2012 Northern Marianas College Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

Northern Marianas College (NMC) was established on August 27, 1986 through the passage of Amendment 38 of the Commonwealth of the Northern Mariana Islands (CNMI) Constitution. The institution was now deemed a public corporation and tasked with providing education in the areas of adult and continuing education, postsecondary and adult vocational education and professional development for the inhabitants of the 14 island chain. Although the original intention was to make the institution a teacher college, it has evolve so much that it now carries with it a land grant designation that is usually reserved for 4-year degree institutions. Today, NMC provides quality education to over 1,000 CNMI residents pursuing degree plans in elementary education, business, natural resource management, and criminal justice. Enrollment at NMC continues to be made up of 55% Chamorro and Carolinian, 34% Asian, 7% other Pacific Islanders, and 4% other ethnicities (i.e. Caucasian, Hispanic, African American.)

Agriculture in the CNMI when compared with our Land Grant partners in the contiguous United Sates may be viewed as being insignificant due to the small acreage of arable land being occupied for food production. Most of the food consumed in the CNMI hails from areas throughout the western United States as more of our stakeholders migrate from the farmlands over to other career options available to them. Some of the more consistent types of crops grown here in abundance include: banana, cassava, taro, yam, eggplant, and hot pepper.

Although small in land mass and isolated in its location, this territorial possession is a unique benefit to the United States of America. The CNMI is one of only a few places where the U.S. flag is flown within a tropical climate making it thus far an untapped national resource with potential in the area of specialty crop diversification and mariculture research. Being so far removed from the mainland also serves as its greatest weakness. Without the direct support of mainland travelers, the territory is at the mercy of external economies like Japan's and Korea's in order to realize any means of trade.

The CNMI consisting of a population of 45, 000 post garment factory era is now facing an uphill battle with its ever dwindling economy. Due to the increases in goods and commodities, as well as the implementation of federal immigration reform, people have found themselves going back to working the land for not only commercial production but personal consumption as well. This move back to agriculture has created a demand for a qualified agriculture workforce in which at present Northern Marianas College cannot provide.

The CNMI's current financial standing has become its most pressing concern as this once thriving community fueled by a strong textile industry has become somewhat of a ghost town. We anticipate recently conducted U.S. Census studies to indicate a mass exodus by the citizenry of this community. The short economic bubble it experienced from opening its doors to the foreign owned garment industry continues to haunt the people here, as constant reminders of that era remain sculpted across Saipan's landscape as the abandoned buildings erected are collapsing and have become major eye sores obstructing tourism's growth as this is the only major industry left. "Sluggish" seems to be an understatement when describing the overall health of the economy in this U.S. possession. The CNMI is experiencing unprecedented declines in revenue since the enactment of the North American Free Trade Agreement "NAFTA". The central government has instituted a reduction of work hours from 80 hours per pay period to 64 hours. This amounts to a 20% reduction in pay for all its employees, as cuts on major appropriations have become a major reality for the people that live here. The exodus of the textile industry was not only felt by the missing taxes collected but also in the prices of all goods imported. Garment

presence on these islands allowed for cheaper pricing of day to day goods purchased by CNMI consumers. Absent their contributions, we are experiencing hikes in all goods and services as imported goods are now priced significantly higher to cover for shipping costs associated with empty cargo ships that now leave the docks, as opposed to ships filled with clothing material. This crisis has ultimately resulted in a recession thus lowering the overall quality of life in this U.S. territory.

Due to the nonexistence of this industry, stakeholders have to rely on highly anemic tourism industry as its major form of salvation. In most recent news, Japan is currently dealing with the after effects of a recent tsunami catastrophe. Being logistically far from the continental U.S., the CNMI is highly dependent on the Asian tourism market. This recent tragedy has a significant impact on our overall outlook of tourism. This will only complicate even further the influx of the already sluggish tourism industry. As Japan recovers, it is anticipated that we must brace ourselves for a long and slow tourism recovery. Because of the aforementioned situations, it has become more and more difficult to acquire funding from the government for necessary resources needed to administer and provide quality instruction.

The Northern Marianas College-Cooperative Research Extension and Education Services (NMC-CREES) provides quality technical programs, services, and information to benefit the people, the environment, and the economy of the Commonwealth of the Northern Mariana Islands. With continuous interaction, collaboration and a unified direction, the department is dedicated to helping improve the economic well-being, living conditions and overall quality of life of its stakeholders. Our stakeholders include: farmers, families, youth, individuals, government agencies, various ethnic communities.

The CNMI's relatively small population coupled with the presence of the land grant system has strengthened the agricultural competitiveness of stakeholders, however much is still needed to attain sustainability. When compared to other Land Grant Institutions, NMC-CREES is small in size, with fewer than 30 employees distributed amongst the three most populated islands of Saipan, Tinian, and Rota. Although the institution may lack key human resources on paper, it makes up this difference by taking a creative approach at program delivery. In order to provide equitable services to our stakeholders, NMC-CREES relies on key partnerships with government agencies, non-profit organizations and other entities locally, regionally and nationally. These community partnerships enable us to promote our educational programs, extension services, and research projects, while steadily growing our professional capacity to support their respective organizations.

Extension services and research projects are primarily stakeholder driven as a result of the growing needs and challenges that the CNMI community must satisfy and face. These concerns raised by the CREES Advisory Council compromised of various facets of our community to include representatives from the youth, families, government, business, and agriculture areas respectively.

The NMC-CREES mission "To be the leader in providing quality programs, services, and information in order to improve the CNMI's people, environment, and economy through agriculture, and the family consumer sciences, " is accomplished through a range of technical programs offered through its two divisions of Agriculture Research & Extension (ARE) and Family & Consumer Sciences (FCS). NMC-CREES' integrated approach amongst its two divisions encourages a multidiscipline and multi-level alliance that encourages effectiveness and sturdy networking among research and extension faculty. This team endeavor transitions program offerings towards tackling community issues directly and indirectly related to established National Goals set forth by the United States Department of Agriculture (USDA).

Total Actual Amount of professional FTEs/SYs for this State

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	29.0	0.0	12.0	0.0
Actual	16.6	0.0	4.2	0.0

II. Merit Review Process

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

- Internal University Panel
- External University Panel
- External Non-University Panel
- Combined External and Internal University Panel
- Expert Peer Review
- Other (Program Leaders and Stakeholders representative)

2. Brief Explanation

Since the number of CREES faculty is relatively small, all professional level staff are encouraged to participate in Merit Peer Review. Also, external collaborators including other institutions of higher learning may send their comments before the Peer Review Committee. A draft of the proposal to be reviewed is e-mailed to all of the CREES staff for suggestions and comments, well before the review meeting. The suggestions and commentary from the team are collated and submitted to who initiated the proposal. The draft proposal is revised and made available to all of the staff for the merit or peer review. All available professional research and extension staff participate in the review. During the review, we assess 1) the priority of importance of the proposed project; 2) the relevance of the proposal; 3) the quality and scientific value of the proposed research and extension activities and 4) the opportunities for partnering with others. The proposals are revised to incorporate the suggestions given during the merit review and approved by the Director of CREES who is recognized as both the State Agriculture Experiment Station Director and Cooperative Extension Director.

III. Stakeholder Input

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

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

Brief explanation.

NMC-CREES continues to culture and nourish its relationship with its established advisory councils on the islands of Rota, Tinian, and Saipan. The advisory council members include stakeholders within agriculture, homemakers, youth, businesses, various ethnic groups, and the indigenous population (Chamorros and Carolinians). These individuals are appointed to serve 2-

year terms by the Northern Marianas College President and serve as the main instrument for program mapping and review.

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

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Needs Assessments
- Use Surveys

Brief explanation.

NMC-CREES has developed over the years as a major catalyst for the integration of technology via the promotion of agriculture and food sciences areas. Because of its continued exposure and reliability of services in the community, the department has a strong following of supporters. Due to the financially unstable times, the department is experiencing a major increase in requests for agricultural and family consumer science consultations. Since we represent a largely diverse population, we make efforts at continuously looking for new stakeholders to serve. Our program staff provides the administration with a list of viable entities based on service delivery data collected in previous years. By providing such a list, the administration then forwards these individuals and/or entities with invitations to participate in the program review process.

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

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Meeting with invited selected individuals from the general public

Brief explanation.

The Advisory Councils continue to hold their quarterly meetings and members discuss concerns that were brought to their attention from other farmers, homemakers, and community leaders. NMC-CREES held periodic meetings with stakeholders and solicited advice on community needs and priorities. In addition to such actions, our program personnel reciprocated such by actively participating in meetings held by our partners. These include:

- CNMI Farmer Support Group Meetings
- Rota Sweet Potato Festival Meetings
- Tinian Hot Pepper Festival Meetings
- Saipan Agriculture Fair Meetings

- Traditional Medicine Group Meetings
- Soil and Water Conservation District meetings
- Head Start Health Advisory Council
- Division of Environmental Quality meetings
- Parent Teacher Association meetings
- Division of Youth Services meetings
- Natural Resource Conservation Service Scoping Meetings
- Farm Service Agency meetings & Other stakeholder association

Program personnel also performed community surveys on projects funded by external grants ie.(Saipan Slaughter House Needs Assessment, Rota Community Kitchen Needs Assessments and Briefing Sessions, and Tinian Military Expansion meetings)

3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities

Brief explanation.

Our department uses the community's input in program and activity planning. Such input also affects our decision making process on whether or not such should be repeated again. NMC-CREES understands that in order to provide exemplary services to stakeholders, it must take the provided input in order to remain target specific.

---In Creating Action Plans;
---To Set Funding Priorities;
---To make recommendations at meetings sponsored by Policy makers;
---Identifying ways at cutting cost while remaining efficient.

Brief Explanation of what you learned from your Stakeholders

Examples of our findings: Rota Community Kitchen Project

Rota's primary agricultural exports are purple sweetpotatoe and colocasia taro. In doing our initial and follow up surveys prior to actual construction of the Rota Community Kitchen funded by Capital Improvement Project (CIP), we found that the citizens residing on that island wanted to expand efforts outside of these two exports. Survey results indicate that a majority of those surveyed believe more work needs to be performed in the area of value adding coconut. Reasons expressed include:

---Year round production;
---40,000 trees (estimated) currently on both public and private lands making it easy to transition;
---Crop has multiple uses (timber, copra, oil, growing media, etc.;

---Shorter wait time for product introduction at various outlets while propagating and land clearing due to fairly large quality currently available;

---Current shortage of coconuts available servicing the nearby island of Guam. (Market Potential).

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
913295	0	867330	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	327956	0	32164	0
Actual Matching	34176	0	29951	0
Actual All Other	965949	0	0	0
Total Actual Expended	1328081	0	62115	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	{No Data Entered}	{No Data Entered}	{No Data Entered}	{No Data Entered}

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Plant Protection Program

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
211	Insects, Mites, and Other Arthropods Affecting Plants	20%		20%	
212	Pathogens and Nematodes Affecting Plants	15%		15%	
213	Weeds Affecting Plants	15%		15%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	15%		15%	
215	Biological Control of Pests Affecting Plants	15%		15%	
216	Integrated Pest Management Systems	20%		20%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	4.3	0.0	5.3	0.0
Actual Paid Professional	1.8	0.0	0.8	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
63190	0	12301	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The CNMI although viewed as "paradise" due to its year round warm weather also serves as a perfect home for the likes of bacteria, fungus, viruses, insects, arthropods, mollusks, and invertebrates. Being one of very few in the United States Land Grant system where our interests lay in tropical agriculture, it is an evergrowing challenge to address the likes of invasive species, insect and pathogen population increases. The Plant Protection Program for this reporting period focused on two main aspects:

1. **Continue** efforts at formulating strategies at identifying and using biological control methods to combat invasive species (ie. Coccinia grandis, Memosa diplothrica, Veronicella cubensis);
2. **Continue** serving clients as the CNMI's resource authority in the area of Integrated Pest Management (IPM);

Biological Strategies:

The weed, Coccinia grandis, came to Saipan in the 1980's, and spread throughout the island of Saipan, Tinian and Rota.This invasive species has inundated the forest areas climbing and covering vegetation, including indigenous plants. In Hawaii, this invasive species is controlled by two beetles (Acythopeus coccinae and A. burkhartorum) and a species of moth (Mellitia oedipus). The two species of weevils were introduced in 2002; however, only A. coccinae has established well. Sight visits performed this fiscal year, around the island of Saipan indicate a 60% gourd defoliation, thus showing an improvement in our choice of biological suppression efforts. As an ecological means of suppression in most cases is a slow process, shortly after institution of A. coccinae, program personnel introduced Melittia oedipus in Saipan (Aug. 2007) and in Rota (Oct. 2007) to further our goal at controlling this noxious weed. As A. coccinae took almost ten years to establish,it is to early to make predictions on M. oedipus effectiveness on C. grandis. Early scouting thus far indicates that its introduction on Saipan displays much promise as the moth has spread well enough for us to report its establishment although the population remains fairly low when compared to A. coccinae. The program aims to continue to monitor this weed and its parasites.

As in last year's submission, the battle continues against the recently introduced Cuban slug, Veronicella cubensis, in the CNMI's southernmost island of Rota. It has spread throughout most of the farm areas causing extensive damage to many crops. It has become a major agriculture pest and it has also become a threat to other islands in the CNMI where this pest is currently not present. Because of relatively short distances to other islands within the Marianas archipelago, V. cubensis poses as a major ecological havoc as well as a potential public health epidemic threat as this mollusk is known to be a host for the rat lung worm disease (Angiostrongylus cantonensis). Through funding made available by USDA

Animal and Plant Health Inspection Service (APHIS) and Western Sustainable Agriculture Research Education (WSARE) our program was able to increase create greater awareness of the cuban slug. As a result, of this concerted effort we are witnessing a dramatic decrease in the population of the slugs. Much of our success has been through stakeholder understanding and the active participation and successful adoption of recommended best management practices in controlling this pest.

As much of our role is related to the prevention and early detection of potentially problematic pests, program staff continue to set up traps and routinely monitor such for fruit fly and Rhino beetle in particular. The areas of greatest concern as funding for such efforts remain limited as we do not pose a direct threat to the contiguous United States. These areas have been identified as being where most of the CNMI's commerce takes place (sea port and airport facilities).

Other note worthy activities include:

- Continued efforts at informing the general public on the concept of Integrated Pest Management;
- Cooperatively worked with the University of Guam on surveying the CNMI for the presence of the highly invasive red imported fire ants (Solenopsis invicta) and little fire ant (Wasmannia auropunctata). As none were found during surveilance efforts in the CNMI, our current focus is now geared at the early detection through the implementation of rapid response strategies with emphasis on entry prevention.
- Staff promoted the use of various alternative pest treatment methods including biopesticides (neem, home-made dish soap concoctions, etc.)
- Program faculty attended various stakeholder venues (schools, environmental expo's, head start parent meetings) giving insight on the identification of natural enemies as an alternative to spraying. We will continue to improve on these methods and to extend the knowledge to our stakeholders.
- The Crop Protection division sponsored workshops at various junctures within the year (Rota Sweet Potato festival, Tinian Pika festival, etc.)
- Program faculty attended professional development sessions (WSARE Agriculture Infrastructure Conference, IPM Symposium, Rat Lung Worm Conference, etc.)

2. Brief description of the target audience

Agriculturists, farmers, crop producers and farm helpers, business operators that promote or sell farm products, grade schools, high schools and college students interested in further knowledge in agriculture, adult volunteer leaders (4-H Clubs) and the general public

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	300	1500	1000	2500

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Research Projects completed on invertebrate pest, such as nematodes, invasive species such as scarlet gourd, melon fly, papaya mealy bug, and Cuban slug).
  Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

Outcome #1

1. Outcome Measures

Number of farmers using Integrated Pest Management to control invasive species

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As the general public is becoming more aware of human influence on environment, there is a strong move for environmentally safer alternatives to growing our food.

What has been done
In response to such a behavioral change by our stakeholders, program personnel engaged clients with the ideals and strategies focused in an IPM system (biological control, neem, monitoring in regards to an established economic threshold, farm scouting, crop rotation, sanitation, mass trapping, etc.

Results
As a result of our continuous efforts at educating the general public on alternative strategies in dealing with agricultural pests, Rota sweet potato farmers are now practicing post harvest sanitation to reduce the spread of the sweet potato weevil that once was considered a major pest due to the poor appearance of the tuber.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #2

1. Outcome Measures

Decrease the population of the various invasive species (Cuban Slug, Melon Fly, Sweet potato Weevil, Whiteflies, and nematodes) by certain percentage:

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Due to the presence of the cuban slug, melon fly, sweet potato weevil, whiteflies, and nematodes agricultural production in the CNMI, we have witnessed a set back in the overall marketable quality which has severely affected yield,sales,and most especially consumer confidence.

What has been done
The use of on-farm demonstrations such as neem and sum hemp production geared towards suppressing nematode and Cuban slug population. Duck production was conducted on multiple farm sites to feed on the Cuban slugs. Male annihilation technique was implemented as IPM tool to control the Melon fly population. Sweet potato post harvest sanitation was used in response to weevil population growth.

Results
Cuban Slug & Nematodes---As a result of farmers using trained ducks to prevent Cuban slug damage to crops, we recorded a 15% growth in the production of chinese cabbage. As an unanticipated result of such an adoption, 2 farmers reported that the ducks used also became an additional commodity which increased farm sales;
Sweet potato weevil---By disposing of field debris (used as animal feed) as a post harvest practice, growers report a 10% increase in the viability of the harvested tubers.
Melon flies---By using male annihilation methods coupled with increased efforts in sanitation (removal of damaged fruits),resulted in higher yields of cucurbits (watermelon, bitter melon, zucchini, etc.) when compared to prior years.

4. Associated Knowledge Areas

KA Code	Knowledge Area

211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #3

1. Outcome Measures

Number of clients learning Pesticide Safety

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	23

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As many of our farm hands in the CNMI are non-residents with very limited English speaking skills, there is very little means of testing their understanding of the dangers pesticides pose on their overall health.

What has been done
Program faculty have taken measures at soliciting volunteers from the different ethnic groups to serve as translators during one on one sessions with farm hands. In addition to working with the Non-English speaking farm hands, staff continue to work with an array of individuals on the concepts related to adopting the IPM system.

Results
As a result of soliciting the assistance of community partners, there is an indication of greater acceptance and overall trust by participating farm hands in the advice given (crucial protective gear, mixing calculations, calibrating equipment, etc.) from extension personnel.

4. Associated Knowledge Areas

KA Code	Knowledge Area

211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

As the CNMI is known as "typhoon alley," we too are surprised that we have not experienced any major disruptions in our weather system. Agriculture professionals in the CNMI alike credit much of our positive results in this year's report to somewhat fair weather.

Although we experienced such a welcomed outcome as far as the pests are concerned, there is still a growing fear by faculty, administrators, and stakeholders alike on the effects of the the Consolidated Natural Resources Act (CNRA) on our ability to fill our Plant pathologist and Entomologist positions respectively. These positions were vacated by the previous individuals as a direct result of the uncertainties associated as this is the first implementation of such in the U.S.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Program personnel continue to collect data at this juncture. We foresee reporting on such findings in future assessments conducted by USDA-NIFA. Current methods of evaluation include the following:

- Pre and Post testing during workshops;
- Insect trap monitoring for population counts;
- Client satisfaction surveys;

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Livestock Improvement Program

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals	15%		15%	
302	Nutrient Utilization in Animals	10%		10%	
303	Genetic Improvement of Animals	20%		20%	
307	Animal Management Systems	20%		20%	
311	Animal Diseases	15%		15%	
312	External Parasites and Pests of Animals	5%		5%	
313	Internal Parasites in Animals	5%		5%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	5%		5%	
902	Administration of Projects and Programs	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	1.5	0.0	0.5	0.0
Actual Paid Professional	0.8	0.0	0.2	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
27442	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

• Continous professional development training of local Paravets and other extension personnel- creation of more animal health technicians
• Continued monitoring of Animal disease survey for the CNMI
• Implement animal health program - approve by USDA
• Conduct farm training for small farmers- livestock enterprise and genetic upgrading, animal welfare, animal nutrition and husbandry management, etc
• Conduct animal health and management workshops
• Conduct mini-workshop on alternative livestock enterprise
• Promote alternative plant medicine to livestock health care Implement and promote sustainable livestock waste management
• Educate community on zoonotic diseases such as Avian Flu, Brucellosis etc
• Grant writing workshop for research funding
• Extension services including promotion, facilitation and networking in Sustainable Agriculture Programs

2. Brief description of the target audience

*Youth and adult *Ranchers/farmers *Livestock producers *Government agencies *Leaders *Retirees looking at new investment *Entrepreneurs

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	250	7000	135	250

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	1	1	2

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Research projects on Animal Diseases and management, Animal genetic upgrading, Animal nutrition, and Animal science

Year	Actual
2012	1

Output #2

Output Measure

- Number of Workshops and professional development trainings for livestock program (Production, Animal Health, etc.)and sustainable agriculture program

Year	Actual
2012	8

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Numbers of clients adopted livestock best management practices as well as sustainable agriculture that resulted to creation of alternative livestock enterprise
2	Numbers of new client gained knowledge and skills about animal science, production, health and management,animal husbandry and sustainable agriculture

Outcome #1

1. Outcome Measures

Numbers of clients adopted livestock best management practices as well as sustainable agriculture that resulted to creation of alternative livestock enterprise

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As the economy continues to dwindle, people in the CNMI are heading back to their farms to subsidize some of their income as salary increases are not being seen across much of the citizens possessing land.

What has been done
Much of our effort this past year was to assist in the development of a slaughter house on the island of Saipan. A businessman who has seen agriculture's growth from the aquaculture side as he is one of the largest shrimp producers in the nation. He believes that swine production can be a profitable business endeavor. Our efforts as a program involved the consulting of participating swine producers on Saipan in breeding, nutrition, best management practices in general).

Results
No results at this juncture of the project.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
307	Animal Management Systems
311	Animal Diseases

312	External Parasites and Pests of Animals
313	Internal Parasites in Animals
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
902	Administration of Projects and Programs

Outcome #2

1. Outcome Measures

Numbers of new client gained knowledge and skills about animal science, production, health and management,animal husbandry and sustainable agriculture

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Because of the aggressive campaign currently underway in agriculture induced primarily by one successful businessman, there is a need to provide education animal production in the CNMI.

What has been done
Program personnel have given numerous workshops on Saipan, Tinian, and Rota. Because of internal partnerships with interested extension personnel in the area of livestock, we have been able to collaborate with key animal specialist from the Virgin Islands and Hawaii. Through the "Marianas Grazing" series (Workshops focused on key elements of running a ranch operation), we have assisted more clients this past year than previous years.

Results
The impact of the "Marianas Grazing" series can be felt by the 7 new clients being served by the program consistently as word continues to spread of the many elements missing in current CNMI Ranching operations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals

302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
307	Animal Management Systems
311	Animal Diseases
312	External Parasites and Pests of Animals
313	Internal Parasites in Animals
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

1. There continues to be a need in the development of local feed to cut the cost of production in the CNMI. The dillemma remains, "Bushel to pound comparisons of locally available carbohydrates." A bushel is much cheaper when considering for example sweet potato that the island of Rota grows in fairly large amounts. The price of sweet potatoe is equivalent to $20 per 20lb. sack, while a stateside farmer can pay for a buschel of corn for much less.
2. There also remains a need to develop breeding centers as we continue to run genetically inferior animals when compared to areas where such desire for business operations of this magnitude exist.
3. The increase numbers of farmers/ranchers engaged in livestock business is primarily due to the hope of new infrastructure(Saipan Slaughter House and Air Cargo Business) that would close that gap in the marketing problems currently being faced.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Crop Improvement Program

☐ Reporting on this Program

Reason for not reporting

As the CNMI is transitioning towards total U.S. Immigration control, such uncertainties has led to the loss of our Plant Pathologist and Entomologist respectively. The two positions make up the team. Because we are so geographically displaced we are finding it difficult to replace such critical positions. Because U.S. Immigration is now the regulating agency charged with overseeing labor issues we are limited to U.S. applicants at this point in the transition period.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	1.0	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

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

V(D). Planned Program (Activity)

1. Brief description of the Activity

* Micropropagation of staple crops such as banana, sweet potato and taro to produce quality and disease free plants.
* Field trials and evaluations of new varieties in fruits, root crops and vegetables conducted in local soil and climatic conditions of CNMI.
* Research and extension programs on underutilized crops (specialty crops) and medicinal plants
* Disease diagnosis and disorder in the crops
* Organize field days and taste testing (sensory evaluation) of new varieties of taro, sweet potato and banana.
* Conduct hands on training and workshops for farmers, extension agents, and students on fruit trees grafting, soil and water conservation techniques, sustainable production of fruits and vegetables and composting.
* Video production
* Publications (brochures and fact sheets) and presentations through informational seminars and lectures. Involve grade school, high school and college students in activities and presentations
* Implement best management practices on farms.
* Present results of research finds in national and interantional scientific meetings and conferences.

2. Brief description of the target audience

* Government /Agency Collaborators
* Research assistants and Agriculture Extension agents
* All farm crop producers and farm helpers in the CNMI
* Business operators that promote or sell farm products
* Grade school, High School and College student
* Adult Volunteer Leaders (4-H Clubs)

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Year: 2012

Actual: {No Data Entered}

Patents listed
{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	2	2	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research projects completed on Crop Improvement Issues

Year	Actual
2012	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of households that begin to grow food in their own garden
2	Number of farmers that learn to use Organic agriculture production systems on farm
3	Number of farmers using Sustainable Agriculture techniques (best management practices) such as cover cropping, mulching, rotational grazing, no-till farming, composting, etc.

Outcome #1

1. Outcome Measures

Number of households that begin to grow food in their own garden

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Number of farmers that learn to use Organic agriculture production systems on farm

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

Number of farmers using Sustainable Agriculture techniques (best management practices) such as cover cropping, mulching, rotational grazing, no-till farming, composting, etc.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Climate Change

☐ Reporting on this Program

Reason for not reporting

We currently do not have any faculty qualified to serve as P.I.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	0.0	1.0	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

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

V(D). Planned Program (Activity)

1. Brief description of the Activity

Demonstration/research projects will be introduced as learning tools. The Dry Litter Waste Management system demonstration along with composting demonstration will be continued and documented. To maximize the exposure of the demonstrations themselves, an educational video series will be produced. Efforts will be made to either receive free or purchase airtime on the local cable T.V.

station to maximize viewer exposure to the educational video series. Furthermore, a goal of this program will be to supply video rental stores will these educational videos for increased viewer numbers. Still photography will also be used to document research and demonstration projects for use in publications (brochures and fact sheets) and presentations to be produced and disseminated through informational seminars and lectures.Farmer-type gatherings such as association meetings, soil and water conservation district meetings and forums will be targeted.Students from the grade school, high school and college will also be involved in activities and presentations when ever possible.Soil sampling for farmers will be ongoing. As a pollution prevention activity, recycling will be promoted and encouraged through capacity building, outreach and education.

2. Brief description of the target audience

Government /Agency Collaborators

All farm crop producers and farm helpers in the CNMI Business operators that promote or sell farm produce

Grade school, High School and College students

Adult Volunteer Leaders (4-H Clubs)

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2012

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total

Actual	1	1	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research projects completed on Soil and Water Quality Issues

Year	Actual
2012	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of households recycling aluminum cans or other recyclable commodities such as paper and plastic
2	Number of households learning to safely use Rain-catchments systems
3	Number of farmers using Dry Litter Waste Management Systems for Hogs
4	Number of farmers or members of the community learning to compost animal wastes, yard scraps, etc.
5	Number of farmers using Sustainable Agriculture techniques (best management practices) such as cover cropping, mulching, rotational grazing, no-till farming, composting, etc

Outcome #1

1. Outcome Measures

Number of households recycling aluminum cans or other recyclable commodities such as paper and plastic

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Number of households learning to safely use Rain-catchments systems

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

Number of farmers using Dry Litter Waste Management Systems for Hogs

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual

2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #4

1. Outcome Measures

Number of farmers or members of the community learning to compost animal wastes, yard scraps, etc.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #5

1. Outcome Measures

Number of farmers using Sustainable Agriculture techniques (best management practices) such as cover cropping, mulching, rotational grazing, no-till farming, composting, etc

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Community Resource Development

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
801	Individual and Family Resource Management	50%		0%	
802	Human Development and Family Well-Being	50%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	0.0	0.0
Actual Paid Professional	2.0	0.0	0.0	0.0
Actual Volunteer	37.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
56492	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

In 2012, the NMC-CREES, Community Resource Development Program (CRD), conducted several activities that focused on community needs as there is a dire need for the program to focus its attention towards activities that either save money, opportunities to make money, and being resourceful with current assets to address financially related problems that arise in CNMI households. In line with this notion a community needs assessment was performed on Rota as this island's curent economic crisis serves as a valid sample size to determine the overall health of the CNMI economy based on the following geographic, socioeconomic, and population characteristics:

1. Distance from national capital of Saipan;
2. Higher commodity prices related to shipping (Sea freight) as there are no significant exports, thus ships leaving Rota have no cargo and as such commodities so consumers are passed on with such associated fees;
3. Government serves as only real employer of significance for the population)
4. Any value added product created also must endure higher associated costs, thus the final product seems outrageously high when compared with the other islands within the Marianas archipelago.

By sampling Rota, it is evident that the CRD program carries a significant role in CNMI society as we serve as a sense of hope through our educational activities. Our target audience is broad as we cater to the general public, however much effort is placed on those needing a helping hand most. An example of such program focus include:

• Sewing Class for Beginners--CRD has determined that there was a pressing need to re-activate the Sewing Class for Beginners on the island Rota. More than 45 individuals signed up for the class, 15 sewing machines were sent to the Island of Rota to commence program activity. The impact of the program can be witnessed by the overwhelming support recieved by policy makers and Community organizations alike.

• Policy Makers (The Mayor of Rota took an active role by assisting program personnel through client referrals, encouraging Municipal staff to take the course, providing outreach to the "recently" unemployed as transportation has now become an issue for this population sector.)

• Community Organizations (Rota-Women-In-Action a non-profit organization formed to encourage Women in Rota to perform philantropical activities played a big role in re-activating the Sewing Class for Beginners on Rota. The group made their conference room available for those students residing in the Songsong area as their backing addressed transportation related issues.

The work that the CRD program is continuous as much of our effort requires such. The approach taken requires financial, human, educational resources as there is no "quick fix," in addressing the CNMI's economic recovery. The program is only one component of many needed to tackle the overarching goal of achieving prosperity. Our role attempts to strengthen the human resource side of this problem through educational activities fit for different segments of the community. As illustrated in the passage above, we do so by empowering people through forging relationships with governmental, businesses, and not for profit organizations. This example is only one of our multifauceted course offerings. The following illustrate how vast the CRD program was devised in order to continuously be dynamic in our program approach:

Other Noteworthy Accomplishments:

• CRD Program, continue to conduct classes and series of workshops focused on Legal Aspects;
• Money Management (Financial Security)

• Facing Older Adults in the CNMI-- Program faculty serviced this sector of the population as our citizenry through advances in medicine, live longer than those compared a decade ago. The program provided such a sector with educational topics such as "Shopping Smart" and "Importance of Savings" using their retirement benefits and other available public assistance offerings.

• Family Financial Management--Servicing this center is crucial to a healthy society as the target market addressed are newly established households, single parents (WIC collaboration), the unemployed

and recent unemployed populations (furlough victims) totally or partially relying on public assistance programs for survival. CRD personnel addressed these populations by conducting workshops such as "Shopping Smart," "Developing a Budget" (NAP Assistance Coupons), "Opportunities of Supplemental Income Generation."

• Youth Money Management--As the middle class as indicated in many well developed countries, The CRD program puts effort at exposing CNMI youth to money management strategies. As many case studies indicate, many of our successful entrepeneurs throughout history have shown signs of understanding money management, at a very young age. Faculty address such by offering educational opportunities as:

- **"What do I do with my Allowance?"**
- **"What do I do with my free time?**--Opportunities to make money"

• Money Management for College Students---Many college graduates serving in the workforce today indicate that much of the debt they incurred was during their time in college. As many financial assistance opportunities are available, many fall in the "financial trap," by taking out unnecessary loans due to the unanticipated lifestyle change without parental guidance. Because of such a dillema, the CRD program exposed this population with workshop topics as:

• Available grants (Scholarships--Federal, State, Regional, Foundation,etc.),

• Work opportunities for students (**Sponsored Internships** *Business, Governmental--Local, State, Federal, and/or Regional, etc.),

• Responsbly managing a Collge loan (if such is decided upon).

• Traditional Home Arts & Designs (Fruit Carving hands-on demonstrations, Home decorations using recycled materials, etc.)Presented at various community outlets (Fairs, Expo's, Businesses, Non-profit Organizations, Cross-agency client referrals, etc.)

• Regional Collaboration among 1862 Land Grants (Professional Development Workshops for new CRD programs ie. COM-Yap, College of the Marshall Islands)

2. Brief description of the target audience

- Kids (6-7)
- Youth (8-17)
- Youth Leaders (18-21)
- Adult Volunteers for Leaders
- Economically Disadvantaged
- Senior Citizens (Man Am'ko)
- Caregivers for the elderly
- General Public
- First Time Business Owner

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	700	2000	441	3000

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Youth and Adults completing Money Management and Family Financial Management workshops.

Year	Actual
2012	295

Output #2

Output Measure

- Number of established Entrepreneurs projects

Year	Actual
2012	5

Output #3

Output Measure

- Number of participants that complete workshop and training on home canning and food preservation
  Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of participants that complete workshop and training on home canning and food preservation.
2	Number of youths and adults successfully completing the Sewing for Beginners on the islands of Saipan, Tinian and Rota.
3	Number of youths and adults completing workshops on Youth and Adult Money Management.

Outcome #1

1. Outcome Measures

Number of participants that complete workshop and training on home canning and food preservation.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Number of youths and adults successfully completing the Sewing for Beginners on the islands of Saipan, Tinian and Rota.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	216

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The CNMI's economy continues to be sluggish. As jobs are scarce, people are looking for ways to save money and as such the CRD program sees teaching traits such as sewing can serve as a remedy for savings.

What has been done
The CRD program has created scheduled courses targeting those that would like to develop the skill set for sewing basic items such as t-shirts, curtains, pants (short and long), aprons, dresses, blouses, table cloths,etc.

Results
In 2012, the program successfully reactivated its Rota Sewing Class (Beginner Level). Of the 216 graduates CNMI wide,40% of them surveyed were able to supplement their income by entering into contracts with other businesses (hotels, restaurants, etc.)to sell finished products such as curtains, tablecloths, staff uniforms, etc.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #3

1. Outcome Measures

Number of youths and adults completing workshops on Youth and Adult Money Management.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	330

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As the CNMI is currently encountering a financial dilemma, the CRD program sees the need to educate members of society in the handling of finances for maintaining the family's household income.

What has been done
The CRD program has tackled the issue affecting many of the population's certain sub-sects by focusing on the details pertaining to their financial burdens. This was done by categorizing them into groups such as the youth and adults (college, single parents, senior citizens, persons with disabilities, etc.) By categorizing them in this manner, we focused on each group's specific financial constraints (each group's is different) as to keep a captive audience and increase our chances of greater impact.

Results
As a result of identifying our target audience the following are some of our direct impacts:
30% of Money Mgt. clients report using their identified skills sets such as baking, sewing, etc. for supplementing their existing family income;
Saipan participants demonstrated their marketing creativity by setting up booths (shared) at the flea market selling different commodities;

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Childhood Obesity

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
703	Nutrition Education and Behavior	50%		0%	
724	Healthy Lifestyle	50%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	1.0	0.0
Actual Paid Professional	3.8	0.0	0.0	0.0
Actual Volunteer	2.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
89690	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
559949	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The Childhood Obesity program previously known as the "Diet Physical Activity and Health Program" has evolved over the years to become a household name within this U.S. protectorate. The CNMI is

ranked 3rd in the nation for highest diabetes cases per capita. This ranking has brought about much needed collaboration among community groups as there are serious implications to such a high incidence of diabetes. The program although it is still just at its intermidiate stage, through its sound outreach campaign has brought about partnerships locally, regionally, and nationally. A few of our partners include the Women Infants and Children Program (WIC), Supplemental Nutrition Assistance Program (SNAP), Diabetes Prevention and Control Program, Lets Move Marianas, CNMI Public School System (PSS), and The Childrens' Healthy Living Program (AFRI funded).

As there is no "silver bullet" approach to tackling a problem that requires a change in behavior NMC-CREES faculty use an array of educational tools in combatting such diseases as heart failure, stroke, hypertension, diabetes, gaut, cancer, obesity, etc. The difficulty of addressing such issues is compounded by the ease of acquiring fatty foods via "fast food chains and mom and pop stores," and the comfort of watching television on a "soft couch as opposed to the rigor of physical activity." It is for this reason that our outreach campaign has remained consistent over the years as such an issue requires more than one reporting period. As the purpose of reporting is to identify approaches that work, the ineffective methods, areas of growth, and most of all areas that need improvement, it is imperative that funding agencies realistically understand that some of the activities performed would require longer periods of application before measurable impact can be realized. The list below provides a glimpse of the different activities undertaken by program personnel to address our fight to reduce non-communicable diseases afflicting our stakeholders:

1. As a result of our collaborative networking with regional partners the the Childrens' Healthy Living Program (CHIL) we were able to provide 34 NMC nursing students with an intership opportunity that gives them the experiential learning opportunity in pediatrics.
2. Because of strengthened networking capabilities, the Childhood Obesity Program worked with University of Guam's Cancer Program on a study focused on "The effects of Betelnut use." As a result of funding allocated towards student experiential learning, 12 NMC nursing students participated by providing the study with the much needed technical personnel in completing the field studies and moving it on towards the final evaluation process. Such a study brings about the promise of greater understanding of the "possible" correlation between betelnut use and eventual mouth cancer.
3. As a result of program demand in the community, program personnel trained 54 childcare providers in the area of "Enhancing Nutrition in Day Cares." These early childhood centers play a crucial role in our community as they serve our underprivledge and poverished families as ranked by federal income guidelines.

Other Noteworthy Activities Performed:

- Monthly nutrition education exhibits at NAP issuance;
- Creation of CNMI Crop Calendar to provide PSS with a guideline for food and fiber available locally for distribution at their schools;
- Monthly promotion of physical activity (Walk Tinian);
- Conducted needs assesment at 6 sites totalling 12 focus groups for upcoming Childrens' Healthy Living Project;
- Periodic (Upon request, follow ups,) nutrition education lessons at Head Start facilities, elementary schools, townhall meetings, fairs, non-profit organization membership meetings on the islands of Saipan, Tinian, and Rota.

2. Brief description of the target audience

The target audience includes the general public, with a particular emphasis on areas of the islands that have a majority of its' residents at or below the poverty level. The program focused efforts but did not limit itself to considering the socio-economic status, educational attainment, and lifestyle of the general public.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	2300	12000	700	3000

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	1	0	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Greater understanding of diet, physical activity, and health

Year	Actual
2012	54

Output #2

Output Measure

- Increase opportunities for physical activity

Year	Actual

2012 1

Output #3

Output Measure

- Improve nutrient intake of school meals among students at one elementary school
  Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Pilot "Recess Before Lunch" at one public elementary school
2	Lighting system will be turned on and available for use by the general public one night a week.
3	Social marketing/awareness campaign on the burden of non-communicable diseases/lifestyle diseases and role of diet and physical activity
4	Quantify progress in schools that participate in Youth Engaged in Advancing Health Project.

Outcome #1

1. **Outcome Measures**

Pilot "Recess Before Lunch" at one public elementary school

Not Reporting on this Outcome Measure

Outcome #2

1. **Outcome Measures**

Lighting system will be turned on and available for use by the general public one night a week.

Not Reporting on this Outcome Measure

Outcome #3

1. **Outcome Measures**

Social marketing/awareness campaign on the burden of non-communicable diseases/lifestyle diseases and role of diet and physical activity

2. **Associated Institution Types**

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	12

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The fight against non-communicable diseases is a complex one that requires an array of strategies as it involves human behavioral changes.

What has been done
Program personnel has partnered with many regional, local, and national partners at addressing the problem via a strong awareness campaign. A few of the activities performed include, monthly NAP exhibits, presentations at community events, and public appearances at media outlets.

Results

85% of the 54 childcare providers that attended the workshops reported they now are providing healthier meals and snacks to children under their care. 60% of childcare administrators report that prior to the training they were unaware of the dietary guidelines set forth by USDA and now have begun making modifications as a result of their participation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #4

1. Outcome Measures

Quantify progress in schools that participate in Youth Engaged in Advancing Health Project.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Other (lack of collaboration)

Brief Explanation

1. Due to the budget constraints experienced by the CNMI Public School System the "Recess Before Lunch" initiative had difficulty with its anticipated launch date. As a result of the increase in utilities and overall lack of financial resources this particular partner chose to shorten the recess time allotted to students during lunch, thus creating this problematic situation for program personnel;
2. As a result of the central government's lack of resources and the overall economic conditions in the CNMI the "lighting project" was not considered a high priority at this particuluar juncture by our main partner (Department of Public Works), thus creating a snag.

The aforementioned issues are major issues that affect public policy. At this point in time, we do not foresee our economic conditions changing positively, thus there seems to be a need to reassess our current strategy.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Qualitative Evaluation was used by the State Extension Director---As one can see the program has made significant strides regardless of their small number of staff. This is evident in their ability to acquire competitive funding, their collaboration with other regional institutions, and the short term outcomes that are logically geared at addressing the program's long term goal of a "Healthy CNMI."

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Food Safety

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
502	New and Improved Food Products	50%		50%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	50%		50%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	2.0	0.0
Actual Paid Professional	1.0	0.0	1.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
37399	0	19863	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

In the CNMI, after produce is harvested, the quality is deteriorated significantly because there is a lack of awareness of the significant break through's in science and such can be credited to our somewhat new presence as a program under NMC-CREES. In order to develop unique value-added product using local produce, the demands and needs of local farmers should be understood and also the most interested produce and value-added products should be identified prior to developing value-added processing. The program helps farmers and producers to select the most characteristic tropical produce in the CNMI in order to develop desirable value-added products.

The following are the specific activities performed:

- Provided workshops on topics related to value adding Coconut Sap Juice (Tuba)
- Participated at various community events (Rota Ag. Fair, Saipan Ag. Fair, Tinian Pepper Festival, etc.)
- Provided on-site consultation at various food processing centers (Herman's Modern Bakery, Stella's Bakery, etc.)
- Created various outreach publications (Making Kimchee video, Handling Food Safely video)

2. Brief description of the target audience

* Farmers, other crop producers, and farm helpers
* Individuals involved in food industry such as processors, managers, food handlers, vendors
* Grade schools, high schools and college students interested in food safety and quality
* Government agency/collaborators

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	150	730	120	1500

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	1	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research on food quality improvements
  Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Number of novel food processing technology workshops

Year	Actual
2012	2

Output #3

Output Measure

- Number of workshops related with food safety and quality

Year	Actual
2012	1

Output #4

Output Measure

- Numbers of newly developed value-added products

Year	Actual
2012	0

Output #5

Output Measure

- Numbers of technical information provided to the public

Year	Actual
2012	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Numbers of farmers/producers that develop value added products
2	Number of farmers/producers implementing good post-harvest practices

Outcome #1

1. Outcome Measures

Numbers of farmers/producers that develop value added products

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Because the CNMI does not have fumigation nor irradiation technology, it is difficult to ship any agricultural product off island as a potential export.

What has been done
Extensive outreach efforts have been made to garner interest among homemakers and business persons alike.

Results
We have two individuals interested in processing coconut sap juice as a product for sale locally with the potential to last beyond current standards.

4. Associated Knowledge Areas

KA Code	Knowledge Area
502	New and Improved Food Products

Outcome #2

1. Outcome Measures

Number of farmers/producers implementing good post-harvest practices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

4-H Youth Development

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
802	Human Development and Family Well-Being	25%		0%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	25%		0%	
805	Community Institutions, Health, and Social Services	25%		0%	
806	Youth Development	25%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	0.0	0.0
Actual Paid Professional	3.0	0.0	0.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
53743	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The CNMI 4-H program collaborated with other government and non-government groups through the development of relationships and designed programs for youth development. Funding was acquired through proposal development in order to support staffing and program facilitation. Volunteers were recruited and clubs formed as a venue for 4-H curricula and programming. Information on the CNMI 4-H programs were developed and continuously disseminated through publications and other media.4-H programs created an enviroment that focused on experiential learning opportunities for youth and parents alike through such as workshops, field days, and hands-on activities related to the 4-H mission and purpose.

Much of the activities conducted on behalf of the program for this reporting period were aimed at providing children with community engangement programs that allow children to learn by doing, hone their leadership skills, and allows them to give back to their community in meaningful ways. This year, our teams across the islands' performed the following:

- built additional pala-pala's(makeshift rest areas) at schools on Saipan and Tinian,
- attended agriculture fairs across the CNMI to display their work and promote program offerings,
- students helped out other community organizations by actively participating alongside our partners during scheduled beach clean-ups.
- organized youth division agriculture fairs and solicited prizes for such events.

2. Brief description of the target audience

- Government Officials/Agency Collaborators
- Business operators
- Grade school, High School and College students, teachers and staff
- Adult Volunteer Leaders (4-H Clubs) from the general public

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	120	300	450	600

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of youth participating in 4-H sponsored events

Year	Actual
2012	520

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of household recycling aluminum cans or other recyclable commodities such as paper and plastic
2	Number of 4-h volunteers recruited
3	Number of youth participants attending 4-H workshop activities

Outcome #1

1. Outcome Measures

Number of household recycling aluminum cans or other recyclable commodities such as paper and plastic

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	42

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The magnitude of the impacts of non-point source pollution is greater felt in smaller land areas, thus recycling is one method to curb the waste we produce daily.

What has been done
With Children Youth and Families at Risk (CYFAR) funding we continue providing positive reinforcement efforts at increasing public awareness through beach cleanups, joint advertisements with collaborators, and short courses at sponsored 4-H camps.

Results
Encouraging the youth of the CNMI to recycle and reuse as much as possible has a profound affect on the level of appreciation and concern they have as citizens. Furthermore, with children urging others in their households or circle of friends to recycle or discard trash appropriately, others are likely to follow suit.

4. Associated Knowledge Areas

KA Code	Knowledge Area
805	Community Institutions, Health, and Social Services

Outcome #2

1. Outcome Measures

Number of 4-h volunteers recruited

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The success of any non-profit organization is based on its ability to encourage volunteerism in their respective communities.

What has been done
Program personnel placed much effort in the recruitment process. With the help of existing CYFAR volunteers we increased community participation based on an event basis. We have found that volunteers tend to continue participating if the event is of interest to them.

Results
As a result of increased volunteerism, we have increased the number of events, increased event topic offerings, and have seen an overall increase in the overall number of volunteers participating in program functions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #3

1. Outcome Measures

Number of youth participants attending 4-H workshop activities

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	637

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In the CNMI, there are very few activities and resources available to children, so it is critical that events and activities be presented to them for their participation.

What has been done
We have conducted numerous workshop, camps, civic engagement activities, and social events for children to participate in.

Results
As a result of additional funding acquired from CYFAR, we gained greater community interest, increased participation from students, and have witnessed greater participation on the side of adult volunteers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

No external factors to report hindering progression of program offerings

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Based on post activity surveys conducted on students evaluating the overall performance of the program, most students believe that activities:

- are relevant to our community.
- teach an important life skill;
- encourage social growth through team building activities;
- teach the importance of agriculture.

Key Items of Evaluation

No item to report in this category.

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Aquaculture and Fisheries Development Program

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	30%		30%	
111	Conservation and Efficient Use of Water	30%		30%	
112	Watershed Protection and Management	10%		10%	
135	Aquatic and Terrestrial Wildlife	30%		30%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	1.0	0.0
Actual Paid Professional	1.2	0.0	0.8	0.0
Actual Volunteer	4.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
34176	0	29951	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
406000	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

NMC-CREES' Aquaculture Development Program (AFDP) has become a major focal point in our program delivery. Although the actual personnel dedicated towards this program are fairly small when compared to many well established Land Grant colleges offering such similar services, the AFDP has been instrumental in the revival of the agriculture industry in our small locale. The following activities highlight the major undertakings and noteworthy accomplishments the program has made during this reporting cycle:

1. As a result of program personnel continuing their extension efforts, a CNMI businessman has expanded his infrastructure signficantly to increase the overall yield of his farming operation. Such an investment not only will quadruple the individual's yield from 5 tons of tilapia to 20 tons annually, it address USDA-NIFA's goal focused on "food security." This expansion quantitatively illustrates the value of the program to CNMI stakeholders.
2. Due to our continued efforts at finding "the unconventional" client, the Municipality of Rota successfully solicited funding from the U.S. Department of Interior (DOI) to train 5 of their field personnel in the area of Aquaponics (the integration of Aquaculture and Hydroponics). The said individuals recieved certificates of completion from the Oceanic Institute, a research based organization affiliated with Hawaii Pacific University in Honolulu, Hawaii. The goal of such an endeavor is to equip the end user with the skills necessary for a successful industry. Partnering with the Rota Mayor is a clear indication that this industry has the support of policy makers and farmers alike.
3. As part of the Department of Interior's goal of addressing human resource scarcity in the islands and a direct follow up on the outcomes listed from their sponsored Economic Summit in which agriculture was recorded as being one of two key areas of promise when industries were tirelessly considered. Such considerations were made due to our geographic displacement from the contiguous United States, our small population demographic, and historically dependent need for outside commodities. With this as our overarching situation, AFDP collaboratively sought funding from the DOI through means of working with the CNMI Aquaculture Producers Association (CAPA), a non-profit organization comprised of farmers sharing resources to ensure success. This successful partnership has netted the industry not only the much needed financial resources, but also a trained aquaculture workforce totalling 16 (8 on Saipan and 8 on Rota), by means of a rigorous training course at the AFDP wet laboratory, an online course from the University of Hawaii's Aquaculture Training Online Learning (ATOL) program, and hands-on applications at various farms on the islands.
4. Competitive funding was also acquired from Western Sustainable Agriculture Research Education (WSARE) to provide fisheries management training opportunities to fishermen from Rota. The objective behind such is two pronged: Educate potential opponents within industry through educating them that aquaculture and fishing can co-exist; Train potential industry stakeholders in order to steadily migrate them over from fishing to aquaculture as signs of wild overharvesting continue to rise and make their way over to the Pacific. By means of WSARE funding considerations the AFDP was able to train 5 fishermen at the Harbor Branch Research Institute, a division of Florida Atlantic University on fish management, fish health, and the techniques of running a successful aquaculture operations.

The following are other noteworthy activities performed during this reporting period:

- Presentations at various outlets (Natural Resource Managment Class, Association of Pacific Island Legislators, etc)
- Professional development for staff to be in tuned with industry advancements (Marine Finfish Hatchery Methodology, Fish Culture, etc.)
- Sponsored Internships (National Institute of Health, Caribbean and Pacific Consortium, Department of Interior, etc.)
- Client Visitations (Follow up recommendations, Appointments, General inquiries, etc.)
- Workshops Conducted (Aquaculture Workforce Development Project, Aquaponics Production on Rota, Marine Finfish Speicies Selection, Aquaculture for Beginners- Students from College of Micronesia)

2. Brief description of the target audience

Youth and Adult
Aquaculture Producers
Government Agencies
Non Governmental Organizations
Business Community
Retirees looking at new investment

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	750	2000	259	600

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of aquaculture workshops

Year	Actual
2012	4

Output #2

Output Measure

- Number of aquaculture research project

Year	Actual
2012	0

Output #3

Output Measure

- number of short course/training

Year	Actual
2012	3

Output #4

Output Measure

- Number of aquaculture demonstration project

Year	Actual
2012	4

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of farmers familiar with Recirculating Aquaculture Systems
2	Number of farmers learning how to use locally available ingredients in the on-island production of feed
3	Number of youths familiar with aquaculture and aquaponics
4	Number of individuals that will venture into aquaculture

Outcome #1

1. Outcome Measures

Number of farmers familiar with Recirculating Aquaculture Systems

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	150

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As the CNMI is primarily made up of soils that perculate at a quick rate, the Recirculating Aquaculture System (RAS) is the most feasible option for our industry.

What has been done
Training courses, workshops, online course training offered by our partners were some of the steps taken at increasing knowledge of RAS.

Results
As a result of our ongoing efforts a Saipan farmer is now capable of producing 40 tons of tilapia annually.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
135	Aquatic and Terrestrial Wildlife

Outcome #2

1. Outcome Measures

Number of farmers learning how to use locally available ingredients in the on-island production of feed

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Number of youths familiar with aquaculture and aquaponics

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	259

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The sustainability of an industry is largely dependent on the workforce skilled in the subject area. By investing in such an age population, we anticipate greater understanding of environmental stewardship and how science drives industry.

What has been done
The AFDP has erected small scale demonstrations models that are mobile and can be easily erected at fairs, exhibitions, etc. In addition to carrying miniature prototypes, program personnel allow access into their wet laboratory to showcase the different systems available and how the science has evolved from its humble beginnings.

Results
The news of our program growth has spread to outlying nations in the Pacific, that we provided 9 students from the College of Micronesia with a hands on workshop entitled "Aquaculture for Beginners." This growth has also lead to the request for a similar workshop from the Caribbean and Pacific Consortium slated for the Summer of 2013.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
135	Aquatic and Terrestrial Wildlife

Outcome #4

1. Outcome Measures

Number of individuals that will venture into aquaculture

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In our previous AREERA submission we had 17 actual farmers focused on different crops such as shrimp grow out, tilapia production, and aquaponics. Economic studies indicate that aquaculture is a very promising industry to invest in considering our strengths and weaknesses as an island economy. Efforts remain on bringing this number higher annually as this industry is becoming evidently sustainable.

What has been done
AFDP continues the promotion of the different systems available to stakeholders by means of extension visitations, public media outlets, demonstration projects, and the continuous professional development of program personnel.

Results
As a result of dynamic program implementation efforts 4 more farmers have demonstrated their commitment to such an industry by investing their financial resources at aquaculture related businesses.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
135	Aquatic and Terrestrial Wildlife

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

The key area not reported on this submission is in the area of "feed creation with locally available products." We continue to put in key infrastructure investments at this time. Work is underway, however the impact of such efforts are not quantitatively ready as such infrastructure is key in ensuring the success of this endeavor. Program personnel anticipate reporting on this section on future reporting submissions as phases of our infrastructure become reality.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

It is obvious that Land Grant division is at its intermidiate stage requiring the program's managment and USDA-NIFA to continue supporting current efforts being made and invest in the overall growth of the program. The need for such can be justified based on the impacts created and the lives positively changed as a result of client participation.

Key Items of Evaluation

Please refer to the aforementioned section indicating continued collaboration.

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Sustainable Energy

☐ Reporting on this Program

Reason for not reporting

As this program was not a submission in the previous Plan of Work due to the uncertainties related to the imposition of the Consolidated Natural Resources Act (CNRA). On May 8, 2008, the CNRA extended most provisions of U.S. immigration law to the Commonwealth of the Northern Mariana Islands (the CNMI) for the first time in its history. The transition period for implementation of U.S. immigration law in the CNMI began on November 28, 2009, and is scheduled to end on December 31, 2014. Such an act significantly reduced NMC-CREES' ability to hire faculty possessing the academic credentials needed to offer stakeholders with technical assistance in the various science disciplines.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

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

V(D). Planned Program (Activity)

1. Brief description of the Activity

No activities planned under this program

2. Brief description of the target audience

No activities planned under this program

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2012

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

Outcome #1

1. **Outcome Measures**

{No Data Entered}

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Public Policy changes

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}