

2013 Northern Marianas College Combined Research and Extension Annual Report of Accomplishments and Results

Status: Accepted

Date Accepted: 12/02/2014

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 evolved 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 degrees in elementary education, rehabilitative services, nursing, 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 States may be viewed as being insignificant due to the small acreage of arable land being occupied for food production. Around 90% of the food stuff in the CNMI is imported from the United States and Asia. 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 decisions made by the World Trade Organization.

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 comprised 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: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	30.0	0.0	12.0	0.0
Actual	18.5	0.0	6.8	0.0

II. Merit Review Process

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

- Expert Peer Review
- Other (Program Leaders and Stakeholders representative)

2. Brief Explanation

The merit review process involved review by content experts, stake holders, and an advisory committee composed of members from various government agencies, non-government organizations, and private citizens with vested interest in Agriculture and Family and Consumer Sciences. Feedback was solicited and used to guide programming evaluation and planning in consideration of accomplishments made and those still needing to be realized.

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

Brief explanation.

Stakeholder participation was encouraged through meetings to solicit input on planned program activities. Strategic plans were also developed through facilitated discussions with key stakeholders. Community-Based Participatory Research methods were used to guide integrated research and extension projects.

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.

Individuals with experience relevant to NMC-CREES' mission, goals and objectives are selected to serve on Advisory Councils. Additionally, Extension Agents, who represent NMC-CREES on various councils and groups, solicit input from stakeholders in these venues. Focus groups have also been used to identify issues and concerns as well as potential ways to address issues to meet local needs. Program leaders regularly collect input from stakeholders and recipients of program services.

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 specifically with non-traditional groups
- Meeting with invited selected individuals from the general public

Brief explanation.

Information/data from meetings, questionnaires, and surveys was used as this has proven to be an effective method for collecting input/feedback from CNMI clientele and for identifying key informants and stakeholder groups. The information collected from meetings and stakeholders is then discussed among program personnel and relevant aspects of the feedback were incorporated into program plans.

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.

Groups and program leaders base program needs on extension and research priorities and emerging problems and opportunities in the CNMI coupled with stakeholder input. A community readiness survey was used to identify at which "stage of change" identified stakeholders were at. The results of the survey were then shared with community groups and used as part of the participatory program planning process.

Brief Explanation of what you learned from your Stakeholders

While stakeholders are generally appreciative of the work of program personnel, there is a need to work with other relevant departments and agencies to ensure the needs and priorities are being effectively and holistically addressed.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
835319	0	795880	0

2. Totaled Actual dollars from Planned Programs Inputs				
Extension			Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	545198	0	77000	0
Actual Matching	0	0	0	0
Actual All Other	23874	0	71619	0
Total Actual Expended	569072	0	148619	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover				
	254333	0	77000	0

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Global Food Security and Hunger: Plant Protection Program
2	Global Food Security and Hunger: Livestock Improvement Program
3	Global Food Security and Hunger: Crop Improvement Program
4	Climate Change
5	Community Resource Development
6	Childhood Obesity
7	Food Safety
8	4-H Youth Development
9	Global Food Security and Hunger: Aquaculture and Fisheries Development Program
10	Sustainable Energy

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger: 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	40%		40%	
215	Biological Control of Pests Affecting Plants	40%		40%	
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: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	4.3	0.0	5.3	0.0
Actual Paid Professional	1.0	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
75905	0	8114	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

1. Brief description of the Activity

The USDA / APHIS CAPS funded project "Arthropod Survey" involves the surveillance of two invasive species of fruit flies the *Bactrocera philippinensis* and *Bactrocera franuenfeldi*. The objective of the project is to set up surveillance monitoring stations at the port of entry and agriculture areas on Saipan and Rota. The strategy is to use attractant pheromone lures in the traps to capture these pest upon arrival to CNMI because early detection can lead to non-introduction of the invasive species or possible eradication.

Plant Protection program is battling against invasive weeds, insect pests, mollusks and plant diseases. As an example, the weed, *Mimosa diplotricha* was accidentally introduced to the Northern Mariana islands and thereafter became invasive. This invasive weed has invaded the farm land and pastures areas by competing with the space and available foods for the cattle's and competing with the environment. The Biological control *Heteropsylla spinulosa* was introduced to Saipan from Palau to control this invasive weed. The surveillance of the invasive species shows the reduction of the *Mimosa diplotricha* on Saipan.

Another example is the recently introduced Cuban slug, *Veronicella cubensis*. It has become established on the island of Rota, has multiplied and 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 not present. We intend to continue to apply the best management methods of control and to find its natural enemies to supplement other methods of control. There are many more existing weeds, arthropods and other crop pests and diseases that require continuous application of best management methods. We will continue to improve on these methods and to extend the knowledge to our stakeholders. We will also continue to collect arthropods of economic importance, expand and enhance the economic insect collection, and the general invertebrate collection for reference, for taxonomic studies, and for educational purposes.

2. Brief description of the target audience

Farmers, crop producers and farm helpers, business operators that promote or sell farm products, grade schools, high schools and college students interested in furthering their 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

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	300	1000	0	0

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

Patent Applications Submitted

Year: 2013
 Actual: 1

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	1	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).

Year	Actual
2013	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of farmers using Integrated Pest Management to control invasive species
2	Decrease the population of the various invasive species (Cuban Slug, Melon Fly, Sweet potato Weevil, Whiteflies, and nematodes) by certain percentage:
3	Number of clients learning Pesticide Safety

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
2013	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Protection our natural resources and environment is one of NMC- CREES goal or mission to ensure the agriculture production and environment are well protected from the invasive species that are threatening the agriculture production on island and the environment. The plant protection have educate the farmers the save use of pesticides by introducing the new methods of control pest which Integrated Pest Management (IPM). The pesticides is the last resort to control pests.

What has been done

The USDA-APHIS CAPS program awarded CREES one year research project and still continue for another year. The project set a new lead idea to capture the invasive pest upon arrival. This project is significant because they provide funding to CREES to surveillance of the invasive species that are threading the CNMI.

Results

The Plant Protection Program continued to distribute the Biological control agent (*Acythopeus coccinae*) of Scarlet gourd (*Coccinia grandis*) throughout the island of Saipan Tinian and Gall fly the bio agent *Cecidochare connexa* on the island of Saipan to control the invasive weed (*Chromolaena odorata*.. The new grant from USDA-APHIS will enhance the distribution of the bio agent on the island of Tinian and Saipan.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods 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
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The CNMI has very limited agriculture resources and the invasive pests that are already present are seriously impacting the agriculture production in the CNMI. Any additional pests can cause major problem to the already fragile commercial and subsistence farming in the CNMI.

What has been done

Extension agents scout for insects and other invasive species and gave educated farmers on how to identify and deal with insect pest through the use of appropriate Integrated Pest Management methods. Additionally, extension agents educated farmers and stakeholders on the negative effects of smuggling non-native plants into the islands.

Results

NMC-CREES collaborated with numbers of agencies in the CNMI Guam, Hawaii and Mainland or Western Region on pest issues, agriculture issues and environmental issues. The DLNR, DEQ Pest Net group, PIDDRS help for pest identification and USDA-APHIS provide funding for surveillance of invasive pest species and pest identification. Quantifying invasive species increases or decreases is on-going. Around 80% of farmers reported being able to identify pests post-education from extension agents.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants

Outcome #3

1. Outcome Measures

Number of clients learning Pesticide Safety

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
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Lack of personnel)

Brief Explanation

Our Plant Protection Program was challenged with no FTE program leader on Saipan and no Staff for the Plant Protection on Rota site and Tinian site.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Although methods to control invasive species and pests have been implemented, eradicating the aforementioned continues to be a daunting task. However, through programming efforts, farmers have been better able to control invasive pests, insects, and plants with the resources that they have access to.

Key Items of Evaluation

Plant protection remains an important program due to the fragile agriculture industry coupled with the challenges of invasive pests, insects, and plants. Regional collaboration and access to scientists plays a key role in moving towards the eradication of invasive species.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Global Food Security and Hunger: 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
303	Genetic Improvement of Animals	40%		0%	
307	Animal Management Systems	40%		0%	
311	Animal Diseases	5%		0%	
312	External Parasites and Pests of Animals	5%		0%	
313	Internal Parasites in Animals	5%		0%	
902	Administration of Projects and Programs	5%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	0.0	1.0	0.0
Actual Paid Professional	0.5	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
51390	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 NMC-CREES Livestock Improvement Program aims to develop educational and capacity building programs that support and encourage livestock producers, contributing to the sustainability and financial viability of their operations. Our program uses a variety of methods and venues that serve to gather and disseminate information to livestock producers, to include, technical assistance, demonstrations, workshops, field days, and locally appropriate research studies related to breed improvement, pasture management, feed processing, animal health, disease management, meat processing and value adding, herd surveys, waste management, and marketing. Although this program works with individuals and associations involved in livestock production, the goals of the program help to contribute to local and regional improvements in food security, access to fresh meats and proteins, increased agricultural commerce, and the adaptability of local agriculture to the affects of climate change.

2. Brief description of the target audience

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

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	80	20	50	25

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

Patent Applications Submitted

Year: 2013

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	0

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
2013	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
2013	9

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
2013	25

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Livestock Production is an important component of our local food systems. Livestock producers provide our communities with access to fresh meats that would otherwise not be available to the general public, due to the sheer distance from our islands to the Mainland USA. Many livestock producers have structured their production systems, based on outdated and unsustainable management practices, resulting in losses to production and created the threat of environmental damage.

What has been done

The NMC-CREES Livestock Improvement Program has been working in partnership with the University of Hawaii, University of Guam, and University of the Virgin Islands, and many other partners to conduct a series of training and capacity building opportunities for farmers in the CNMI and Guam, which has come to be known as the "Marianas Grazing Academy". We set up farmer advisory councils and met with producers throughout the region to guide our program planning efforts. We have developed the first publicly supported artificial insemination program for cattle, established grass and leucaena demonstration and research plots, and conducted workshops and field days on a variety of livestock production topics.

The NMC-CREES livestock Improvement program employs a variety of evaluation tools to assess our programs, to include pre and post-surveys, herd and livestock surveys, areas under pasture, pasture and legume data collection, numbers of clients applying and receiving EQIP and FSA funding, amount of USDA dollars applied for and spent on conservation practices, numbers of waste management systems constructed, number of clients adopting BEST management practices (such as composting), pre and post-tests, interviews, advisory councils, and direct and indirect client contact numbers.

Results

Through the collection and analysis of data collected through a variety of methods, our program has observed increases in livestock production, pastured areas, meat processing activity and businesses, legislative support (imports to Guam), and increases in the interest levels of farmers in adopting BEST management practices, such as, weed suppression, pasture management, animal health, biomass and forage improvement, breed improvement, animal waste management, and overall community support for sustainable livestock production in the CNMI.

4. Associated Knowledge Areas

KA Code	Knowledge Area
303	Genetic Improvement of Animals
307	Animal Management Systems
311	Animal Diseases
312	External Parasites and Pests of Animals
313	Internal Parasites in 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
2013	100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Livestock Production is an important component of our local food systems. Livestock producers provide our communities with access to fresh meats that would otherwise not be available to the general public, due to the sheer distance from our islands to the Mainland USA. Many livestock producers have structured their production systems, based on outdated and unsustainable management practices, resulting in losses to production and created the threat of environmental

damage.

What has been done

The NMC-CREES Livestock Improvement Program has been working in partnership with the University of Hawaii, University of Guam, and University of the Virgin Islands, and many other partners to conduct a series of training and capacity building opportunities for farmers in the CNMI and Guam, which has come to be known as the "Marianas Grazing Academy". We set up farmer advisory councils and met with producers throughout the region to guide our program planning efforts. We have developed the first publicly supported artificial insemination program for cattle, established grass and leuceana demonstration and research plots, and conducted workshops and field days on a variety of livestock production topics.

The NMC-CREES livestock improvement program employs a variety of evaluation tools to assess our programs, to include pre and post-surveys, herd and livestock surveys, areas under pasture, pasture and legume data collection, numbers of clients applying and receiving EQIP and FSA funding, amount of USDA dollars applied for and spent on conservation practices, numbers of waste management systems constructed, number of clients adopting BEST management practices (such as composting), pre and post-tests, interviews, advisory councils, and direct and indirect client contact numbers.

Results

Through the collection and analysis of data collected through a variety of methods, our program has observed increases in livestock production, pastured areas, meat processing activity and businesses, legislative support (imports to Guam), and increases in the interest levels of farmers in adopting BEST management practices, such as, weed suppression, pasture management, animal health, biomass and forage improvement, breed improvement, animal waste management, and overall community support for sustainable livestock production in the CNMI.

4. Associated Knowledge Areas

KA Code	Knowledge Area
303	Genetic Improvement of Animals
307	Animal Management Systems
311	Animal Diseases
312	External Parasites and Pests of Animals
313	Internal Parasites in 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

Extension agents have been effective at improving grazing strategies through the promotion of rotational grazing. In addition to time and labor saved on managing weeds by using rotational grazing, farmers have reported that cattle grow faster due to the increased nutrition associated with rotational grazing. This has resulted in greater beef yields than previously observed.

As a result of extension agents, dragon fruit production has been introduced and is being done by several farmers. Programming has resulted in increased use of sustainable agriculture methods as well as increased farm income due to increased crop production. The latter helps to improve the overall economic condition of the CNMI while providing healthier food choices.

Key Items of Evaluation

There is a need to recategorize the rotational grazing outcome for next reporting season.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Global Food Security and Hunger: Crop 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
102	Soil, Plant, Water, Nutrient Relationships	30%		30%	
204	Plant Product Quality and Utility (Preharvest)	30%		30%	
205	Plant Management Systems	10%		0%	
902	Administration of Projects and Programs	30%		40%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	1.0	0.0
Actual Paid Professional	0.5	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
45047	0	9697	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

- * 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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	100	200	50	200

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

Year: 2013
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research projects completed on Crop Improvement Issues
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 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.
4	Diversifying crops and cropping systems

Outcome #1

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

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

Not Reporting on this Outcome Measure

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
2013	25

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Livestock Production is an important component of our local food systems. Livestock producers provide our communities with access to fresh meats that would otherwise not be available to the general public, due to the sheer distance from our islands to the Mainland USA. Many livestock producers have structured their production systems, based on outdated and unsustainable management practices, resulting in losses to production and created the threat of environmental damage. Specifically, over-grazing of grass and legume pastures can lead to the proliferation of invasive or non-edible species that may out compete desirable pasture species, leading to a

reduction in productive capacity of the pasture, diminished animal health, and increased soil erosion. BEST management practices, such as rotational grazing, can improve pastures over time, improving edible grass species growth, contributing to better animal health, and improved soil health and fertility.

What has been done

The NMC-CREES Livestock Improvement Program has been working in partnership with the University of Hawaii, University of Guam, and University of the Virgin Islands, and many other partners to conduct a series of training and capacity building opportunities for farmers in the CNMI and Guam, which has come to be known as the "Marianas Grazing Academy". We set up farmer advisory councils and met with producers throughout the region to guide our program planning efforts. We have developed the first publicly supported artificial insemination program for cattle, established grass and leuceana demonstration and research plots, and conducted workshops and field days on a variety of livestock production topics, to include pasture management topics.

The NMC-CREES livestock Improvement program employs a variety of evaluation tools to assess our programs, to include pre and post-surveys, herd and livestock surveys, areas under pasture, pasture and legume data collection, numbers of clients applying and receiving EQIP and FSA funding, amount of USDA dollars applied for and spent on conservation practices, numbers of waste management systems constructed, number of clients adopting BEST management practices (such as composting), pre and post-tests, interviews, advisory councils, direct and indirect client contact numbers.

Results

Through the collection and analysis of data collected through a variety of methods, our program has observed increases in livestock production, pastured areas, meat processing activity and businesses, legislative support (imports to Guam), and increases in the interest levels of farmers in adopting BEST management practices, such as, weed suppression, pasture management, animal health, biomass and forage improvement, breed improvement, animal waste management, and overall community support for sustainable livestock production in the CNMI. Farmers also reported saving time and labor as a direct result of using rotational grazing practices as promoted by program extension agents.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems

Outcome #4

1. Outcome Measures

Diversifying crops and cropping systems

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Due to the limited land area, resources, and food security issues in the CNMI, there is a need for farmers to diversify crops and improve cropping systems with sustainable agriculture techniques.

What has been done

Extension agents worked with farmers to diversify crops and improve cropping systems through inter-cropping and other best-practice methods. Extension agents worked with 8 farmers to introduce specialty crops (i.e. dragon fruit) and to improve current cropping systems.

Results

As a result of the extension work, an additional \$30,000 in income was generated among the 8 farmers who received crop improvement programming.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Due to employee turnover, not all outputs and outcomes were accomplished.

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

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	20%		0%	
111	Conservation and Efficient Use of Water	20%		0%	
132	Weather and Climate	20%		0%	
133	Pollution Prevention and Mitigation	20%		0%	
403	Waste Disposal, Recycling, and Reuse	20%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	0.0	1.0	0.0
Actual Paid Professional	0.2	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
10801	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

Demonstration and research projects will be applied as learning tools for educating farmers and the community in regards to climate change and the importance of strong agriculture systems in mitigating against the impacts of climate change on our island communities. Sustainable farming systems, such as the Dry Litter Waste Management system, rotational grazing, improved pasture grasses and legumes, composting and others will be demonstrated, documented, and shared through education and outreach efforts. Farmer-type gatherings such as association meetings, soil and water conservation district meetings and forums will target students from the grade school, high school and college will also be involved in activities and presentations whenever possible. Soil sampling has been conducted as part of the improved pasture grasses and legumes trials to determine the levels of carbon sequestration occurring in our tropical cattle pasture systems. Variety trials that evaluate crops and fruit trees for resistance to wind, salinity, drought and other factors has been conducted in order to strengthen local agricultural production systems and keep them adaptable to changes in the climate and other environmental factors. 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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	150	200	50	75

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

Patent Applications Submitted

Year: 2013
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	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
2013	1

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

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Number of households learning to safely use Rain-catchments systems

Not Reporting on this Outcome Measure

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
2013	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Hog waste can carry deadly pathogens that seep into soils and natural water resources through the conventional spray out system of waste management. Dry systems for hog waste management, and other sustainable systems, offer hog producers a chance to avoid contamination of soils and water resources, along with, providing them with compost to enhance their soil fertility and productivity.

What has been done

Workshops and demonstrations of dry litter systems for hogs, pasture management, improved pasture grasses and legumes, and others provide opportunities for educating farmers and

community members and providing options that allow them to become stewards of their environment.

Results

Farmers are coming around to the idea that they can become good stewards of the land and are adopting sustainable farming practices that enhance their productivity and strengthen their farming systems.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
403	Waste Disposal, Recycling, and Reuse

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
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Composting provides farmers and community members an opportunity to recover nutrients from carbon materials that would otherwise be lost by burning or dumping of trash in the land-fill.

What has been done

Composting demonstrations have been set up and used as learning tools via presentations and workshops.

Results

Farmers and community members are adopting composting in their homes and others are requesting for composting workshops and information.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
403	Waste Disposal, Recycling, and Reuse

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
2013	120

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Sustainable farming practices strengthen local farming systems, making them more adaptable to climate change and often times, adding to their financial viability.

What has been done

Workshops, Demonstrations, and field days on topics such as animal waste, pasture management, and sustainable farming practices have been conducted.

Results

Many farmers are adopting sustainable farming systems as a means of improving their productivity and the sustainability of their farms.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
403	Waste Disposal, Recycling, and Reuse

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

A downturn in the economy has causes some farmers to hesitate to adopt or maintain sustainable systems that require a financial investment on their farms.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Farmers who participated in the compost trainings have adopted these methods and continue to successfully compost animal and yard scraps to this day, serving as demonstrations sites where others can be exposed to the benefits and methods of composting.

Key Items of Evaluation

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: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	0.0	0.0
Actual Paid Professional	1.0	0.0	0.0	0.0
Actual Volunteer	36.0	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
74846	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 2013, the Community Resource Development (CRD) program added new, short-term classes and hands-on-training opportunities in the area of hair and facial care to respond to the needs of families and the community. One conservative estimate stated that a family of four spends around \$360 annually on hair care services. Since 100% of class attendees were low-income, with an annual gross income of around \$11,544, having the skills to cut family members hair can result in savings of hundreds of dollars a year.

Due to proposed changes in immigration regulations, it is anticipated that 90% of the overseas workers who provide hair and facial care services will be departing the CNMI in the near future. The classes offered through CRD provide free skills training in this area so that individuals can increase their ability to be employed in this area.

CRD program continues to develop educational materials, conduct workshops in home-canning/food preservation, container gardening, money management for youths and adults, home arts and designs, local handicrafts, legal considerations facing older adults in the CNMI, and sewing classes for families with limited resources.

The ultimate goal of the CREES-CRD program is to improve the quality of life for all CNMI residents by understanding and addressing our immediate community needs as well as breaking the cycle of social problems often caused by a lack of job skills and self-worth. The proposed activities aim to increase competency in life skills that would ultimately benefit CRD participants in general.

2. Brief description of the target audience

- Children (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

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	500	1000	3000	5000

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

Year: 2013
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	2	0	2

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
2013	311

Output #2

Output Measure

- Number of established Entrepreneurs projects

Year	Actual
2013	4

Output #3

Output Measure

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

Year	Actual
2013	215

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.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	215

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In 2013, the number of participants who attended and completed training and hands-on-demos, claimed to benefit more (in terms of knowledge and applications of knowledge and skills obtained) on a one-on-one bases or small group training and demos.

What has been done

CRD Program Manager required a minimum of ten (10) participants for training and workshops on home canning and food preservation to take place.

Results

Participants who were interested and committed to learn recruited friends, relatives and interested others in an efforts for the training and workshops to take placed.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

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
2013	256

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In 2013, more than 50% of business establishments had to cut down work hours for their employees to avoid termination of what already limited employees that they have. The private and government sectors accepted the reality that they could no longer pay employees' wages. CRD pre/post survey reviewed that majority of unemployed individuals, took advantage of NMC-CREES, CRD free training and workshops in an effort to learn new skills, training and managing their limited income that mostly derived from farming, fishing and from part-time jobs. A good number of students who had successfully completed the Sewing Class for Beginners, earned side income from repairing zippers, sewing baby cloths, mending pants and sewing curtains for friends, hotels etc.,

What has been done

On Saipan, sixty (60) students who had graduated from the sewing program formed a non-profit organization. The non-profit organization promote CREES-CRD many programs through recruitment of individuals to participate in the program and volunteering when needed. Majority of them are now members of the Sabalu Garage Sale Business. They sell baby and children clothing as well as arts and craft at the Sabalu Garage Sale Business site.

Results

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
2013	325

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

CNMI continue to report an increased in domestic violence due to drug abuse, gambling and unemployment. A significant percent of the Nutrition Assistance Program (NAP) and the Women-Infant and Children voucher recipients have very limited knowledge in budgeting their food stamps and WIA vouchers. The Division of Youth Services incorporated lessons in money management for the youths, detained in the Juvenile Detention Facility.

What has been done

CRD Money Management program teaches recipients to treat their NAP and WIA vouchers as Cash Income. CRD Money Management program, conducted workshops on Smart Shopping, How to Budget their Food Stamps, Youth Money Management, Money Management for College Students and Family Financial Management. CRD also taught participants whys to earn side income.

Results

100% of CRD Money Management workshops? participants claimed to have learned something new and felt that they can apply what they have learned. Many of our youth participants developed a piggy bank using recycled producta and started savings to meet their short-term savings goals.

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

Natural disasters such as typhoons, flooding, drought and other extreme weather conditions and extreme economic downturn, which might affect manpower availability and unavailability of needed facilities and equipment to conduct extension services.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

- 100% of our adult participants gained knowledge and can develop a bi-weekly family budget.
- 100% of NAP recipients who attended the CRD Money Management workshops claimed to be able to budget their Food Stamps and shop wisely.
- 100% of our youth participants made their own piggy bank from reused materials and claimed to start savings.
- A good number of our Money Management workshops participants claimed to know how to develop a bi-weekly budget but do not see a need to develop one due to unemployment.
- 100% appreciated the new lesson on How to Make or Earn Money.

Key Items of Evaluation

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%		50%	
724	Healthy Lifestyle	50%		50%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	0.0	0.0
Actual Paid Professional	1.5	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
68735	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
23874	0	71619	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

-Conducted baseline measurements on 976 children ages 2-8 years old as part of multi-state integrated research and extension project; partnered with several local agencies/offices/groups and

universities to accomplish this

- Trained and standardized college nursing students to conduct anthropometric measurements
- Conducted focus-groups in intervention and delayed-optimized/comparison villages to plan for intervention focused on improving the health of children by decreasing overweight and obesity among 2-8 year olds
- Identified and trained role models from intervention villages to lead changes conducive to healthy living at the village level; assisted with the formulation of the role model training guide
- Collaborated with Pacific Island Land-Grant college and university nutrition educators to develop training modules for nutrition educators and community workers who currently work with or plan to work with Pacific Island groups
- Assisted with the contextualization of Community Assessment Tool forms and conducted assessments using Community Assessment Tool forms in intervention villages and delayed-optimized (comparison) villages.

2. Brief description of the target audience

The target audiences included children, ages 2-8 year old, caregivers of children, and families with young children.

Key people from villages who have influence and have the potential to influence others were selected based on community recommendations and the recommendations of the Children's Healthy Living Program Local Advisory Committee to be trained as "role models" for health.

3. How was eXtension used?

eXtension was used to search for literature on best practices in promoting community health and wellness.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1500	3000	1200	1500

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

Patent Applications Submitted

Year: 2013
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
------	-----------	----------	-------

Actual	7	6	13
---------------	---	---	----

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Greater understanding of diet, physical activity, and health
Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Increase opportunities for physical activity
Not reporting on this Output for this Annual Report

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

Output #4

Output Measure

- Anthropometric measurements and other data collected from children 2-8 years old and their caregivers

Year	Actual
2013	960

Output #5

Output Measure

- Community champions/role models trained using regionally-developed training guide

Year	Actual
2013	20

Output #6

Output Measure

- Conduct focus groups composed of parents, teachers, child care providers, and community leaders in 4 communities

Year	Actual
2013	12

Output #7

Output Measure

- Physical activity workshops held for elementary and Head Start teachers and administrators from identified villages

Year	Actual
2013	50

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.
5	Empower community role models to take the lead in promoting health in their respective communities/villages
6	Teachers of young children increase physical activity opportunities during school day

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

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Empower community role models to take the lead in promoting health in their respective communities/villages

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Previous attempts to improve the health of people in the CNMI have not been as successful as anticipated. One i

What has been done

A role model training manual was developed with the input of content experts and contextualization input from CNMI extension agents. The manual was tested and feedback was solicited from potential end-point users. Role models were identified based on feedback from the Local Advisory Council, key informants, and relevant agencies. Three trainings were held: one to train identified individuals on how to "role model" healthy behavior, one training for role models on motivational interviewing, and one master role model training which was attended by 4 "leader role models".

Results

As a result of the trainings, two role model groups were formed for the villages of Kagman and Tanapag, Achugao, San Roque, and As Matuis (TASA). A weekly village walk was initiated by the Kagman role models. The walk is attended by around 20-40 families. Around 75% of the families did not use the pathway prior to the role model initiated weekly village walk. The TASA role models formed a registered non-profit group and submitted a grant application to run a summer youth camp. The grant was approved. The camp focused on encouraging healthy behaviors including drinking water, consuming fruits, and vegetables, and increasing physical activity. Tip sheets were distributed on healthy behaviors to promote with children to parents of camp attendees. As a result of the success of the summer camp, the role models decided to extend the camp beyond summer. Around 20-25 children attended and/or continue to attend the camp.

4. Associated Knowledge Areas

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

Outcome #6

1. Outcome Measures

Teachers of young children increase physical activity opportunities during school day

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	30

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Regular physical activity in childhood helps to control weight, improves strength and endurance, and reduces anxiety and stress. Research also suggests that developmentally appropriate physical activity can enhance the learning and cognition of children.

What has been done

Three practical, hands-on, research-based work-shops entitled, "Creating a win-win for Academic Achievement and Health Outcomes", were held for early childhood and elementary school teachers and administrators. The training is the first part of an integrated approach to increase physical activity during school hours. The remainder of the aforementioned approach will take place in FY 2014.

Results

Around 75% of the teachers who attended the trainings reported integrating more physical activity into their teaching post-trainings. As a result of the effectiveness of the methods learned at the trainings, one administrator has ordered recommended, research-based curriculum materials to encourage more physical activity integration.

In Spring of 2015, 2-10 year old children from pre-identified sites will again wear Actical accelerometers to see if moderate and/or vigorous intensity physical activity during school hours was increased as a result of the trainings. This will be done as part of a 5 year multi-state research project.

4. Associated Knowledge Areas

KA Code	Knowledge Area
----------------	-----------------------

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Competing Public priorities
- Competing Programmatic Challenges
- Other (Collaboration)

Brief Explanation

The collaboration between the Childhood Obesity Program and the Public School System, Head Start Program, University of Hawaii, CNMI Women, Infants, and Children Program (CNMI WIC), Diocese of Chalan Kanoa, community members (role models), Let's Move Marianas, and the Northern Marianas College Nursing Department played an integral role in achieving the outputs and outcomes associated with this program. Despite the unfavorable economic conditions, the willingness of the aforementioned agencies made the programming possible.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The major evaluation associated with this program will take place in 2015. In early 2015, 24-month data collection will take place. The results of the 24-month anthropometric measurements will be compared against baseline anthropometric measurements to determine if BMI changed as a result of the interventions/programming conducted in identified villages/communities. The following behavioral outcomes will also be measured at 24-month data collection: increase in fruit and vegetable consumption, increase in water intake, increase in moderate/vigorous intensity physical activity, increase sleep, decrease sugar-sweetened beverage consumption, and decrease recreational screen time.

Key Items of Evaluation

The successes that were realized this reporting year can be largely attributed to the partnerships and collaborative relationships that extension agents have been able to develop and foster over the years. Developing community role models is a process, that when done properly, can yield impact in both the short and long terms. In the CNMI, each village has at least several community residents who are interested in improving the collective health and wellness of the village they call "home". Focusing on the health and wellness of children can provide the impetus to empower communities to take the lead in improving the health of all village residents.

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
501	New and Improved Food Processing Technologies	0%		25%	
502	New and Improved Food Products	50%		25%	
503	Quality Maintenance in Storing and Marketing Food Products	0%		25%	
504	Home and Commercial Food Service	0%		15%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	50%		0%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	0%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	2.0	0.0
Actual Paid Professional	0.5	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
48393	0	37889	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 troughs' 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 ice cream making and calamansi lemon processing and HACCP on meat processing and slaughtering house
- Participated at various community events (Rota Ag. Fair, Saipan Ag. Fair, Tinian Pepper Festival, etc.)
- Provided on-site consultation at various food processing centers (Marianas Meat Harvest, Shinho Development for jam and ice cream making)
- Created various outreach publications (Handling Food Safely brochure)

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 agencies/collaborators

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	120	750	900	1800

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

Year: 2013
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	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
2013	2

Output #3

Output Measure

- Number of workshops related with food safety and quality

Year	Actual
2013	3

Output #4

Output Measure

- Numbers of newly developed value-added products

Year	Actual
2013	2

Output #5

Output Measure

- Numbers of technical information provided to the public

Year	Actual
2013	1

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
2013	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

It is difficult to ship any agricultural product off-island as a potential export due to lack of fumigation and food irradiation facilities. Additionally, the high price of electricity makes it very difficult for farmers/producers to use cold storage facilities. Consequently a large portion of these produce is either fed to livestock or given away. Thus there is need to for local farmers and producers to utilize fresh produce in order to create additional profits for small and mid-sized farms in the NMI.

What has been done

Extensive outreach efforts have been made to help local farmers and producers to develop value-added products. 2 value-added process works shops were held to teach how to make fruits jams and how to preserve these agricultural products. In addition, HACCP and safe food handling workshops were also provided to the public. The Food Safety Program Leader also visited producers to give them pertinent consultation on site.

Results

We have three new individuals processing locally grown and butchered meat, calamansi lemon, and extending the shelf-life of coconut sap beyond current standards. The program provided these producers technical advices to obtain suitable containers, equipment, and ingredients as well.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies

502 New and Improved Food Products

Outcome #2

1. Outcome Measures

Number of farmers/producers implementing good post-harvest practices

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
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

- 1 research was conducted to improve food quality and shelf-life tests for 5 commercial products: 3 cookies made from local produce, 1 locally made wine, hot pepper pastes,
- 2 value-added processing workshops, on jam making and canning processes were provided to local farmers and producers, and 5 food manufacturers are applying the knowledge gained from these workshops to improve their products (jams, hot pepper sauce, and pickles).
- 2 intensive HACCP workshops for meat processing and slaughtering house and 1 safe food handling workshop were provided. As a result, one commercial slaughtering house, Marianas Meat Harvesting Company, updated its HACCP system and is now in compliance with local food safety regulations.
- Information for ethylene gas removal sachet was disseminated to improve post-harvest quality of fresh produce. 3 farmers are using these ethylene gas removing sachets to maintain the freshness of their fruits (banana, sour sop, and calamansi lemon).

Key Items of Evaluation

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: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	0.0	0.0
Actual Paid Professional	1.8	0.0	0.0	0.0
Actual Volunteer	20.0	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
89249	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 collaborates with other government and non-government groups to develop relationships and design programs for youth development. Funding will be sought through proposal development and other efforts in order to support staffing and program facilitation. Volunteers will be recruited and clubs formed as a venue for 4-H curricula and programming. Information on the CNMI 4-H programs will be developed and continuously disseminated through publications and other media. 4-H programs will sponsor experiential learning opportunities for youth and parents such as workshops, field days, and hands-on activities related to the 4-H mission and purpose.

4-H is targeting projects that promote healthy living and help to reduce the likelihood of childhood obesity. Our CYFAR project has community engagement projects in which our children participants renovate local facilities on island. Our program also focuses on developing leadership skills, setting life and educational goals, and high school drop out remediation.

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

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	120	300	550	600

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

Patent Applications Submitted

Year: 2013

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	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
2013	550

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
2013	60

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The impacts of non-point source pollution are hard-felt in island communities where land based activities ultimately affect reef communities. Thus, recycling promotion and education is one way to encourage citizens to care about their environment and manage their waste appropriately.

What has been done

Recycling is promoted and encouraged at all of our events and functions. We also host beach and park clean-ups. We also conduct mini-trainings and forums on recycling, re-using, and watershed education.

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 about they environment. 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
2013	20

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. Recruiting and enlisting volunteers serves to enhance community buy-in and overall support for youth programs.

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
2013	650

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 and development. Lack of constructive activities for youth can lead our young people to participate in activities that are less-than-beneficial to society.

What has been done

We have conducted numerous workshops, camps, civic engagement activities, and social events for children to participate in.

Results

With the financial support from CYFAR, we gained greater community interest, increased participation from students, and have witnessed greater volunteer participation.

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

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Global Food Security and Hunger: 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: 2013	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
80832	0	21300	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

NMC CREES' Aquaculture & Fisheries Development Program (A&FDP) 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 A&FDP 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. **Tilapia Feed Project:** Based on stakeholder feedback from the 2011- 2015, CNMI, Aquaculture, Strategic, Development, Plan (CNMIASDP), the A&FDP wrote and submitted a proposal in early 2013, and was subsequently awarded a grant in the amount of \$32,900 to build capacity among the Tilapia farmers in the production of Tilapia feed using locally available ingredient like taro, sweet potato, banana, etc. Using funds from the grant, the A&FDP arranged for eight (8) farmers to travel to Thailand in October for a weeklong training in feed making at the Asian Institute of Technology (AIT). Of the 8 farmers, one has already started using his knowledge from the training in making feed for his backyard Tilapia grow-out production.

2. **Community-based, Rabbitfish Development Project:** In the A&FDP's efforts to expand the aquaculture industry in the CNMI and to provide an alternative species for grow out, the program embarked on a project to conduct research on the captive reproduction of the Forktail Rabbitfish specie, a popular indigenous food fish, with a huge commercial potential in the Marianas. With commercial successes in marine shrimp and Tilapia production as a result A&FDP's efforts in research and demonstrations, the program turned its attention to marine finfish as the next aquaculture commodity to develop. In the summer of 2012, a community meeting was held to determine the specific, marine finfish species for development, and Rabbitfish, was the overwhelming choice by those present. As a result, a proposal was submitted to conduct the research in producing juveniles in captivity for eventual distribution to farmers for grow-out. A&FDP was awarded a grant of \$69,000 to conduct the research and to date the program have successfully spawned the locally collected broodstock in captivity. Project is ongoing.

3. **A&FDP Outreach:** To ensure the sustainability of the aquaculture industry in the CNMI, the A&FDP continues to conduct numerous outreach activities in the community throughout the year. One of these events, where large crowds can be engaged and educated about the activities of the program, were the annual, CNMI-wide, Agriculture Fairs. In these Fairs, displays were erected to highlight, promote, and educate the public on ongoing projects like aquaponics and Tilapia feed making. Additionally, the program welcomed and gave tours to adults and youths alike to the A&FDP wet laboratory on campus where visitors can observe the actual research projects being investigated or technology being demonstrated. In-classroom presentations, may it be on campus or in the schools, were also undertaken. The program conducted many workshops throughout the program year to improve the knowledge base of aquaculture farmers and the community in hopes of improving production at the farm site.

2. Brief description of the target audience

Youth and Adults
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

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	960	3000	493	800

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

Patent Applications Submitted

Year: 2013
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of aquaculture workshops

Year	Actual
2013	8

Output #2

Output Measure

- Number of aquaculture research project

Year	Actual
2013	1

Output #3

Output Measure

- number of short course/training

Year	Actual
2013	9

Output #4

Output Measure

- Number of aquaculture demonstration project

Year	Actual
2013	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
2013	467

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Due to the CNMI's stringent waste discharge regulations, limited space, and mostly limestone-based soils, Recirculating Aquaculture System (RAS) is the preferred culture method for the production of aquatic animals and plants.

What has been done

Outreach in major public events, workshops, and trainings were some of the efforts undertaken to increase knowledge in RAS among the farmers.

Results

As a result of these extraordinary measures taken by the program, a new farm was started on the island of Saipan.

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Feed availability and cost has been identified by stakeholders as one of the constraints to expansion of the aquaculture industry in the CNMI.

What has been done

The A&FDP submitted and was awarded an external grant to build up capacity among CNMI farmers in the production of Tilapia feed using locally available ingredients. To this end, the program brought eight (8) farmers to the Asian Institute of Technology (AIT) in Thailand for hands-on training on Tilapia feed making.

Results

As a result, one of the farmers that participated in the Tilapia feed training in Thailand has started using his newly, learned skill to make feed using local ingredients like banana for his small scale Tilapia operation. As a result of applying knowledge gained from the AFDP, the farmer saved around \$1,000 on tilapia feed.

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 #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
2013	493

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The longevity and sustainability of the aquaculture and aquaponics industries in the CNMI will largely depend on the next generation of farmers. To this end, the A&FDP is very active in engaging youths in activities that promote and educate on aquaculture and aquaponics production.

What has been done

The A&FDP has been actively promoting aquaculture and aquaponics to the youth by way of school presentations, agriculture fair displays, field trips to active farms, and leading tours and demonstrations of the NMC CREES Aquaculture Wet Laboratory.

Results

As a result, the A&FDP is entertaining requests by schools for onsite aquaculture and aquaponics demonstration systems where the units will be used as science teaching tool.

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
2013	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

All indicators are pointing to the continued expansion of aquaculture worldwide as wild fisheries catch continues to decline. Half of seafood consumed today comes from fish farming. The situation in the CNMI is no different as growth in population has reduced the number of wild fish catch. However, the demand for seafood continues to grow and opportunities abound for aquaculture expansion in the CNMI.

What has been done

The ongoing activities that A&FDP is investigating in such as lowered feed and energy costs, capacity building, and new species development is providing current and potential farmers the sense of optimism that results in further investment and industry expansion.

Results

As a result of the program's outreach and the dynamics in the CNMI aquaculture industry itself, i.e., first CNMI shrimp farm acquired by multi-national company, three entrepreneurs are seriously looking into investing in aquaculture.

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 CNMI has been fortunate because it has not had a major storm in recent years. Unfortunately, it is also located in what's called "Typhoon Alley" so typhoons are a major threat to any agricultural activity in the Marianas and farmers are advised on the appropriate technology to address these concerns. Government regulations and competing public priorities are the only other externalities that are considered constraints to further expansion of the industry especially when it comes to permitting and allocation of government resources mostly going to the visitor industry.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The tremendous growth of aquaculture in the CNMI in the last several years is testament to the efficacy of the program in knowledge and technology transfer to the farmers. Farmer sentiment, positive feedbacks, and word of mouth that result in referrals are proof of the strength of program delivery to the client.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Sustainable Energy

- Reporting on this Program
 - Reason for not reporting
 - Principal Investigator not hired to address this planned program.

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: 2013	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

2013	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: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	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}