (disease-free and high yielding) of certain banana varieties that will improve the quality and quantity of certain banana varieties for the export market are also continuing. A research project looked at determining comparative resistance of different taro varieties to the taro leaf blight disease. Other research projects were the germplasm of staple root crops, namely sweet potato, cassava and taro, has ensured the genetic conservation of these valuable resources for future generations. This has also facilitated the continue supply of planting materials to growers and allow in-vitro multiplication of other food crops such as breadfruit and pandanus.

Aquaculture/mariculture demonstration projects are continuing with new advances in technology to transfer the technical know-how to Micronesians to enable them to actively engage in projects that could improve health, support the local economy and provide for employment. Aquaculture activities were reinstated in Palau with the hiring of an aquaculture researcher. As a result, rabbit fish were reared in tanks and preliminary outcomes showed survival of larvae increased to 20% when rotifers for larval food was increased from 3 to 5 rotifers per ml. As of last year, 30,000 fingerlings were released in clam farms. On giant freshwater prawn research, facility and technical problems associated with its culture are being ironed out. The developing technology for the farming of black-lip pearl oyster has enabled the establishment of pilot farms in the outer islands of Pohnpei and the Marshall Islands and plans are underway for the transfer of this technology to other parts of Micronesia. The pearl oysters project will encourage local pearl oyster production that will benefit farmers, develop pearl oyster culture industries, create job opportunities, and support national revenues.

Outreach programs continued to focus on a wide range of critical issues ranging from food safety and quality, health and nutrition, food security, soil management, strengthening families and developing youth, water quality, developing leadership and volunteerism, and managing limited natural resources and the environment. The nutrition, diet and health programs continued thru a consortium of the five land-grant institutions in the American-Pacific region to stress the importance of healthy lifestyles, which include behavioral changes (physical activity and consumption of safe, nutritious local food) to combat the ever rising tide of obesity, diabetes and heart diseases and other NCDs among both children and adult. A project on endangered species of banana is trying to multiply these rare banana varieties to help with the nutritional needs for Vitamin A among both children and adult. The youth development programs at the schools and with out-of-school children provided information to increase their knowledge and appreciation of marine and terrestrial flora and fauna. Summer programs also provided information on basic survival skills on small island communities and home economics and appropriate island lifestyles. More students are now exposed to computers through computer training programs at schools that provided the opportunity for children to use the Internet as an introduction to electronic connectivity and information gathering. Water quality education programs continued in some of the island communities as collaborative efforts with international and regional organizations, government agencies, and community groups on monitoring and surveillance testing of water sources in selected areas continued. Sustainable agriculture and integrated pest management programs continued to provide farmers awareness, understanding, and information regarding the adoption of sound agricultural production practices that sustain or protect the fragile island ecosystem integrity and biodiversity.

Activities are ongoing on resistant crop varieties and practical biological pest control measures to provide useful tools to the stakeholders for combating crop pests and diseases and increase productivity of tropical food crops. The use of beneficial organisms was the emphasis in reducing pest threats on crops. Biological control agents such as mirid bugs (*Cyrtorhinus fulvus)* to control the taro leafhopper, predatory mites (*Neoseilus longispinosus)* to control the cassava spider mites and the parasitic wasp *(Aphidius colemani)* to control the melon aphids on taro were reared in the screen house and released several times on field plantings of taro and cassava in four States of Palau. The biological control of the melon aphid and mile-a-minute is progressing well with the successful control of gallflies and mired bugs with *Chromolaena* and taro leafhopper. Activities are ongoing for the biological control of the *Mimosa diplotricha,* which is still growing along roadsides through the use of the psyllid insects.

Multi-state, multi-institutional and multi-disciplinary efforts continued through the consortium of the American-Pacific land-grant universities and colleges through the Agricultural Development in the American Pacific (ADAP) Project and with the College of Tropical and Subtropical Aquaculture (CTSA) on aquaculture projects. A cost-sharing agreement with Pohnpei State Government continued, whereby Extension Agents from the Agriculture Station have been working side-by-side with Pohnpei CES staffs.

There is still a continuing shortage of necessary human resources and professional staff, therefore human resource and capacity building efforts continued to be a top priority. Several programs and activities toward developing this area included a Financial Assistance & Scholarship Program for high school students through a summer research/extension apprenticeship program and financial assistance for college students enrolled in agriculture and home economic courses. Other capacity building activities included sustainable agriculture workshops, pesticide application, tissue culture and nursery practice, integrated pest management, EFNEP, and basic sewing attended by farmers, producers, homemakers, the youth and adult sectors of the society and the underprivileged and underrepresented.

2. Enter the Total Actual amount of professional FTEs/SYs for the State.

Year: 2007	Extension		Research		
	1862	1890	1862	1890	Others*
Plan	**49.1**		**11.9**		
Actual	**8.75**		**8.25**		**5.0**

*** Administrative Staff**

II. Merit Review Process

1. Select the Merit Review Process that was employed for this year. (Check all that apply).

__x_ Internal University (college) Panel
_x__ External University Panel
___ External Non-University Panel
___ Combined Internal and External University Panel
_x_ Combined Internal and External University and External Non-University Panel
___ Expert Peer Review
___ Other _____

2. Tell us about your Merit Review and/or Peer Review Process completed this year. (3200 characters).

At PCC-CRE, a 4-member publications committee reviewed proposals. Two external reviewers, who are experts in the areas of the proposals, evaluated the proposals. After the evaluation by the external reviewers, the proponent incorporated the comments of the reviewers. Once it is finalized, the Vice President of CRE through the PCC President endorsed the proposals and submitted them to the COM Executive Director/Interim CES/AES Director, who endorsed proposals and sent them to USDA CRIS for final approval.

At CMI-CRE, all project proposals were submitted to the Dean for review. Two internal reviewers from the college reviewed proposals and provided feedbacks. It took several days to receive the reviewers' feedbacks. External reviewers were faculty and researchers from other Land Grant colleges/universities and international organizations such as (SPC, UNDP, SOPAC, SPREP, etc.). Two external reviewers followed the same process as the internal reviewers. Feedbacks were provided to the researchers and after they made changes, they were sent to the AES/CES Interim Director for endorsement and submission to USDA CRIS.

At COM-FSM-CRE, the peer review of all Hatch research proposals is made prior to submission to the Interim Director of AES/CES for his endorsement before submission to CRIS for approval. These included both internal and external reviewers and must be supported by three reviewers. Funded programs including matching funds programs, whether Research or Extension were submitted to the College of Micronesia-FSM Sponsored Programs review committee for review as outlined in the Terms of Reference of that committee. Seventeen diverse members of the college community, including all state campuses reviewed proposals and advised the President of concerns or support of the proposals.

III. Stakeholders Input

1. Actions taken to seek stakeholders input that encourages their participation. (Check all that apply.)

_x_ Use of media to announce public meetings and listening sessions
_x_ Targeted invitation to traditional stakeholder groups
_x_ Targeted invitation to non-traditional stakeholder groups
_x_ Targeted invitation to traditional stakeholder individuals
___ Targeted invitation to non-traditional stakeholder individuals
___ Targeted invitation to selected Individual from general public
___ Survey of traditional stakeholder groups
___ Survey of traditional stakeholder individuals
___ Survey of general public
___ Survey specifically with non-traditional groups
___ Survey specifically with non-traditional individuals
___ Survey of selected individuals from the general public
___ Other _____

Briefly explain how you encouraged stakeholder participation (3200 characters).

PCC-CRE through its outreach programs brought into the community of each state in Palau the products of its research and extension activities and through the exchange of ideas and problems, comments, views, and suggestions during the scheduled meetings. These suggestions and emerging issues related to extension and research are incorporated in our research programs. Also concerns from other agencies of the government within and outside Palau are compared with current priority areas of work so that a consensus could be reached on priority programs.

Stakeholders were identified in meetings held by local and national government agencies, traditional and political leaders together with CRE staff. They were assigned to be involved in the implementation and evaluation of the projects. In some instances, some projects required participation of the farmers from the start of the project until they were completed. In that way the transfer of technology to other people can be easily facilitated through the help of the clienteles. Furthermore, research and extension results were translated into simple English or in the local dialect/language in the brochures, bulletins and reports for easy dissemination to the public.

At CMI-CRE, before any research proposal is written, the researchers met with traditional and government leaders, government agencies, and NGOs to collect their

inputs on agriculture, aquaculture, and home economic issues that they would like to see addressed. Stakeholder meetings were held once or twice a year depending on needs of the communities. The CMI-CRE strategic plan and COM Plan of Work were presented to them and they were asked for their feedback and inputs.

The FSM stakeholders were kept informed of activities through direct communication or electronic sharing of information. Stakeholders' inputs were solicited when priority areas of action were identified. In addition, presentations were made to the Pohnpei State Legislature prior to and during negotiations for the development of the Memorandum of Understanding covering the CES state budgets. The Farmers Cooperative of Pohnpei met regularly and provided input to the CES programs by identifying priority areas of concern.

2(A). 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. (Part – 1)

1. **Method to identify individuals and groups. (Check all that apply)**

___ Use Advisory Committee
__x_ Use Internal focus Group
___ Use External Focus Groups
___ Open Listening Sessions
_ x _ Needs Assessments
___ Use Surveys
___ Other _____

Briefly explain your methods for identifying individuals and groups. (3200 characters)

PCC-CRE staff approached political and traditional leaders for their assistance in identifying individuals or groups who should attend meetings / trainings. These individuals and groups were informed through radio announcements or were personally approached to inform them when and where the meetings / trainings were to be held.

CMI-CRE announced the plan event on the local radio station inviting interested individuals or groups. Letters were also sent to traditional or political leaders requesting their assistance in identifying individuals or groups to participate in the events.

For COM-FSM-CRE, known individuals involved in particular program areas were contacted for specific input and guidance. Information was solicited from collaborators by individual contact. Interest expressed for specific programs such nutrition and home gardening by the head of the local government or state government. Local governments and the traditional leaders have been very helpful in identifying segments of the population for specific target program.

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 stakeholders input. (Check all that apply).

_**x**_ Meeting with traditional Stakeholders groups;
___ Survey of traditional Stakeholder groups
_x_ Meeting with traditional Stakeholder Individuals
___ Survey of traditional Stakeholder Individuals
_x_ Meeting with the general public (open meeting advertised to all)
___ Survey of the general public
___ Meeting specifically with non-traditional groups
___ Survey specifically with non-traditional groups
___ Meeting specifically with non-traditional individuals
___ Survey specifically with non-traditional individuals
_x_ Meeting with invited selected individuals from the general public
___ Survey of selected Individuals from the general public
___ Other _____

Briefly explain your methods for collecting stakeholder input. (3200 characters)

At PCC-CRE, extension staff conducted personal visits to stakeholders in their homes and on their farms and through these visits, one-on-one interviews were held to get the relevant information needed to facilitate work in each respective state.

CMI-CRE staff met with stakeholders individually to collect their inputs. Also, during public meetings and training workshops, inputs were also collected from stakeholders.

At COM-FSM CRE, stakeholders' inputs were gathered during meetings, workshops, visits by individuals, farm visits, and response to specific problems. Often exchange of information is casual and often not formally recorded. The information is gathered and used as anecdotal background in decision-making. At other times when a specific agenda is required, formal meetings of stakeholders were organized with information recorded. Such events were arranged for strategic planning efforts, collaborative project efforts, legal agreements and identification of professional positions in the organization. Often these meetings were addressing issues of interest to other collaborating organizations.

3. How the input was considered. (Check all that apply).

___ In the Budget Process
_x_ To identify emerging issues
_x_Redirect Extension Programs
_x_ Redirect Research Program
___ In the Staff Hiring Process
___ In the action plans
__x_ To Set Priorities
___ Others _____

Briefly explain how you used the input given by stakeholders (3200 characters).

At PCC-CRE, many of the ideas given by stakeholders are relevant with the current or proposed activities on research and extension. Therefore, in several instances, suggestions from stakeholders were included to modify and strengthen proposals or activities in research and extension.

The collected input were used to help write research and extension proposals at CMI-CRE. They also helped the staff in designing and redesigning their lessons and programs.

COM-FSM-CRE used stakeholders input in making decisions on two vacant research positions, preparation for matching fund proposals, and to identify critical issues such as the effect of sea level rise and its effects on food supply on the atolls.

Key Stakeholder input items for CSREES Attention: What did you learn from your Stakeholders? (3200 characters)

At PCC-CRE, stakeholders in some cases were good sources of traditional knowledge, which can be used to improve the research and extension strategies employed.

At CMI-CRE, we learned that some of our stakeholders were knowledgeable and could be used as technical advisors in some of our projects. They provided good and useful information about the history of the islands that can be used for comparing traditional and modern methods as we conducted our research and extension projects.

At COM-FSM CRE, stakeholders provided most current information on climate change and the sea-level rise. They also expressed concerns about atoll agriculture and food security as it relates to climate change. People understand the effects of global warming, but do not know what they can do to help. The general public is not aware of the potential dangers in our water supply and in many cases do not associate diseases and health to water quality.

IV (A): Planned Program (Knowledge Area)?
Name of Planned Program: Aquaculture

1. Enter the program Knowledge Areas (up to 20) and a percentage for each (total of each column must equal either 100% or 0%).

KA Code	Knowledge Area	%1862 Extension	%1862 Research
135	Aquatic and Terrestrial Wildlife	13	3
136	Conservation of Biological Diversity	17	3
301	Reproductive Performance of Animals	12	37
302	Nutrient Utilization in Animals	5	0
307	Animal Management Systems	23	17
308	Improved Animal Products (Before Harvest)	13	23
315	Animal Welfare/Well-being and Protection	15	13
511	New and Improved Non-Food Products and Processes	2	3
Total		100	100

IV (B). Planned Program Inputs

1. Enter the actual amount of professional FTEs/SYs expended for this Planned Program.

	Extension		Research	
	1862	1890	1862	1890
Plan	**6.9**		**5.0**	
2007	2.75		1.25	

2. Enter Actual dollars Expended in this Planned Program during FY 2007 (includes Carryover Funds from previous years). The values must be whole number i.e. no commas or decimals are allowed.

	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
2007	$ 39448	0	$ 51450	0

	1862 Matching	1890 Matching	1862 Matching	1890 Matching
2007	0	0	0	0

	1862 All Other	1890 All Other	1862 All Other	1890 All Other
2007	0	0	0	0

IV. (C): Planned Program (Activity and Participation)

1. Brief description of Activity (What was done?): (3200 characters)

In Palau, the rabbit fish spawners maintained in a 6 - ton capacity circular tank started to spontaneously produced millions of eggs. A total of 2.5 million fertilized eggs were collected after two days of successive spawning. About 400,000 newly hatched larvae were stocked in a 10-ton capacity concrete tank for larval rearing. The larvae were fed mainly with rotifers on their onset of feeding at a density of 3 rotifers/ml. After 35 days, 5,700 fingerlings were distributed to clients who wanted to stock these rabbitfish fingerlings on their fishponds. Larval rearing runs were conducted to improve the survival rate, which has the initial density of rotifers increased to 5 individuals per ml. About 30,000 fingerlings have already been released to10 clam farm sites in Airai and Koror.

Preliminary attempt to stock freshwater shrimp for broodstock at the R&D station was hindered by gross water seepage encountered in the earthen grow-out pond. Due to pond's high elevation and porous sandy clay, the pond bottom was not able to hold supplied freshwater, making the pond empty after 1-2 days. Plastic lining used throughout the pond bottom was an option to improve the water holding capacity. Local sourcing for endemic giant freshwater prawn, in major freshwater bodies of Palau was another constraint in implementing this project. Sourcing for supplier of fingerlings is ongoing. Some other extension activities conducted included on-site technical support on natural food production and larval rearing of groupers, technical assistance in milkfish fry collection and pond management, transport and stocking of

hatchery-bred rabbit fish at clam farms, participation in international and local events by presenting posters and aquarium exhibit, and lectures to high school and elementary students.

Two research projects were implemented in the Marshall Islands: (1) Research and Extension Training in Black-Lip Pearl Oyster in the Atolls, which is a project that impacted on the black pearl industry. The project was successful in researching ways in which it could enhance the percentage of survival and growth-out of spat in farms by using more efficient rearing methods, reduction of fouling, predation, etc. The new settlement substrate feedback from the industry was good and need further refinement to increase efficiency. This information would be a great boon to the more refinement and success of the commercial black pearl oyster culture. The other research project was on the full or partial replacement of live algal feeds in the hatchery production of *Pinctada margaritifera* (*Linnaeu*s). A hatchery spawning was undertaken for the purpose of assessing the effect of live feed and algal paste on the hatchery rearing of the pearl oyster. Preliminary results showed that the larvae could be reared on the dead algal feeds. These findings had an immediate impact on the black pearl hatchery and farming industry where the farming is entirely based on hatchery produced spat and any way to reduce the cost of operation in the hatchery is a must to be competitive in the global market.

In FSM, USDA-Hatch funded pearl quality improvement research continued by assessing experimental results from the operations at Nett Point and follow-up harvest was conducted at Pakin Atoll. Hands-on training on hatchery, ocean nursery and pearl cultivation continued for the project's staff and the outer island communities under the USDOI/OIA funding. Technical advices on pearl farm maintenance were provided by the pearl project staff who began monitoring the hatchery-produced oysters at commercial pilot farms at three new sites with collaboration of the Pohnpei State Marine Development. A new research project was also implemented in July 2007, which was funded for two years by the CTSA titled "Improving Pearl Quality by Grafting Technologies and Husbandry Methods for a Hatchery-Based Black Pearl Industry Development in Pohnpei, Federated States of Micronesia". The pearl project also provided advices to Pakin Atoll community people on establishing the island's community association (NGO) as a decision making body of Pakin Atoll for preparation of its community-based commercial pearl farming and Marine Protected Areas (MPAs) development. From the project's demonstration pearl harvest, sample pearls and pearl shells were donated to local craftsmen and shops for making pearl accessories and pear-shell handicraft to encourage local business people and to increase local awareness of pearl industry development.

2. Brief description of the target audience. (3200 characters)

Target audience included the individuals who were engaged in aquaculture activities, their family members, and their technicians. Personnel of the BMR hatchery, as well as Ngatpang State Aquaculture Project have benefited from the technical assistance that was provided. College, secondary and elementary school students were taught about the importance of aquaculture and basic ideas on how to grow fish.

Other target audience included trainees, community members, students, local government and traditional leaders on the outer islands of Pohnpei and the Marshall Islands who are involved in the aquaculture projects, their traditional and local government leaders and the communities.

IV (D): Planned Program (Outputs).

1. Enter the actual number of persons (contacts) to be reached through direct and indirect methods. (Standard Extension Output).

Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contact Youth
Year	Target	Target	Target	Target
Plan	350	1000	150	1000
2007	347	250	226	250

2. Number of patents (Standard Research Output).
Patents Received

Year	Target
Plan	**0**
2007	**0**

If patents received, please list them here.

3. Publications (Standard General Output Measure).
Number of Peer Reviewed Publications.

	Extension	Research	Total
2007	**0**	**0**	**0**

IV (E): State Defined Output Measure
1. Output Target
Number of demonstration farms established.

Year	Target	Actual
2007	**6**	**13**

1. Output Target
Number of publications for lay use.

Year	Target	Actual
2007	**4**	**4**

1. Output Target
Number of conference paper and publication/presentation.

Year	Target	Actual
2007	**5**	**3**

1. Output Target
Expected Professional Journal publications.

Year	Target	Actual
2007	**3**	**0**

1. Output Target
Expected Gray Literatures.

Year	Target	Actual
2007	**6**	**0**

1. Output Target

Expected publications for lay use.

Year	Target	Actual
2007	5	3

IV (E): State Defined Outcome Measures

1. **Outcome Target: Increase awareness in the communities and prospective and existing industry about sustainable, site-specific, and low energy aquaculture technologies.**
2. **Outcome Type**

_x_ Change in Knowledge Outcome Measure
___ Change in Action Outcome Measure
___ Change in Condition Outcome Measure

Enter by Quantitative and/or Qualitative Method Below as appropriate.
Quantitative Outcome

Year	Quantitative Target (If appropriate)	Actual
2007	30	548

Qualitative Outcome or Impact Statement

Issue (Who cares and Why?): (500 Char Max)

As fish population dwindled, people in small island communities are becoming alarmed. They are beginning to see the importance of aquaculture as a way of promoting sustainable fish production to help with deteriorating health and decreasing food choices and the importance of fish for the enhancement of economic and social well being of Micronesians.

What has been done: (500 Char Max)

At PCC-CRE, poster and aquarium display of hatchery-produced rabbit fish fingerlings were shown at various local and international events and activities. A series of lectures about fish and aquaculture were conducted in different schools and students and the general public made on-site visits to the hatchery facilities. Site visits and technical assistance was provided in some aquaculture farms in Ngatpang and Ngechesar States. Their clam pens and fish cages were stocked with rabbit fish.

At CMI-CRE, six outer islands trainees attended an extensive training in hatchery and farming technology for pearl farming at the CMI-CRE hatchery. The trainees returned to their home islands and established pearl farms there. Oyster spats were provided to all 6 demonstration farms on these atolls and they were monitoring and measuring the growth rate of the spats for information to be provided to the researcher.

At COM-FSM CRE, pearl harvest and seeding work were demonstrated at the Pakin Atoll pearl farm in July – August 2007 for the community. The project's hatchery, ocean grow-out and pearl culture methods were filmed at Nett Point by the USDA Land Grant Video News team and by the Japanese filming team.

Results: (1000 Char Max)

At PCC-CRE, visitors were able to understand the early life history of rabbit fish and how to rear them from eggs to juveniles. Students gained knowledge about the basics of aquaculture and fish farm workers in Ngatpang and Ngechesar states learned how to identify and collect wild milkfish and tiger shrimp fry as well as the proper feeding and pond management. Existing clam farmers in Airai learned the importance of growing rabbit fish in their clam pens to control the growth of filamentous algae that usually damage their stock.

The trainees in the Marshall Islands have shown their interest in pearl farming and have been diligent in monitoring and collecting data. Everyone on those atolls felt a sense of ownership of the farms and had contributed a lot of their time to their maintenance.

In FSM, Pakin people from the groups of youths, women, church, school and fishermen participated to pearl harvest and seeding operation, which enhanced their awareness and practical planning toward implementing their community-owned pearl farming. Pakin Elementary School children were also invited to observe the farming operation as a part of school program. People in Pohnpei were able to watch the project's low tech methodologies and activities through the Islands Cable TV and tens of thousands of Japanese became aware of a new industry development work through BS Hi-vision TV program.

3. Associate KAs from the Planned Program. (Check all that apply).

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

IV (F): State Defined Outcome Measures

1. **Outcome Target - Adoption of sustainable aquaculture technologies by commercial and community groups.**
2. **Outcome Type**

___ Change in Knowledge Outcome Measure
__x_ Change in Action Outcome Measure
___ Change in Condition Outcome Measure

Enter by Quantitative and/or Qualitative Method Below as appropriate.

Quantitative Outcome

Year	Quantitative Target (If appropriate)	Actual
2007	**10**	**46**

Qualitative Outcome or Impact Statement

Issue (Who cares and Why?): (500 Char Max)

At PCC-CRE, aquaculture workers and operators were asking for hands-on technical advise on milkfish fry collection, needed help on proper pond management, seed production of economically important marine fin fishes in the hatchery, grow-out of rabbit fish and grouper in fish pens and fish cages.

At CMI-CRE, people in the six atolls are becoming more interested to learn about hatchery work and pearl farm management.

At COM-FSM-CRE, atoll communities of Pakin and Mwoakilloa expressed their eagerness toward establishing a community-based black pearl farm as a feasible economic development measure and requested direct involvement in the pearl project's demonstration work and implementing their own trial farming.

What has been done: (500 Char Max)

At PCC-CRE, on-site technical support in the natural food and seed production of grouper and rabbit fish was done at the hatchery. Hands-on technical assistance/demonstrations on how to collect milkfish fry from the wild and improved pond management was also done in Ngatpang and Ngchesar States. Rabbit fish were transported and stocked in ponds, clam pens and fish cages in Ngechesar, Airai and Koror States.

CMI-CRE aquaculture staff visited the six atolls where farms were established and held community meetings with the traditional and political leaders and community members to explain the status and progress of the pearl farms. The trainees on these atolls were given the opportunity to update community members of successes and problems encountered in the operation of those farms.

At COM-FSM-CRE, 3500 each of hatchery-produced adult oysters were transported to Mwoakilloa and Pakin for simulate a small-scale commercial farming. The project staff attended community meetings to instruct farm maintenance and to advice commercialization process. Six youths from Pakin and Mwoakilloa were included in the farming skill training at the project's Nett Point as apprentices, who learned grow-out farming protocols and later returned to their atolls to continue farm maintenance work by demonstrating to their own people.

Results: (1000 Char Max)

3. Associate KAs from the Planned Program. (Check all that apply).

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

IV (G): State Defined Outcome Measures

1. **Outcome Target: Number of established aquaculture operations.**
2. **Outcome Type**

___ Change in Knowledge Outcome Measure
___ Change in Action Outcome Measure
_x__ Change in Condition Outcome Measure

Enter by Quantitative and/or Qualitative Method Below as appropriate.

Quantitative Outcome

Year	Quantitative Target (If appropriate)	Actual

2007	**3**	**7**

Qualitative Outcome or Impact Statement

Issue (Who cares and Why?): (500 Char Max)
At PCC-CRE, owners of an existing fishpond in Ngechesar and clam farms in Airai were interested in stocking rabbit fish for grow-out.

At CMI-CRE, currently there is only one existing commercial pearl farm in the Marshall Islands. One of the objectives of setting up the farms in the different atolls was to raise awareness of the potential of establishing a black pearl industry and providing employment and income to indigenous people.

At COM-FSM-CRE, the project's two demonstration farms at Pakin Atoll are in a transition to community-based commercial farms. People became aware of self-sustainable activities inspired by the project's demonstrations of pearl production on-site Nett Point and Pakin Atoll. Other communities in Pohnpei and private sector requested the project's assistances and advices on forming associations such as community association (NGO) and/or pearl farmers association to by-pass a local government bureaucracy. As expectation became increasing, the project shifted its effort to a mass hatchery production methods and skill training in order to cope with demand by start-up commercial farms for seedable adult pearl oysters in a year or two.

What has been done: (500 Char Max)

At PCC-CRE, about 30,000 of hatchery-produced rabbit fish have been released in 5 separate grow-out facilities.

At CMI-CRE, proper fish handling and transport procedures were demonstrated to fish farmers. The Rongelap Atoll Government provided funds to CMI-CRE to assist them in becoming a full-scale black pearl commercial farm. Spats have been provided to them and the researcher has been working with the project manager and staff in providing technical assistant and monitoring of their existing farms.

COM-FSM-CRE, the project arranged and participated to several meetings with the Pakin community people to establish Pakin Community Association (NGO), which represents all walk of the community and acts as a decision making body of the community. The project developed a close collaboration with the Pohnpei State Marine Development to realize orderly and sustainable pearl industry development, which includes commercialization of pearl farming as an integral part of community improvement activities such as MPAs development and community-based fisheries management program. A trial restocking of hatchery-produced blacklip pearl oysters was conducted in the reef areas of Pakin Atoll to encourage community involvement.

Results: (1000 Char Max)

At PCC-CRE, fish farmers obtained their rabbit fish fingerling requirements. However, success in production was not significant because some of their fish stock had escaped and were infested by predatory birds. The major problem observed was the failure of fish farmers to conduct regular and thorough monitoring of their stocks as well as provision of feeds.

At CMI-CRE, no data collection and monitoring were done due to a problem with the small airplanes that service those atolls. However, the people on those atolls did maintenance work and monitoring of the farms.

At COM-FSM-CRE, Pakin community developed by-laws of its island council (NGO), which is to be registered in October 2007 under the Pohnpei State registration. A preliminary monitoring work of the restocked and farmed pearl oysters was commenced at Pakin and Mwoakilloa with participation of Pakin and Mwoakilloa communities. Approximately 2000 round pearls were harvested from quality experiments at Pakin farm and about1,000 half-pearls, or "Mabe" pearls. Half-pearl nuclei had been implanted in the previous year by two of the project staffs, who have been learning seeding skill from the project's hired seeding technician.

3. **Associate KAs from the Planned Program. (Check all that apply).**

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

IV (H): Planned Program (Evaluation)

1. **Evaluation studies Completed. (Check all that apply)**

___ After Only (post program)
___ Retrospective (post program)
_x_ Before-After (before and after program)
_x_ During (during program)
___ Time series (multiple points before and after program)
___ Case study
___ Comparisons between program participants (individual, group, organization) & non-participants
___ Comparison between different groups of individuals or program participants experiencing different levels of program intensity;
___ Comparison between locales where the program operates and sites without program intervention;
___ Other(s) _____

What are your Evaluation Results? (3200 characters)

There was success in seed production of rabbit fish in Palau and there was an increase in the number of individuals who developed an interest in aquaculture and who wish to invest in aquaculture activities. The establishment of practical feeds as well as local sources was done so that fish farmers could buy for their fish culture requirements.

In the RMI, people came to realize the potential economic benefits of establishing a pearl industry and the outer islands and atolls were the most suitable for pearl farming with their pristine lagoon water and clean environments.

In FSM, the project developed recommendations of 5-year pearl business plan for a community-based pearl farming with collaboration to the Pohnpei State Division of Marine

Development, which is an integral part of a Community-Based Fisheries Management Programs (CBFMP) in the State of Pohnpei. Pakin Atoll is considered to be the least advantaged outer island community and Mwoakilloa Atoll is one of the most advantaged. These two atolls are located to the west and the east off the Pohnpei, having uniquely different social infrastructure, language, religion, politics and traditional leadership, land ownership and other life styles. It has been a slow process to encourage the islands people for pearl farming but we share the same goal to improve the island's livelihoods from economically and environmentally sustainable activities. Now they are ready for launching commercial farming based on the project's technical advices. Because almost all the wild stock had been wiped out several decades ago, all the oysters have been produced successfully from the project's hatchery and ocean grow-out operation at Nett Point.

The pearl quality improvement experiments continue to provide a basis of pearl export business development in future. From the harvesting operation conducted in July, 2007 at Pakin Atoll farm, 84.2% survived from 260 seeded in August 2006 for the "flaw-reduction" experiments and 174 oysters (66.9% pearl success rate) produced pearls. In another experiments, 80.9% survived after re-seeding of 246 oysters with 67.9% pearl success rate. Among 1945 oysters seeded in 2005, 967 oysters produced pearls after two year cultivation. Pearl quality assessments for the flaw-reduction" experiments are ongoing for comparisons from previous results. High rates of survival and pearl success suggest that re-seeding (the second nucleus implantation) could be effective if a quality of product such as luster and shape is assured. The re-seeding has advantage over the first seeding operation to produce larger pearls in a shorter culture period. As given in the previous report, the shape of the second (or pearl from the re-seeding) tended to increase its roundness compared to the first (or pearl from virgin oyster). A preliminary assessment from the harvest of the flaw-reduction experiments in 2007 indicates a repeated results of circle-flaw reduction by the experimented re-seeding procedure, in some cases, the oysters produced circled pearls were able to produce non-circled or round pearls. The quality evauations could provide more details to develop economic and effective use of pearl seeding operations.

Key Items of the Evaluation(s) for CSREES Attention. (3200 characters)

The success in natural spawning of captive rabbit fish breeders triggered the development of practical methods in larval rearing. The embryonic and larval development of rabbit fish had been well documented and a better feeding protocol was established. After conducting a series of larval rearing trials, the larval production and survival rate were improved.
The evaluation of various extension activities was based on observations on the client's reactions immediately after conducting the program.

IV (I): Planned Program (Outcome)

1. External factors which affected outcomes. (Check all that apply)

___ Natural Disasters (drought, weather extremes, etc.)
___ Economy
___ Appropriation changes
___ Public Policy changes
___ Government regulations
_x_ Competing Public priorities

_x_ Competing Programmatic Challenges
___ Population changes (immigration, new cultural groupings, etc.)
___ Other

Brief explanation of external factors which affected the outcomes. (Opportunity to discuss Unmet Goals). (3200 characters).

Extreme weather in the forms of tropical storms and super typhoons are common phenomena in this part of the world, so they will have a major impact on the outcomes of aquaculture projects. In addition, public policy changes can affect implementation of programs as priorities change with new and different administrations.

Success in grow-out may be possible if fish farmers will open themselves to follow the design and management recommended by the extension agents. As to what have been noticed, some fish farmers have followed their own ideas despite recommendations that were provided to them. Also, fish farmers have to consider allocating capital for the feed requirement and other contingencies needed in their fish grow-out projects.

IV (A): Planned Program (Knowledge Area)?
Name of Planned Program: Small Island Agricultural Systems

1. Enter the program Knowledge Areas (up to 20) and a percentage for each (total of each column must equal either 100% or 0%).

KA Code	Knowledge Area	%1862 Extension	%1862 Research
102	Soil, Plant, Water, Nutrient Relationships	8	15
111	Conservation and Efficient Use of Water	5	2
112	Watershed Protection and Management	10	0
123	Management and Sustainability of Forest Resources	2	0
125	Agroforestry	5	0
133	Pollution Prevention and Mitigation	3	3
136	Conservation of Biological Diversity	3	5
202	Plant Genetic Resources	10	15
204	Plant Product Quality and Utility (Preharvest)	3	2
205	Plant Management Systems	13	20
212	Pathogens and Nematodes Affecting Plants	3	10
216	Integrated Pest Management Systems	15	15
315	Animal Welfare/Well-Being and Protection	5	0
601	Economics of Agricultural Production and Farm Management	15	13
	Total	100	100

IV (B). Planned Program Inputs

1. Enter the actual amount of professional FTEs/SYs expended for this Planned Program.

	Extension		Research	
	1862	**1890**	**1862**	**1890**
Plan	**19.8**		**7.0**	

2007	**2.47**		**6.25**	

2. Enter Actual dollars Expended in this Planned Program during FY 2007 (includes Carryover Funds from previous years). The values must be whole number i.e. no commas or decimals are allowed.

	Extension		Research	
	Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
2007	**$ 39448**	**0**	**$ 77177**	**0**

	1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
2007	**0**	**0**	**0**	**0**

	1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
2007	**0**	**0**	**0**	**$ 26664 - WSARE**

IV. (C): Planned Program (Activity and Participation)

1. Brief description of Activity (What was done?): (3200 characters)

The germplasm collection in Palau consisted of 22 varieties of sweet potato, 53 varieties of cassava and 98 varieties of taro, which were maintained at the R&D station by continuous replanting, weeding and fertilization. This served as the core collection of root crops and as sources of planting materials for farmers. There were 5,101 cultures maintained in the laboratory, 2,302 plantlets acclimatized in foam cups in the greenhouse, while 3999 plantlets were transferred in plastic bags. A total of 6795 tissue-cultured taro plants were distributed to farmers in different states of Palau and thirty varieties of taro were conserved in vitro in the laboratory. Research and demonstration farms were established in three farmer cooperators' land and at the R&D station to showcase appropriate banana production technologies. Some of the farms were planted with tissue cultured Lacatan bananas that have no manure and fertilizer (control), some with manure and fertilizer at planting time, some with manure and fertilizer application every two months, and manure application every 2 months. Data gathering, fertilizer application, weeding and removal of sick leaves were done every two months. Over a year, the plants that were applied fertilizer and manure every two months were significantly taller and more vigorous growing than those applied with manure only every two months and other two treatments, which showed the need for continuous nutrient management as an appropriate banana production technology. An alarming problem was the increase incidence of the disease caused by the fungus, *Marasmielus* sp., which affects the pseudostem. Four varieties of sweet potato consistently showed the absence of scab-infected leaves and shoots while the Hawaiian variety was susceptible to fungal infection. A collaborative project with the Northern Marianas College on Dry Litter Waste Management System in pigpens was undertaken with the use of coconut husk and wood chips as bedding materials, which conserves water and protects water and land from contamination with pig manure and urine.

Research in FSM included testing of different types of media formulation and preparation using various combinations of plant growth regulators with other components like organic and inorganic nutrients, vitamins and amino acids to develop suitable multiplication and

maintenance protocol for local and acquired germplasm. Inoculation, aseptic culture establishment and multiplication of different varieties of banana, sweet potato, and taro were done. Varieties of banana, sweet potato and taro were inoculated for micropropagation and conservation. An effort to remedy prevailing citrus canker prompted a literature search to identify the best available germplasm for rootstock and budwood. Initial communication has started with the University of California to procure virus-indexed rootstock and bud wood of lime. A nematode research project assessed the potential damage to plants by parasitic nematodes and since nematodes are a limiting factor in crop production, it is important to gather information thru surveys and collection of soil and root samples. Data on nematode density are necessary to elucidate whether a given type of nematode is causing any significant damage to crops. Periodic surveys were carried out on a wide spectrum of field grown and pot-grown plants to identify, record and document plant-parasitic nematodes and several parasitic species known elsewhere in the Pacific were documented.

Extension activities included farm visits and on-site demonstrations, community meetings and training workshops on acclimatization of tissue-cultured plantlets, soil-based issues in sustainable agricultural practices, noni production and marketing, paravet and Avian Influenza. Eradication measures continued for false kava and other alien invasive species. Work on the Avian Influenza included the eradication of an exotic parrot in Pohnpei. Collaboration continued with appropriate agencies to address agricultural production and marketing, pest and diseases, and degradation and degeneration of biodiversities.

In the Marshall, meetings between farmers, government agencies, and regional and international programs (Taiwan Technical Mission and SPC) were held to discuss community needs and strengthen partnership in addressing these needs. A task force was organized by the government as a rapid response team to address any outbreak in the bird flu and the agriculture extension agent was a member. The agent continued to provide appropriate information and demonstrated proper ways of managing home gardens and domestic livestock (pigs and chickens). Sweet potato was the focus of backyard gardening as it is easy to cultivate and has high nutrient value. A taste trial on 12 sweet potato varieties resulted in a number of varieties accepted by the local population. Educating students and teachers on water quality issues occurred at several elementary and high schools. Presentations on conserving water, treating drinking water, and water purification techniques were made at these schools.

2. Brief description of the target audience. (3200 characters)

At PCC-CRE, the main target audience were the root crop farmers, college, high school and elementary school children and faculty who visited the R&D station and viewed our exhibits during various civic events such as Earth Day, Vocational Education Week, Olechotel Belau Fair, World Food Day.

Information on control of pests of crops and improving crop production, use of tissue culture techniques and importance of root crops germplasm conservation, water quality education and dry litter waste management were disseminated to all our target audiences.

At CMI-CRE, the target audience included farmers, women, students, youths, community, church and traditional and political leaders and colleagues from international and governmental agencies, NGOs.

Farmers, producers and exporters of the state are target audiences. Internships are being provided to college agriculture students.

IV (D): Planned Program (Outputs).

1. Enter the actual number of persons (contacts) to be reached through direct and indirect methods. (Standard Extension Output).

Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contact Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	**600**	**3000**	**300**	**600**
2007	**1116**	**3700**	**500**	**1200**

2. Number of patents (Standard Research Output).

Patents Received

Year	Target
Plan	**0**
2007	**1**

If patents received, please list them here.

Esguerra, N.M. and Del Rosario, A.G. 2007. Economic Entomology in Micronesia. PCC. 214 pp.

3. Publications (Standard General Output Measure).

Number of Peer Reviewed Publications.

	Extension	Research	Total
2007	**0**	**0**	**0**

IV (E): State Defined Output Measure

1. Output Target

Expected Professional Journal Publications.

Year	Target	Actual
2007	**0**	**3**

1. Output Target

Expected Gray Literatures.

Year	Target	Actual
2007	**0**	**4**

1. Output Target

Expected publications for lay use.

Year	Target	Actual

2007	**0**	**6**

1. Output Target
Conference presentations.

Year	Target	Actual
2007	**0**	**20**

1. Output Target
Conference publication.

Year	Target	Actual
2007	**0**	**6**

1. Output Target
Number of publications for lay use.

Year	Target	Actual
2007	**0**	**8**

1. Output Target
Number of conference paper publication/presentations.

Year	Target	Actual
2007	**0**	**6**

1. Output Target
Number of demonstration farms established.

Year	Target	Actual
2007	**0**	**12**

IV (F): State Defined Outcome Measures

3. **Outcome Target - Number of persons with increased knowledge on appropriate production technologies.**
4. **Outcome Type**
   _x_ Change in Knowledge Outcome Measure
   ___ Change in Action Outcome Measure
   ___ Change in Condition Outcome Measure

Enter by Quantitative and/or Qualitative Method Below as appropriate.
Quantitative Outcome

Year	Quantitative Target (If appropriate)	Actual
2007	**2400**	**1900**

Qualitative Outcome or Impact Statement

Issue (Who cares and Why?): (500 Char Max)

School children, youth, farmers and officials from government agencies had increased knowledge and awareness on importance of conservation and preservation of different varieties of root crops in Palau, use of tissue culture technique as method for the rapid mass propagation of taro, control of pest of crops using IPM techniques with the aim of preserving environmental health. They also became aware of new ways to control animal waste that flows down to water sources and protects the environment and rainwater catchments maintenance.

The program educated and provided awareness to young and old, farmers and non-farmers, government and private businesses, health and environmental agencies in order to protect or preserve our plant genetic resources, and the pristine natural resources of the island. There is now continuous availability of information related to current technologies in agricultural science, promotion of clean water conservation, and prevention of animal waste and contaminants from polluting our water sources and environment. In addition, the Dry Litter Waste Management Project was adopted and constructed for demonstration to swine operation owners on Palau because the traditional swine operation uses lots of water to clean the pens that washes away the animal waste to the water sources and the environment. This project promotes water conservation and prevents animal waste contaminants to the environment and water sources.

At CMI-CRE, food security and water quality and quantity have always been important issues that needed to be addressed in the Marshall Islands. Extension staffs have worked hard as a team to find appropriate solutions through traditional methods and applied research to provide to their clients to use to improve their quality of live.

At COM-FSM-CRE, every household is affected by the incidence of non-communicable diet relate diseases directly or indirectly related to increased cost of health care, therefore, efforts to improve local food supplies affected all. There is a greater pressure on farmers to produce for family use or for the export market. Due to the costs of agriculture inputs from outside, some farmers have shown interest in adapting techniques and technologies that can be generated locally through extension and research advice. The economy has been severely affected by the increased cost of fuel, the cost of shipping food, feed and other commodities. Utility has become a major expense on the households, businesses, and governmental agencies.

What has been done: (500 Char Max)

At PCC-CRE, farmers, school children, government officials were briefed on programs dealing with conservation of plant genetic resources, integrated pest management, water quality education and dry litter waste management during their visits to the R&D Station and also during civic activities. Thus, they learned new developments and technologies in agricultural science.

The CMI-CRE agriculture staff conducted workshops, made presentations at meetings, and visited homes and established demonstration plots to showcase cultivation of certain food crops.

In the FSM, vegetable variety trials were conducted to identify preferred and adapted varieties. Collection of local and imported germplasm of banana, sweet potato and taro is continuing and different types of media formulation and preparation for tissue culture has been developed for multiplication of these varieties of crops. A survey was conducted to identify and document plant parasitic nematodes affecting crops in Micronesia.

Results: (1000 Char Max)

In Palau, school children, youth and farmers are now aware of new developments and current technologies in agricultural science. Students who have participated in the water quality

education campaign are now aware and knowledgeable with the water contaminants, water maintenance and the value of water sources to the islands. The students are more conscious about the contaminants that can be found in their drinking water. Government agencies that deal with regulating environmental issues including water are now referring clients to PCC-CRE for awareness and adoption of the Dry Litter Waste Management System and Rainwater Catchments system maintenance. Swine farmers who have visited the demonstrations showed interest to adopt the model and they want to tell their fellow farmers to adopt this model. Several farmers and school farms are also in the process of adopting the model for their piggeries.

At CMI-CRE, clients asked for information on gardening, composting, water testing and sanitization, and pest managements, so this information was provided via a weekly radio program. Through an established partnership with the Ministry of Resources & Development and the RMI Environmental Protection Authority, programs and resources have been shared to achieve our shared mission and goals.

At COM-FSM-CRE, thirty-four varieties of banana, twelve varieties of sweet potato and one variety of taro have been inoculated for micropropagation and conservation. More than 10,525 elite seedlings of different varieties of banana, taro and sweet potato were produced through micropropagation and nursery management system. Total 6,114 seedlings of different varieties of banana, taro and sweet potato were distributed to the interested farmers. Sow management techniques were developed and shared with swine farmers.

3. Associate KAs from the Planned Program. (Check all that apply).

	KA Code	Knowledge Area
x	102	Soil, Plant, Water, Nutrient Relationship
x	111	Conservation and Efficient Use of Water
	112	Watershed Protection and Management
x	133	Pollution Prevention and Mitigation
x	136	Conservation of Biological Diversity
x	202	Plant Genetic Resources
	204	Plant Product Quality and Utility (Preharvest)
x	205	Plant Management Systems
	212	Pathogens and Nematodes Affecting Plants
x	216	Integrated Pest Management Systems
x	315	Animal Welfare/Well-Being and Protection
x	601	Economics of Agricultural Production and Farm Management

IV (G): State Defined Outcome Measures

3. **Outcome Target - Number of program participants adopting recommended practices.**
4. **Outcome Type**
   - **___ Change in Knowledge Outcome Measure**
   - **_x_ Change in Action Outcome Measure**
   - **___ Change in Condition Outcome Measure**

Enter by Quantitative and/or Qualitative Method Below as appropriate.
Quantitative Outcome

Year	Quantitative Target (If appropriate)	Actual
2007	10	345

Qualitative Outcome or Impact Statement

Issue (Who cares and Why?): (500 Char Max)

At PCC-CRE, planting materials of root crops were distributed to farmers to increased their food production capacity and biological control agents were released in farms infested with insects that were affecting the growth and development of their crops. These activities hopefully would improve their productivity and yield in their farms. Ways to test, clean and decontaminate rainwater catchments are now available to the school children and the public. The dry litter waste management project has served as a model for swine farmers to promote water conservation and prevent environmental pollution.

At CMI-CRE, recent studies have stated that one of the leading causes of death for Micronesians is diabetes. Therefore, it is important that people begin eating and living healthy. Bacterial tests have indicated that 50% of the previous water tests indicated that the communities' collected rain water were not safe for drinking and cooking.

At COM-FSM-CRE, about 30 youths and adults have started establishing their farms and gardens, cultivating different varieties of banana, colocasia taro, sweet potato and noni.

What has been done: (500 Char Max)

At PCC-CRE, planting materials of root crops and biocontrol agents were given to farmers. School children were taught how to test, clean, and decontaminate their rainwater catchment's systems at home and in school. The dry litter waste management project also served as a showcase to farmers, school children and government officials on a very efficient way of preventing environmental pollution, conserving water resources and having a good source of compost material for crop production.

At CMI-CRE, planting materials and demonstrations on composting have been provided to interested farmers who have already identified space for their garden. Visits to homeowners and communities were made to explain to them about their test results and to provide demonstrations on how to clean their water catchments.

In the FSM, a market survey sponsored by Island Food Community of Pohnpei (IFCP) indicated an increase of sales of Vitamin A rich banana varieties. Extension staffs have been collaborating and working closely with the IFCP and other NGOs.

Results: (1000 Char Max)

At PCC-CRE, farmers now have the assurance that they can successfully grow crops every year thru tissue culture and micropropagation techniques.

At CMI-CRE, it was observed that farmers are maintaining their gardens and looking forward to harvesting time. Homeowners have followed the advice of extension agent and cleaned their

catchments and roof gutters from debris, which was the reason the water tested positive for coliforms. People are also beginning to boil their water rather than drinking it straight from the catchments.

The availability of Vitamin A-rich produce in the market is a good indication of program participants adopting recommended practices. All participating households in a targeted village on nutrition program started to use more local food including yellow-flesh banana and swamp taro varieties and vegetables.

3. Associate KAs from the Planned Program. (Check all that apply).

	KA Code	Knowledge Area
x	102	Soil, Plant, Water, Nutrient Relationship
x	111	Conservation and Efficient Use of Water
x	112	Watershed Protection and Management
x	133	Pollution Prevention and Mitigation
x	136	Conservation of Biological Diversity
x	202	Plant Genetic Resources
	204	Plant Product Quality and Utility (Preharvest)
x	205	Plant Management Systems
	212	Pathogens and Nematodes Affecting Plants
x	216	Integrated Pest Management Systems
x	315	Animal Welfare/Well-Being and Protection
x	601	Economics of Agricultural Production and Farm Management

IV (H): State Defined Outcome Measures

4. **Outcome Target - Number of established farms and farm related businesses by individuals and cooperatives.**
5. **Outcome Type**
   ___ Change in Knowledge Outcome Measure
   ___ Change in Action Outcome Measure
   _x_ Change in Condition Outcome Measure

Enter by Quantitative and/or Qualitative Method Below as appropriate.

Quantitative Outcome

Year	Quantitative Target (If appropriate)	Actual
2007	0	80

Qualitative Outcome or Impact Statement

Issue (Who cares and Why?): (500 Char Max)

At PCC-CRE, the demonstration farms showcased the importance of proper nutrient management and other cultural technologies for successful banana production as well as preventing environmental pollution, conserving water resources and having a good source of compost material for crop production. Farmers are always interested to learn new production technologies.

In the Marshall Islands, imported fruits and vegetables are very expensive. Land space is limited in the Marshall Islands. Trainings are provided to interested people who want to start a garden in their backyards.

In the FSM States, most people are farmers in their own rights and most people engaged in farming of staple food crops such as banana, breadfruit, taro, cassava and varieties of green leafy vegetables. Individuals and families formed farmers' cooperatives to sale their surpluses at the local and export markets.

COM-FSM-CRE, put your report here!

What has been done: (500 Char Max)

PCC-CRE

On farm trials have been established for staple food crop production, including new varieties of taro and banana that were imported and mass propagated by way of tissue culture. The distribution of planting materials continued to be made to farmers in the communities. Other demonstrations were established for the dry litter waste management and pig feed projects. And backyard gardens for the imported sweet potato varieties continued in many of the low-lying coral atolls for food security purposes with the assistance of agriculture staff.

COM-FSM-CRE

Results: (1000 Char Max)

There is a decreasing dependent of imported food products as farmers, students and government and private sector officials established new farms and started relying on their own produce. Several new farmers markets have sprung up and farmers now have found places where they can sale their surplus produces.

3. Associate KAs from the Planned Program. (Check all that apply).

	KA Code	Knowledge Area
x	102	Soil, Plant, Water, Nutrient Relationship
x	111	Conservation and Efficient Use of Water
x	112	Watershed Protection and Management
x	133	Pollution Prevention and Mitigation
	136	Conservation of Biological Diversity
x	202	Plant Genetic Resources
	204	Plant Product Quality and Utility (Preharvest)
x	205	Plant Management Systems
	212	Pathogens and Nematodes Affecting Plants
x	216	Integrated Pest Management Systems
	315	Animal Welfare/Well-Being and Protection
x	601	Economics of Agricultural Production and Farm Management

IV (I): Planned Program (Evaluation)

1. Evaluation studies Completed. (Check all that apply)

___ After Only (post program)
___ Retrospective (post program)
_x_ Before-After (before and after program)
_x_ During (during program)
___ Time series (multiple points before and after program)
___ Case study
___ Comparisons between program participants (individual, group, organization) & non-participants
___ Comparison between different groups of individuals or program participants experiencing different levels of program intensity;
___ Comparison between locales where the program operates and sites without program intervention;
___ Other(s) _____

What are your Evaluation Results? (3200 characters)

The increased areas for crop production are due to the availability of planting materials and the reduced incidences of pests are due to the availability of biological control agents. There was also an increased understanding of IPM techniques and the improved growth rate of crops is due to adopted practices of continuous fertilization. An increase understanding of the dry litter waste management system has conserved water and prevents animal waste and contaminants from polluting water sources and the environment.

Key Items of the Evaluation(s) for CSREES Attention. (3200 characters)

Through the tissue culture technology, farmers are assured of continuous supply of planting materials that are disease-free and as a result of the dry litter waste management system, animal waste and other contaminants were prevented from polluting water sources and the environment.

IV (J): Planned Program (Outcome)

1. External factors which affected outcomes. (Check all that apply)

_x__ Natural Disasters (drought, weather extremes, etc.)
___ Economy
___ Appropriation changes
___ Public Policy changes
___ Government regulations
_x_ Competing Public priorities
_x_ Competing Programmatic Challenges
___ Population changes (immigration, new cultural groupings, etc.)
___ Other

Brief explanation of external factors which affected the outcomes. (Opportunity to discuss Unmet Goals). (3200 characters).

The administration of PCC has repeatedly refused to implement an important Western SARE approved component of the banana project, which has adversely affected the outcome of the

project and the agency responsible for providing the biocontrol agent has difficulty rearing the good insect thus causing a much delayed implementation of the project.

At CMI-CRE, results indicated that people would like to continue working on their gardens and that they have learned a lot from the trainings they attended. During the El Nino drought, clients mentioned that they boiled their drinking water instead of drinking straight from the catchments. They clean out their roof gutters that connect directly to their catchments at least once a month.

At the COM-FSM-CRE, high increase in fuel prices has negatively impacted delivery of programs and increased the cost of farm inputs. On the other hand, there has been a positive effect as demand for local produce increased tremendously.

IV (A): Planned Program (Knowledge Area)?
Name of Planned Program: Families, Youths & Communities

1. Enter the program Knowledge Areas (up to 20) and a percentage for each (total of each column must equal either 100% or 0%).

	KA Code	Knowledge Area	%1862 Extension	%1862 Research
	608	Community Resource Planning & Development	3	0
	801	Individual and Family Resource Management	10	0
	802	Human Development and Family Well-being	17	0
	804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	0	0
	806	Youth Development	70	0
		Total	100	100

IV (B). Planned Program Inputs

1. Enter the actual amount of professional FTEs/SYs expended for this Planned Program.

	Extension		Research	
	1862	1890	1862	1890
Plan	12.4		0.0	
2007	1.0			

2. Enter Actual dollars Expended in this Planned Program during FY 2007 (includes Carryover Funds from previous years). The values must be whole number i.e. no commas or decimals are allowed.

	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
2007	$ 26298	0	0	0

	1862 Matching	1890 Matching	1862 Matching	1890 Matching
2007	0	0	0	0

	1862 All Other	1890 All Other	1862 All Other	1890 All Other

2007	**0**	**0**	**0**	**0**

IV. (C): Planned Program (Activity and Participation)

1. Brief description of Activity (What was done?): (3200 characters)

At PCC-CRE, the after-school science program was conducted to 11 10th graders at an all-boys high school twice a week for a month. The boys learned the importance of Palau's natural resources such as water, land, mangroves, forest and marine plants and animals. They also learned the importance of aquaculture and agriculture to people's life and how to conserve Palau's precious natural resources. The students were involved in hands-on activities, took field trips, and discussed topics and issues pertaining to marine lives and the environment. The Upward Bound Program math and science students and Koror State Boy Scouts visited the R&D Station where they were exposed to various programs on biodiversity, aquaculture and fish biology, invasive species, insects, tissue culture, and water quality. In addition to the lab activities, the students had field trips to the sites where the actual activities are implemented. They learned important information from the tours. A half-day nature's walk to the waterfall with about forty boy scouts members was provided and the boys had shown their appreciation of Palau's forest, rivers, streams and waterfalls. The nature walk was part of the program that promotes environmental and marine science programs. Upward Bound students participated in a half-day invasive weed (Mile-a Minute weed) clean up at college's old taro patch. They were shown different methods of killing or eradicating invasive weeds from spreading and killing food crops.

At CMI-CRE, a new 4-H extension agent was hired and she started working with at-risk students from the fourth, fifth and sixth grades of two public elementary schools and provided lectures on health and social issues. She also visited a neighboring atoll and visited two public elementary schools there to work with students in the lower grades and worked with a church youth group and shared the process of preparing and preserving breadfruit into a traditional dish called Bwiro. Preparing Bwiro is a long and tedious process, therefore the art of making it no longer appeals to the younger generations. The objective of this project was to introduce to the youth the process so that they can learn and be able to prepare it themselves for their families and for social gatherings. Implementing the CYFAR project is one of the responsibilities of the 4-H/Youth Extension Agent. She had met with NGOs and appropriate governmental agencies on the CYFAR project.

At COM-FSM-CRE, different hands-on training workshops were conducted to homemakers and women groups in the communities on new knowledge and skills on food processing techniques and in sewing and embroidery to enable family clothing production and small scale entrepreneurship to produce new and improved products for family use and for income. Entrepreneurial development training and business skills was provided to handicraft artisans and community groups.

2. Brief description of the target audience. (3200 characters)

Target audience included students in elementary, high school and college; some of whom are members of boys scout clubs and students with the Upward Bound Program. Other target audiences were young mothers and other family members, traditional and elected officials, church leaders, and staff from governmental and non-governmental organizations.

IV (D): Planned Program (Outputs).

1. Enter the actual number of persons (contacts) to be reached through direct and indirect methods. (Standard Extension Output).

Year	Direct Contacts Adults Target	Indirect Contacts Adults Target	Direct Contacts Youth Target	Indirect Contact Youth Target
Plan	900	2700	1200	3600
2007	450	2000	500	3000

2. Number of patents (Standard Research Output).

Patents Received

Year	Target
Plan	0
2007	

If patents received, please list them here.

3. Publications (Standard General Output Measure).

Number of Peer Reviewed Publications.

	Extension	Research	Total
2007			

IV (E): State Defined Output Measure

1. Output Target

Number of training conducted targeting youths.

Year	Target	Actual
2007	12	9

1. Output Target

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

Year	Target	Actual
2007	6	4

1. Output Target

Total number of youth clubs organized.

Year	Target	Actual
2007	3	2

IV (F): State Defined Outcome Measures

5. **Outcome Target - Number of youth with increased awareness and understanding of roles and relationship with parents.**
6. **Outcome Type**
   _x_ Change in Knowledge Outcome Measure
   ___ Change in Action Outcome Measure

___ Change in Condition Outcome Measure

Enter by Quantitative and/or Qualitative Method Below as appropriate.

Quantitative Outcome

Year	Quantitative Target (If appropriate)	Actual
2007	900	415

Qualitative Outcome or Impact Statement

Issue (Who cares and Why?): (500 Char Max)

Youths and their families gained knowledge and awareness of science and marine's science impacts to the island. Relationship between families and youths were strengthened through established working relationship and increased respect and trust for each other.

At PCC-CRE, programs strived to reach the goal of promoting the science programs to students who were struggling with science or who have wrong impressions of science. Most of the teachers in science courses are foreigners and that shows that few native Palauans have science background from college. In that case, the program is trying to change the mentality of the students about science so the activities that are conducted is educating the students more on science that are relevant to the island ecosystem

Youths and their families gained knowledge and awareness of science and marine's science impacts to the island. Relationship between families and youths were strengthen through established close working relationship and increased respect and trust for each other.

At CMI-CRE, a lot of young children were raised by their grandparents and they do not have a strong relationship with their parents. Youth programs emphasized appropriate behaviors and socials values of respecting elders and cooperation with other community members.

In the FSM, exposure to the western culture and lifestyle, rapid increased in the population, demand for material goods, increasing costs and decreasing purchasing value of the dollar, unemployment, and peer pressure are factors associated with break down in the family structure and erosion of the traditional values. Young people nowadays do not care much for their island culture, family values, and society as a whole. They cursed and they trashed everywhere and they sabotaged public properties. In other cases, they steal things to exchange for money and other materialistic needs, including harvesting of agricultural produce.

What has been done: (500 Char Max)

Students who participated in the programs have been evaluated and the results showed that the students did learn from the programs and activities that were offered to them. The students did share the information to their friends because when they were recruited, they were already familiar with the program. Students show that they do know what's happening in the environment because they can answer the questions concerning the environment and marine science. After school programs were provided where students learn personal values, local customs and culture, and family responsibilities.

Other programs offered to youths to promote a sense of personal responsibility and community involvement were gardening, sports activities, creative art and craft, and community beautification. There were also youth club activities on leadership and volunteer development. Basic, intermediate and advanced sewing were provided to students and young mothers as way of earning an income and provide for family clothing needs.

Results: (1000 Char Max)

Students are now more involved with community clean up, recycling practices and some of them started participating in environmental issues contests and debates. Students are even sharing the information to their younger or older siblings and even their parents. Evidence of the programs shows that the students, who are now extending their education to college level are increasing in the science field. Schools are also starting their after school science programs at their site to motivate the students to like science because that students from that particular school have participated in the program. Students now are becoming more aware of the ill effects of littering and trashing the environment.

3. Associate KAs from the Planned Program. (Check all that apply).

	KA Code	Knowledge Area
	608	Community Resource Planning & Development
	801	Individual and Family Resource Management
x	802	Human Development and Family Well-being
	804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
x	806	Youth Development

IV (G): State Defined Outcome Measures

5. **Outcome Target - Number of families adopting interpersonal skills to improve quality of life and harmony in the family.**
6. **Outcome Type**
   ___ Change in Knowledge Outcome Measure
   __x_ Change in Action Outcome Measure
   ___ Change in Condition Outcome Measure

Enter by Quantitative and/or Qualitative Method Below as appropriate.
Quantitative Outcome

Year	Quantitative Target (If appropriate)	Actual
2007	300	626

Qualitative Outcome or Impact Statement

Issue (Who cares and Why?): (500 Char Max)
In this day and age, there is a decrease appreciation of the traditional customs and culture by youths as they adopted the Western lifestyles. This has led to decrease in respect for the parents and elders in the communities.

What has been done: (500 Char Max)
After school programs have been conducted where resource persons from collaborating agencies worked with youth leaders in providing information to youths on personal and family values.

Results: (1000 Char Max)
Two hundred thirty-nine youths participated in this year's program. During the evaluation, it was observed that their level of awareness on the various issues increased after participating in the 4-H after school program. Also they were observed to be more responsible in school, in their homes and in church.

3. Associate KAs from the Planned Program. (Check all that apply).

	KA Code	Knowledge Area
	608	Community Resource Planning & Development
	801	Individual and Family Resource Management
x	802	Human Development and Family Well-being
	804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
x	806	Youth Development

IV (H): State Defined Outcome Measures

2. **Outcome Target - Total number of families and youths benefiting from the use of learned skills.**
3. **Outcome Type**
   - **___ Change in Knowledge Outcome Measure**
   - **___ Change in Action Outcome Measure**
   - **_x_ Change in Condition Outcome Measure**

Enter by Quantitative and/or Qualitative Method Below as appropriate.
Quantitative Outcome

Year	Quantitative Target (If appropriate)	Actual
2007	300	288

Qualitative Outcome or Impact Statement

Issue (Who cares and Why?): (500 Char Max)
What has been done: (500 Char Max)
Results: (1000 Char Max)

3. Associate KAs from the Planned Program. (Check all that apply).

	KA Code	Knowledge Area
	608	Community Resource Planning & Development
	801	Individual and Family Resource Management
x	802	Human Development and Family Well-being
	804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
x	806	Youth Development

IV (I): Planned Program (Outcome)

1. External factors which affected outcomes. (Check all that apply)

_x_ Natural Disasters (drought, weather extremes, etc.)
___ Economy
_x_ Appropriation changes
___ Public Policy changes
___ Government regulations
_x_ Competing Public priorities
_x_ Competing Programmatic Challenges
_x_ Population changes (immigration, new cultural groupings, etc.)
___ Other

Brief explanation of external factors which affected the outcomes. (Opportunity to discuss Unmet Goals)

PCC-CRE and COM-FSM-CRE do not have reports here.

The only factor that affected the outcome of the project is the lack of transportation. The only local airplane for the country was grounded for several months due to mechanical problems. However, several schools and churches were targeted last year.

IV (J): Planned Program (Evaluation)

2. Evaluation studies Completed. (Check all that apply)

___ After Only (post program)
___ Retrospective (post program)
_x_ Before-After (before and after program)
___ During (during program)
___ Time series (multiple points before and after program)
___ Case study
_x_ Comparisons between program participants (individual, group, organization) & non-participants
_x_ Comparison between different groups of individuals or program participants experiencing different levels of program intensity;
_x_ Comparison between locales where the program operates and sites without program intervention;
___ Other(s) _____

What are your Evaluation Results? (3200 characters)

More students are now involved with community clean up and more students got into science as their field of specialization.

It was observed that the participants' awareness has increased. The students who were tested after the program ended had passing grades. Some of the parents of the youths in the Bwiro training mentioned that their kids have now acquired the taste for Bwiro, which did not happen before their participation in the training.

Key Items of the Evaluation(s) for CSREES Attention. (3200 characters)

Youth and students make more than 50% of the population of the Marshall Islands. More programs are planned for next year and hopefully to hire another person to help the extension agent.

IV (A): Planned Program (Knowledge Area)?
Name of Planned Program: Food, Nutrition & Health

1. Enter the program Knowledge Areas (up to 20) and a percentage for each (total of each column must equal either 100% or 0%).

KA Code	Knowledge Area	%1862 Extension	%1862 Research
501	New and Improved Food Processing Technologies	5	25
502	New and Improved Food Products	5	25
701	Nutrient Composition of Food	12	10
702	Requirements and Function of Nutrient and Other Components	15	0
703	Nutrition Education and Behavior	12	10
711	Ensure Food Products Free of Harmful Chemicals, including, Residues from Agricultural and Other Source	17	10
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxin	10	10
724	Healthy Lifestyle	25	10
	Total	100	100

IV (B). Planned Program Inputs

1. Enter the actual amount of professional FTEs/SYs expended for this Planned Program.

	Extension		Research	
	1862	1890	1862	1890
Plan	10.0		0.0	
2007	1.25		0.75	

2. Enter Actual dollars Expended in this Planned Program during FY 2007 (includes Carryover Funds from previous years). The values must be whole number i.e. no commas or decimals are allowed.

	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
2007	$ 26298	0	$ 51450	0

	1862 Matching	1890 Matching	1862 Matching	1890 Matching
2007	0	0	0	0

	1862 All Other	1890 All Other	1862 All Other	1890 All Other
2007	0	0	0	$ 12939 - EFNEP

IV. (C): Planned Program (Activity and Participation)

1. **Brief description of Activity (What was done?): (3200 characters)**

At PCC-CRE, two research projects were implemented; one on processing of root crops and the other on product development for food security. Seventy processed food products were developed utilizing root crops (taro, cassava and sweet potato comprising 34 dried, 5 frozen, 8 baked, 6 fermented and 17 cooked food products). Likewise, 21 processed foods were developed utilizing fish, banana and coconut as raw materials. All 91 food products have been undergoing storage studies using suitable packaging materials at different storage conditions such as ambient, dry, freezing, and refrigeration temperatures. Extension work was likewise conducted by holding three food technology classes, and conducting taste tests of food products serving 1023 clients, 560 of them were adults and 454 youths.

One Adult EFNEP training program was conducted for parents of Head Start students, three Youth EFNEP programs to students at two high schools and one Youth EFNEP program was conducted for the Koror State Boy Scout members. Topics taught in these training programs included choosing healthy foods using the five food groups and the new "My Pyramid", menu planning, reading food labels, home food safety, which included safe food handling and storing, personal hygiene and safety tips in the kitchen, healthy foods on limited budget, and preparation and cooking of selected healthy recipes to enable participants to put into practice the knowledge and healthy eating skills learned.

At CMI-CRE, the EFNEP staff conducted three training workshops where a total of 80 men and women participated. A total of 12 lessons and 6 recipes were presented and reinforced with cooking demonstrations of the recipes. The EFNEP staff also made presentations on nutrition and food safety at local events and continued to collect local recipes as required for her projects with the ADAP Healthy Living in the Pacific Islands (HLPI) project.

At COM-FSM-CRE, the 12 EFNEP lessons on nutrition and cooking demonstrations were the methods used for dissemination of information on food, nutrition, and human health. A range of topics presented during EFNEP training included the 3 general food groups, nutrient sources and values, functions and symptoms of protein, starch, vitamins and minerals, balanced diets, food safety, and non-communicable food related conditions such as diabetes and hypertension. In addition, all extension sites were actively collaborating with government agencies to present nutrition and health related information at hospitals, schools and at public fairs and community meetings. Agents in Pohnpei have supported the Island Food Community of Pohnpei with great success in food use surveys, nutrient analysis of Vitamin A rich local foods and food preservation through both traditional and introduced methods. Collaboration with Island Food Community of Pohnpei (IFCP) has been recognized in international publications and presentations. Group activities included healthy recipe development and practice of healthier food preparation techniques aimed at reducing NCDs and to encourage healthier lifestyles.

The 2007 Go Local campaign was spearheaded by IFCP and the collaborating agencies with the display of local foods, cooking demonstrations and posters on healthy eating, healthy

lifestyle and promoted the use of local foods during the World Food Day. Agents at all sites participated in Food Handler/Food Safety training programs for hotel, restaurant, hospital, school and other public institution food handlers. Home gardening training is included in this program area as support to dietary improvement in the home.

2. Brief description of the target audience. (3200 characters)

Target audience were participants who attended the 3-food technology training programs in Palau. The profile of the participants included a wide spectrum of groups like women in the food business, hotel/restaurant managers, employees, teachers, homemakers, farmers, and entrepreneurs. The target audience for food products include tourists, men, women, children, youth, students, parents, civic groups, church groups, micro-enterprise owners and the general public interested in food processing.

In the Marshall Islands and the FSM States, both the adult and youth EFNEP programs targeted families and individuals with limited income, young mothers with young children, individuals with little school background, food handlers, women's groups, individuals with special needs, pregnant and at-risk mothers.

IV (D): Planned Program (Outputs).

1. Enter the actual number of persons (contacts) to be reached through direct and indirect methods. (Standard Extension Output).

Direct Contacts Adults Indirect Contacts Adults Direct Contacts Youth Indirect Contact Youth

Year	Target	Target	Target	Target
Plan	600	3000	300	1500
2007	1813	5710	1658	1910

2. Number of patents (Standard Research Output).
Patents Received

Year	Target
Plan	0
2007	

If patents received, please list them here.

3. Publications (Standard General Output Measure).
Number of Peer Reviewed Publications.

	Extension	Research	Total
2007			

IV (E): State Defined Output Measure
1. Output Target
Number of community workshops conducted.

Year	Target	Actual
2007	12	9

1. Output Target

Number of coalitions strengthens.

Year	Target	Actual
2007	6	8

1. Output Target

Number of intervention conducted to individuals or small groups.

Year	Target	Actual
2007	134	268

IV (F): State Defined Outcome Measures

7. **Outcome Target - Number of program participants who increase awareness of nutrition related health issues.**
8. **Outcome Type**

_x_ Change in Knowledge Outcome Measure
___ Change in Action Outcome Measure
___ Change in Condition Outcome Measure

Enter by Quantitative and/or Qualitative Method Below as appropriate.

Quantitative Outcome

Year	Quantitative Target (If appropriate)	Actual
2007	900	956

Qualitative Outcome or Impact Statement

Issue (Who cares and Why?): (500 Char Max)

With people's diet too high in sugars, sodium and saturated fats and very low in fruits and vegetables, the rate of non-communicable disease is escalating everywhere. If this trend continues, the end results is that there will be more cases of cardiovascular diseases, obesity, hypertension and significant disability from these chronic diseases. Another problem was food poisoning or food-borne illnesses. Most of the food consumed in parties, traditional ceremonies, family and public gatherings, including funerals and important events were prepared and packed hours before they were actually served without proper storage.

Participants of food technology classes had gained knowledge about processing food products from local resources. Food products taste test evaluators such as tourists, men, women, children, youth, food business entrepreneurs, hotel and restaurant managers, students, teachers, parents, employees, farmers, local leaders, women's groups, student associations, church groups and the general public have increased their knowledge and awareness of these different processed foods that could be prepared from root crops, fish, banana, and coconut. The participants in the formal trainings and food evaluators became aware of new food products that have potential contributions in food security and business development.

What has been done: (500 Char Max)

A three-week (two hours per day) food technology-training course offered to the public as outreach services of PCC-CRE was conducted in three States. 44 participants attended these. Taste tests of food products were conducted during visits of different groups to the

R&D Station, Vocational Education Week, Earth Day Celebration, and Olechotel Belau Fair.

Programs on Adult and Youth EFNEP continued to be conducted by EFNEP staffs throughout the islands to women groups and school children to educate them on healthy eating, healthy diet utilizing local food, and proper food handling and storage.

Other training programs were on proper food handling and storage. Through the ADAP HLPI project, health and nutrition staff continued to provide food safety, nutrition, and health education programs to youths and families throughout the islands in Micronesia.

Results: (1000 Char Max)

Results showed that participants in formal Food Technology Training Course have learned how to process about 50 products from local resources like root crops, fish, banana and coconut. Food product evaluators of different age groups, genders and affiliations increased their awareness on the utilization of local crops into value-added processed food products.

According to CRS5 Behavior Checklist Summary Report, 27% or 15 of 56 adult participants showed improvement in planning meals, making healthy food choices, preparing foods without adding salt, reading nutrition labels and having children eat breakfast. For youth, 91% of 68 increased their ability to select nutritious foods.

3. Associate KAs from the Planned Program. (Check all that apply).

	KA Code	Knowledge Area
X	501	New and Improved Food Processing Technologies
X	502	New and Improved Food Products
X	701	Nutrient Composition of Food
X	702	Requirements and Function of Nutrients and Other Food Components
X	703	Nutrition Education and Behavior
X	711	Ensure Food Products Free of Harmful Chemicals, including Residues from Agricultural and Other Sources
X	712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxin
X	724	Healthy Lifestyle

IV (G): State Defined Outcome Measures

7. **Outcome Target - Number of program participants adopting recommended practices after completing educational programs.**
8. **Outcome Type**
   - **___ Change in Knowledge Outcome Measure**
   - **_x_ Change in Action Outcome Measure**
   - **___ Change in Condition Outcome Measure**

Enter by Quantitative and/or Qualitative Method Below as appropriate.
Quantitative Outcome

Year	Quantitative Target (If appropriate)	Actual
2007	600	593

Qualitative Outcome or Impact Statement
Issue (Who cares and Why?): (500 Char Max)

People who had hands on practice in the processing of food products as well as those who have evaluated the food items by taste tests, demonstrated interest in increasing their productivity in food provision, as well as opening their minds to go into food businesses, having been armed with acquired skills and product ideas for sale.

It has always been difficult to reverse the change in attitudes toward fast and imported processed food, which has become a habit to so many people in the islands. There is a huge change in the preference of imported processed food over local food, which has contributed to an increase in NCDs and the escalating cost of health care.

What has been done: (500 Char Max)

The participants of the three Food Technology Classes practiced what they have learned by providing their families with novel foods from abundant local resources like root crops, fish and fruits. Some participants prepared selected foods for custom practices. Those who have tasted the food products during civic events signified their interest to learn more about these local products.

After taking the Food Technology Classes, follow up encounters with participants was conducted through personal visits and telephone conversations. Linking the processors with prospective buyers was also explored.

Introduction of new recipes using local food products and demonstrating these new recipes were part of extension education programs on healthy living and healthy diet. These programs are important to the health of people in small island communities whose diets have been influenced by fast food with low nutrition content.

Results: (1000 Char Max)

As a result of the follow up activities, two participants working at the PCC Cafeteria started preparing some of the food products that they have learned from the class. These processed foods were served to the students and those who take their meals at the Cafeteria. A storeowner prepared foods for sale. One participant prepared tapioca pancake mix and served them to 50 LEEP students during a 4-week camping activity. Eight other participants prepared some of the foods for traditional events such as funerals and birth ceremony.

People have come to appreciate the value added products from their staple food crops as a result of their gained knowledge in processing them.

3. Associate KAs from the Planned Program. (Check all that apply).

	KA Code	Knowledge Area
X	501	New and Improved Food Processing Technologies

X	**502**	**New and Improved Food Products**
X	**701**	**Nutrient Composition of Food**
X	**702**	**Requirements and Function of Nutrients and Other Food Components**
X	**703**	**Nutrition Education and Behavior**
X	**711**	**Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources**
X	**712**	**Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxin**
X	**724**	**Healthy Lifestyle**

IV (H): State Defined Outcome Measures

4. **Outcome Target – Annually increase the number of healthy food snacks or lunch programs in schools and communities.**
5. **Outcome Type**
   ___ Change in Knowledge Outcome Measure
   ___ Change in Action Outcome Measure
   _x_ Change in Condition Outcome Measure

Enter by Quantitative and/or Qualitative Method Below as appropriate.

Quantitative Outcome

Year	Quantitative Target (If appropriate)	Actual
2007	**6**	**11**

Qualitative Outcome or Impact Statement

Issue (Who cares and Why?): (500 Char Max)

The processing of local foods gives support to the local tourism industry, the lifeblood of the economy, by providing foods for tourists for them to consume and patronize. This activity also addresses the problem of low agricultural productivity and large food importation in Palau. Production and utilization of local foods will result in self-sufficiency and food security.

Large food importation in the islands is currently decreasing the Gross Domestic Product (GDP) from the agriculture sector. Processing of local food resources is made available as outreach services attempt to entice and train women and entrepreneurs to go into food business enterprise. The development of business enterprises has chain reaction and synergistic effects in helping people meet the needs of tourists and locals for good quality food items, creating job opportunities, increasing tax revenues, reducing food imports, and ensuring food security, which ultimately redound to improved quality of life of the people.

What has been done: (500 Char Max)

In order to keep track of the teaching activities conducted among the participants, changes in condition outcome measures was investigated. List of participants and food products learned from the courses that are being marketed were determined.

Results: (1000 Char Max)

One participant has successfully embarked on the commercialization of Taro Sub Sandwich. Another continued to prepare taro wine and selling the product. Tapioca steamed cakes were sold at the Bethlehem market during payday weeks. A participant sold tapioca cookies and cakes during civic events like Tourism Week. One participant is producing tapioca starch for sale at grocery stores. A manager of a big hotel indicated interest in serving local foods to their guests after they tasted the food products that were taught to the participants of the Food Technology Course.

Different recipes of local food content are now being accepted by an increasing number of people in the communities. Varieties of banana and taro that have a high nutrient and Vitamin A content and easy to cultivate have been widely accepted for their taste, which is contributing to a healthy and well-nourished population.

3. Associate KAs from the Planned Program. (Check all that apply).

	KA Code	Knowledge Area
X	501	New and Improved Food Processing Technologies
X	502	New and Improved Food Products
X	701	Nutrient Composition of Food
X	702	Requirements and Function of Nutrients and Other Food Components
X	703	Nutrition Education and Behavior
X	711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
X	712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxin
X	724	Healthy Lifestyle

IV (I): Planned Program (Outcome)

1. External factors which affected outcomes. (Check all that apply)

_x_ Natural Disasters (drought, weather extremes, etc.)
_x_ Economy
_x_ Appropriation changes
_x_ Public Policy changes
_x_ Government regulations
_x_ Competing Public priorities
_x_ Competing Programmatic Challenges
___ Population changes (immigration, new cultural groupings, etc.)
_x_ Other

Brief explanation of external factors which affected the outcomes. (Opportunity to discuss Unmet Goals)

Strict government regulations and expensive permits to obtain licenses to operate small businesses hampered entrepreneurs who would like to go into the food business right away.

The actual number of targeted clients was not met due to holidays such as Thanksgiving, Christmas and New Year, state legislators campaigns, funerals, traditional customs, public priorities such as Constitutional Day and Independence Day that involved all 16 states of Palau. Most people were occupied in preparation for exhibitions, dances, chants, arts and crafts, debates and many other things. It's very difficult to get more than 10 women together in one place for a day or a week even just for one hour. Agents are having a hard time recruiting clients and especially this year with general election coming up in November 2008.

IV (J). Planned Program (Evaluation)

1. Evaluation studies Completed. (Check all that apply)

_x_ After Only (post program)
___ Retrospective (post program)
_x_ Before-After (before and after program)
__x_ During (during program)
___ Time series (multiple points before and after program)
___ Case study
_x_ Comparisons between program participants (individual, group, organization) & non-participants
_x_ Comparison between different groups of individuals or program participants experiencing different levels of program intensity;
___ Comparison between locales where the program operates and sites without program intervention;
___ Other(s) _____

What are your Evaluation Results? (3200 characters)

Results of formal evaluation by participants of Food Technology Classes showed that all of them benefited from the activity, for having acquired skills to process food products from local resources. During the closing ceremonies / graduation day, the participants were given opportunities to voice out their favorable comments. They also prepared the food products that they have learned from the course for visitors to comment on. Food evaluators in taste tests recorded their comments in a logbook after signing in. Most tasters commented that the products were very acceptable and promising for business ventures.

Adult in Nutrition practice: 98% of 57 participants more often planned meals in advance; 96% more often thought about healthy food choices when deciding what to feed their family; 30% more often prepared food without adding salt; 95% more often used the "Nutrition Facts" on food labels to make food choices; and 95% reported that their children ate breakfast more often. In food safety practices, 60% more often followed the recommended practices of not allowing meat and dairy food to sit out for more than two hours; 60% always follow the recommended practice and 70% more often followed the recommended practice of not thawing foods at room temperature and 70% always follow the recommended practice. For youth, 90% of 48 youth now eat a variety of foods; 93% of 173 increased knowledge of the essentials of human nutrition; 91% of 68 youth increased their ability to select low-cost and nutritious foods and 92% of 104 improved practices in food preparation and safety. 24-hour diet recall and checklist were used to evaluate adult

participants and questionnaire comprised of 10 questions about nutrition and food safety was used for pre and post tests with youth.

Key Items of the Evaluation(s) for CSREES Attention. (3200 characters)

V. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS) and Actual Total Formula, Matching and Other dollars Expended for FY 2007 (automatic addition from Planned Programs)

Year:	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Allocated	$959,051	0	$1,299,774	0

2. Total Actual dollars from Planned Programs input Screens

Actual Formula	0	0	0	0
Actual Matching	0	0	0	0
Actual Other	0	0	0	0
Total Actual Expended	0	0	0	0

3. Amount of Above Actual Formula Dollars Expended for FY 2007 which comes from Carryover funds from previous years.

Carryover	0	0	0	0