2015 Northern Marianas College Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

Fiscal Year 2015 was a period of transition and challenges at Northern Marianas College-Cooperative Research, Extension, and Education Services (NMC-CREES). An acting dean was appointed from June 2014 to January 2015. In February 2015, Dr. Timothy Kock officially became the department dean. For most of July 2015, internet was not available in the CNMI due to the lone undersea fiber optic cable having been severed. All internet-related services were either completely unavailable or only available on a very limited basis.
In August 2016, the Northern Mariana Islands was devastated by Super-Typhoon Soudelor. NMC-CREES offices on the island of Saipan were struck particularly hard by the typhoon. All CREES buildings, labs, and the vast majority of electronic equipment were destroyed. The CNMI was without electricity and running water for a few months post Super-typhoon Soudelor. Presently, NMC-CREES personnel located on the island of Saipan are still situated in temporary office spaces.
Despite the myriad of challenges NMC-CREES has faced, the institution remains committed to addressing the needs of stakeholders in Agriculture and Family and Consumer Sciences. The department was given the "Health in All Policies Award' by the World Health Organization for its research and extension work empowering community volunteers to take the lead in addressing health at the village level. The Aquaculture Program was also approved to implement a Hatch Project focused on developing marine finfish aquaculture technologies. The Agriculture Experiment stations on Saipan, Tinian, and Rota have undergone equipment modernization and are in the process of implementing field trials and irrigation techniques on a variety of crops.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	22.0	0.0	7.0	0.0
Actual	18.7	0.0	8.5	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

Program review was scheduled for August 8, 2015. New dean came on board Feb. 2015 and developed external plrogram review plan to take place August 8, 2015. However, Typhoon Soudelor decimated the

island on August 3, 2015. As such the review was postponed until February 2016.

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 non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of the general public

Brief explanation.

Stakeholder input was encouraged through the convening of local advisory groups. Topic-focused community non-profit groups are also consulted for input on a variety of extension areas.

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 External Focus Groups
- Open Listening Sessions
- Use Surveys

Brief explanation.

Local advisory group members are selected through a key-informant interview process. Key-informants recommend individuals from their respective communities to advise on community relevant issues. Potential advisory council group members are then asked by research and extension personnel if they would be willing to be a member and provide input periodically in group and individual settings.

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
- Survey specifically with non-traditional groups
- Meeting specifically with non-traditional individuals

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

Brief explanation.

Local advisory groups were convened periodically. Department personnel are present at meetings to listen to concerns and recommendations from stakeholders. Minutes of meetings are recorded and summarized for review by department personnel. Online surveys were also used to gauge the community readiness of identified village communities to participate in research and extension programming.

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.

The input provided by stakeholders from community meetings, focus groups, advisory group meetings, and survey results is considered when planning programs and assessing progress in meeting program objectives and addressing community needs.

Brief Explanation of what you learned from your Stakeholders

Hiring of additional qualified personnel in the area of Agriculture is needed.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1148094	0	1076361	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	237990	0	35514	0
Actual Matching	0	0	0	0
Actual All Other	316062	0	316062	0
Total Actual Expended	554052	0	351576	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	292344	0	795000	0

V. Planned Program Table of Content

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%	
213	Weeds Affecting Plants	10%		10%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	5%		5%	
215	Biological Control of Pests Affecting Plants	20%		20%	
216	Integrated Pest Management Systems	25%		25%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	5.3	0.0	5.3	0.0
Actual Paid	0.5	0.0	0.5	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
118243	0	35514	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

Plant Protection staff will conduct research on biological and other methods of control against invasive weeds, insect pests, mollusks and plant diseases. As an example, the weed, Mimosa diplotricha which came to the Northern Mariana islands and became invasive. On the island of Saipan, Tinian and Rota this invasive species has invade the farm land and pastures areas by competing with the space and available foods for the cattle's and competing with the environment. This invasive species weed, can effectively control by the Mechanical/Physical control, Cultural control and the herbicide. The Biological control Heteropsylla spinulosa has been introduced to control this invasive weed, but impact has yet to be realized. Another example is the recently introduced Cuban slug, Veronicella cubensis, into the CNMI. 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 yet 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 make up the target audience.

3. How was eXtension used?

Information from eXtension was used for extension education through posters display, insect display, flyers, brochures, and one-on-one discussion.

V(E). Planned Program (Outputs)

1. Standard output measures

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	200	500	300	500

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

Patent Applications Submitted

Year:	2015
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2015	Extension	Research	Total
Actual	2	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Research Projects completed on invertebrate pest, such as nematodes, invasive species such as scarlet gourd, melon fly, papaya mealy bug, and Cuban slug).

Year	Actual
2015	2

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:

Outcome #1

1. Outcome Measures

Number of farmers using Integrated Pest Management to control invasive species

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Protection of our natural resources and our island from invasive species are the key to healthy environment. The NMC-CREES primary goal and objective is to ensure that environment and agriculture production on the three islands are well protected from the others invasive species that are threatening the islands fauna, flora, agriculture production and the environment.

What has been done
The USDA-APHIS Cooperative Agriculture Pest Survey (CAPS) program funded NMC-CREES research project for two invasive species of fruit flies, Bactrocera philippinensis and Bactorcera fraunenfeldi. These two invasive flies are among the major pests listed on the Guam Pest List. Guam categorized these pests are threatening pests for the Mariana Islands. These pests present in the Freely Associate States (FAS) which causing the significant damaged to the Agricultural crops. However, the project set a new lead to capture these invasive pests upon their arrival. The establishment of the surveillance on Saipan and Rota will pave the way to the early detection and capture of these pests can lead to eradication before they become established.

In collaboration with the University of Guam surveillance of Little fire Ant (Wasmannia auropunctata) and Rhino Beetle (Oryctes rhinoceros) in the CNMI. However, both invasive pests already present on the island of Guam.

Another funded project from USDA-APHIS is Biological Control of Siam Weed in the Northern Mariana Islands, the purpose of this project is for releasing the Bio-control (Cecidochares connexa) on the two islands (Tinian and Saipan) to control the invasive Siam Weed (Chromolaena odorata). The bio-control was collected on Rota and distributed to Saipan and Tinian to control the Chromolaena Odorata.

Results
The plant protection program continues surveillance the invasive species at seaport, airport and farm areas.

The surveillance of fruit flies on Saipan and Rota is completed in year 2015. As a result there is no capture of the Bactrocera frauefeldi and Bactrocera philippinensis on both islands. This means that Saipan and Rota are still free from these two fruit flies that have been causing problems to our neighboring islands in the Freely Associated States (FAS), Philippines and Australia.

The surveillance of Little fire Ants (Wasmannia auropunctata) and Rhino beetle (Oryctes rhinoceros) on Saipan is completed and no capture of the pest.

Bio-control agent, Cecdochares,connexa to control invasive plant Chromolaena odorata is established on Saipan. The released of bio-control on Tinian needs to follow-up.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	30

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The CNMI is limited with agriculture resources and the present of invasive pests is causing serious impact to the agriculture production in the CNMI. The additional pests can cause major problem to Ranchers, Agricultural and subsistence farming in the CNMI.

What has been done
The CREES Extension Agent will regularly visit farmers to provide technical services. Which will include the following; To identify pests and to control pests using the IPM methods of control. The Chemical control last option to apply if necessary.

Results
The NMC-CREES collaborates with partnership agencies in the CNMI, which include agencies such as CNMI-DLNR, and BECQ. Also, in collaboration with the Western Region, Pest Net Group, PIDDRS, UH, UOG and USDA-APHIS on the invasive pests and environmental issue.

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

The NMC-CREES Plant Protection division is challenged due to the lack of FTE's and Program leader (Entomologist).

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The number farmers who adopt the Integrated Pest Management Program (IPM) practice.
The number farmers learned to control invasive pests.

Key Items of Evaluation

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: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	0.0	1.0	0.0
Actual Paid	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**
0	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 effects of climate change. Just prior to the beginning of the year 2015, our only livestock extension faculty quit, leaving us without a dedicated Livestock Program leader. Further complicating matters was the fact that our Marianas Grazing Academy project, which was grant funded, was ended at the end of 2014.

2. Brief description of the target audience

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

- Farmer Associations

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2015	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: 2015

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2015	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
  Not reporting on this Output for this Annual Report

Output #2

Output Measure

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

Year	Actual
2015	2

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
2015	5

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?(MGA). .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. Although our MGA project has ended, we strive to continue to keep the momentum going by providing technical support for livestock producers.
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.

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

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	9

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, 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

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.

Key Items of Evaluation

Leauceana/grass plots production and soil research data, farmer adoption of sustainable production practices and Breed Improvement data.

V(A). Planned Program (Summary)

Program # 3

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: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	0.0	0.0
Actual Paid	1.0	0.0	0.0	0.0
Actual Volunteer	5.0	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
60098	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

NMC-CREES, CRD program will continue to conduct and coordinate training for certification in sewing, safe home canning and food preservation. Numerous community workshops will continue to be provided by trained staff and CRD professional adult volunteer leaders in the areas of hair and facial care, fruit and vegetable carving,home arts and designs, using mainly reused materials, in an effort to promote recycling and clean environment.

The CRD Program Manager will continue to play a major role in educating the community on value added for both crops and animal products. The Sewing Classes for Beginners will continue to be offer **on** the three most populatedislands of Saipan, Tinian and Rota and certificates of successful completion will be issued to those students who successfully completed the 12 sewing projects. Workshops on Money Management for Youth and Adults, Making Custom Jewelry and Legal Aspects Facing Older Adults in the CNMI will also be offered on the islands of Saipan,Tinian and Rota.

2. Brief description of the target audience

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

3. How was eXtension used?

EXtension was used to disseminate information and conduct hands-on-demonstrations to external agencies, residential, high, Middle and elementary schools as well as to subsistence and commercial farmers.

V(E). Planned Program (Outputs)

1. Standard output measures

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1520	1590	1800	2500

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

Patent Applications Submitted

Year:	2015
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2015	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2015	277

Output #2

Output Measure

- Number of established Entrepreneurs projects
  Not reporting on this Output for this Annual Report

Output #3

Output Measure

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

Year	Actual
2015	21

Output #4

Output Measure

- Number of home canning and food preservation workshops conducted

Year	Actual
2015	3

Output #5

Output Measure

- Number of sewing classes for youth and adults conducted

Year	Actual
2015	180

Output #6

Output Measure

- Number of youth and adult money management workshops conducted

Year	Actual
2015	7

Output #7

Output Measure

- Number of hair and facial care classes conducted

Year	Actual
2015	20

Output #8

Output Measure

- Number of arts and crafts and commercial jewelry classes

Year	Actual
2015	180

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
2015	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
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
2015	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
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

2015 0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
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

External Evaluation will take place sometime in February 2016 and results of CREES' Research and Extension evaluation will be readily available in March 2016.

Key Items of Evaluation

The External Evaluation Committee met with CREES' support staff, program leaders and stakeholders, representing government agencies, non-profit organizations and CREES' clients to determine the effectiveness of CREES' programs and services.

The Committees' final report will pin point the strength and weakness of each program and will make recommendations as to how to better serve our clients, effective record keeping and the importance of gathering data.

V(A). Planned Program (Summary)

Program # 4

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: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	4.0	0.0	1.0	0.0
Actual Paid	0.5	0.0	1.4	0.0
Actual Volunteer	5.0	0.0	5.0	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**
59649	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**
316062	0	316062	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The NMC-CREES Childhood Obesity Program was able to:

• Convene two new role model groups from identified villages and conduct training on role-modeling (positive deviance model)
• Provide follow-up and encouragement to existing role model groups
• Conduct social marketing focused on the following behavioral outcomes: decreasing sugar-sweetened beverage intake, increasing water intake, increasing fruit & vegetable intake, increasing physical activity, decreasing leisure screen time, and increasing sleep.
• Conduct planting, harvesting, and eating local produce at one Head Start Center and one elementary school
• Work with community role models and private businesses to build a playground in Tanapag village.

2. Brief description of the target audience

• Potential role models and community champions from identified villages
• Teachers and child care providers of young children
• Head Start, elementary, and child care program administrators
• Parents of young children
• Community groups concerned about child health

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	200	600	500	800

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

Patent Applications Submitted

Year:	2015
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2015	Extension	Research	Total
Actual	4	4	8

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of role models trained

Year	Actual
2015	20

Output #2

Output Measure

- Number of trainings on increasing physical activity
  Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Number of trainings and meetings with/for role models

Year	Actual
2015	10

Output #4

Output Measure

- Number of role model initiated projects

Year	Actual
2015	9

Output #5

Output Measure

- Number of social marketing campaigns in identified villages

Year	Actual
2015	4

Output #6

Output Measure

- Number of stores participating in Health Village Stores project

Year	Actual
2015	2

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Role models lead village projects as a result of programming received from Childhood Obesity Program
2	Teachers and child care providers integrate more physical activity into school/child care schedule
3	Environmental enhancements are made at two facilities that provide direct services to young children
4	Two elementary schools adopt child wellness policy
5	One child care center adopts at least two policies that enhance young child health and wellness

Outcome #1

1. Outcome Measures

Role models lead village projects as a result of programming received from Childhood Obesity Program

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Lack of safe public parks for young children in the villages of Tanapag, Achugao, San Roque, and As Matuis.

What has been done
Community role models from these village worked with program personnel to plan and build a play ground for young children and children from these villages.

Results
The community role models in partnership with program personnel, were able to work with private businesses (Sea Fix and Marianas Resort) and government agencies to secure permitting, materials, and fabrication. Additionally, role models volunteered to wash recycled tires which were used to build play ground equipment. Role models also volunteered manual labor to install the playground equipment and build the perimeter boundary of the playground. Over 250 hours were volunteered to complete the playground.

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle

Outcome #2

1. **Outcome Measures**

Teachers and child care providers integrate more physical activity into school/child care schedule

Not Reporting on this Outcome Measure

Outcome #3

1. **Outcome Measures**

Environmental enhancements are made at two facilities that provide direct services to young children

Not Reporting on this Outcome Measure

Outcome #4

1. **Outcome Measures**

Two elementary schools adopt child wellness policy

2. **Associated Institution Types**

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Children spend a significant amount of time (6-7 hours) in school. The school environment can influence nutrition behaviors.

What has been done
Through the advocacy of parent role models and the with the support of the school leadership team, a School Wellness Policy was implemented at Kagman Elementary School and GTC Elementary School. The policy was created by NMC-CREES Childhood Obesity personnel with

input from school officials and community role models. The policies encourage healthy drink options (water and low-fat milk) and prohibits teachers, staff, and students from bringing soda, sports drinks, sweetened teas, drinks with added sugar, and caffeinated drinks to school.

Snacks such as candies, potato chips, sugar-sweetened beverages like Hi ?C, Kingcar and other unhealthy products are also not allowed as school snacks. Instead students are encouraged to bring fruits, vegetables, snacks high in whole grain, and snacks such as hard boiled eggs and cheese. Role models and department personnel worked with two stores in each village to ensure that recommended snacks and drinks were available for purchase.

Results
School personnel reported that informing parents about the health status of children in their villages and conducting presentations regarding the implementation of the School Wellness Policy resulted in support and adherence by teachers, parents of students, and students to the Wellness Policy.

4. Associated Knowledge Areas

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

Outcome #5

1. Outcome Measures

One child care center adopts at least two policies that enhance young child health and wellness

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

The series of typhoons and tropical storms affected continuous and efficient implementation of program implementation. In particular, Super-typhoon Soudelor caused projects such as community-led enhancements to the built environment (physical activity prompts) and the Healthy Village Stores initiative to be postponed.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

We are currently analyzing post-programming/intervention data on physical activity, fruit and vegetable consumption, and BMI among other measures. The quantitative data analysis comparing pre and post behavioral and anthropometric measures will be ready for the next accomplishment report.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Food Safety

☐ Reporting on this Program

Reason for not reporting

Due to transition in personnel, we will not be reporting on this program this reporting period.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	2.0	0.0
Actual Paid	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

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

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Establishment of good post-harvest practices
- Establishment of outstanding food safety training programs
- Development of various value-added food products using local produce
- Introduction of new food processing technologies to the CNMI

I Conduction of basic and applied research to intensify the Food Safety and Quality Program

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?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2015	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: 2015

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2015	Extension	Research	Total
Actual	0	1	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of novel food processing technology workshops

Year	Actual
2015	0

Output #2

Output Measure

- Number of workshops related with food safety and quality

Year	Actual
2015	0

Output #3

Output Measure

- Numbers of newly developed value-added products

Year	Actual
2015	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

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

Outcome #1

1. Outcome Measures

Numbers of farmers/producers that develop value added products

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Number of farmers/producers implementing good post-harvest practices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 6

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: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	0.0	0.0
Actual Paid	2.0	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**
0	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 will collaborate 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.

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

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	50	75	250	400

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

Patent Applications Submitted

Year:	2015
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2015	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
2015	250

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

Outcome #1

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
2015	13

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Recruiting and enlisting volunteers serves to enhance community buy-in and overall support for youth programs.

What has been done
Program personnel have made efforts to recruit volunteers through personal contacts and efforts to develop programs that potential volunteers might enjoy contributing too.

Results
Volunteers were a big part of our 4-H activities this year, taking lead roles in the youth division of the agricultural fairs and summer camp activities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #2

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
2015	250

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.

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

Results
Agents and volunteers were able to contribute to a number of meaningful youth events and activities, such as the Eco-camps, summer fun camps, youth conferences, and others.

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

Based on post activity surveys conducted on students evaluating the overall performance of

the
program, most students believe that activities:
• are relevant to our community.
• teach an important life skill;
• encourage social growth through team building activities;
• teach the importance of agriculture and recycling.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 7

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: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	1.0	0.0
Actual Paid	0.5	0.0	0.5	0.0
Actual Volunteer	4.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
0	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
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. **"Forktail Rabbitfish Aquaculture Development in the CNMI" Project:** The Aquaculture and Fisheries Development Program (A&FDP) put together and submitted a Hatch proposal in May of 2015 to continue the "Community-based Rabbitfish Development" project that was started in 2013 with funding from NOAA through the CNMI Department of Lands & Natural Resources (CNMI DLNR). In July of 2015, USDA approved funding for the project and improvements to the A&FDP Wet Laboratory infrastructure to allow larval rearing and grow out of Rabbitfish larvae started in November of 2015 as result of the delay caused by **Typhoon Soudelor**. Rabbitfish was the species of choice selected for aquaculture development by stakeholders in a selection process held in July of 2012. This specie has a wide market and cultural appeal to consumers in the Mariana Island chain and beyond.

1. **Adoption of Technologies to Reduce Cost of Production:** The A&FDP program helped a Tilapia farmer in Saipan adopt technologies that reduced his production cost in half by installing a Venturi aeration unit that circulates and aerate the water in the tank by running only one pump instead of two, energized by solar panels and by constructing an adjacent tank that grows an aquatic fern, high in nitrogen, called Azolla, using water from the culture tank that reduced the use of commercial feeds to one feeding a day.

1. **Hydroponics in CNMI Public Schools:** With funding from the United States Department of Agriculture's (USDA) Specialty Crop Block Grant (SCBG) program; the CNMI DLNR's Division of Agriculture (DOA), in cooperation with the CNMI Public School System (CNMI PSS) and NMC CREES, continued in 2015, the installations and introduction of alternative, vegetable production methods using hydroponics technology in four (4) public schools in Saipan and two (2) in Tinian. The project aims to encourage local production and consumption of vegetables and address health issues related to sedentary lifestyles and unhealthy food choices.

1. **A&FDP Outreach:** To ensure the sustainability of the aquaculture industry in the CNMI and relevance of A&FDP; the program continues to conduct numerous outreach activities in the community throughout the year.

Two of these events, where large crowds can be engaged and educated about the activities of the program, were the annual, CNMI-wide, Agriculture Fairs and the BECQ Environmental Expo. As in previous years, the A&FDP program participated in the annual Agriculture Fairs in Saipan, Tinian, and Rota and the Expo in Saipan. At these Fairs and Expo, displays highlight, promote, and educate the public on ongoing projects like Rabbitfish hatchery and grow out, alternative, aquatic-based, plant production methods like hydroponics, aquaponics, and Sub Irrigation Planters (SIP).

The A&FDP program regularly gives educational tours at the aquaculture wet laboratory to visitors from such organizations like the 4-H Summer Program, Saipan Summer Fisheries Program, and exchange

students from Asia to observe and learn the actual research projects being conducted or technology being demonstrated. Presentations on open ocean cage culture and aquaculture career options, may it be on or off campus, 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.

1. **New Farms:** The A&FDP program helped Mr. Nestor Tumaquip built an aquaponics system at his farm in San Vicente, Saipan. The system included Tilapia grows out tanks and two 12 square feet grow beds, for leafy vegetable production. Mr. Tumaquip's aquaponics system was the second in Saipan to integrate the one pump system using airlift technology borrowed from Olomana Gardens in Hawaii.

Additionally, the program also helped Mrs. Luci Shilling in Papago, Saipan build a non-circulating, backyard hydroponic system for lettuce production that the A&FDP developed over the years using materials that are available in local hardware and pet stores. The unit does not use any type of pump so there is no energy cost associated with the system and is user friendly that anyone can put together a unit within a few hours.

2. Brief description of the target audience

Youth and Adult
Aquaculture Producers
Government Agencies
Non-Governmental Organizations
Business Community
Retirees at new investment
Health-conscious Individuals
Extension

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1051	1500	1576	3000

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

Patent Applications Submitted

Year:	2015
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2015	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of aquaculture workshops

Year	Actual
2015	9

Output #2

Output Measure

- Number of aquaculture research project

Year	Actual
2015	1

Output #3

Output Measure

- number of short course/training

Year	Actual
2015	9

Output #4

Output Measure

- Number of aquaculture demonstration project

Year	Actual
2015	5

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
2015	1051

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, aquaculture wet laboratory visits, and trainings were some of the efforts undertaken to increase knowledge in RAS among the farmers.

Results
As a result of the measures taken by the program, two (2) farms were established in the island of Saipan; one (1) aquaponics and one (1) hydroponics.

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
2015	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
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
2015	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
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
2015	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
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

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Climate Change

☐ Reporting on this Program

Reason for not reporting

Transition in personnel has resulted in no activities having been conducted under 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: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	0.0	0.0	0.0
Actual Paid	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

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

V(D). Planned Program (Activity)

1. Brief description of the Activity

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 when ever 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. Agents will work with local climate change working groups and others that are engaging in activities that are consistent with the mission of the climate change program.

2. Brief description of the target audience

- Government Officials/Agency Collaborators
- Business operators
- Grade school, High School and College students, teachers and staff
- Volunteers Leaders from the general public
- Farmers and environmental groups and associations.

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2015	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: 2015

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2015	Extension	Research	Total
Actual	{No Data Entered}	{No Data Entered}	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of projects and programs that serve to diversify and strengthen local agricultural systems

Year	Actual
2015	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of farmer adopting sustainable farming systems
2	Number of participants attending workshops on climate change, local action strategies, and sustainable farming systems

Outcome #1

1. Outcome Measures

Number of farmer adopting sustainable farming systems

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Number of participants attending workshops on climate change, local action strategies, and sustainable farming systems

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

VI. National Outcomes and Indicators

1. NIFA Selected Outcomes and Indicators

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