

# 2018 Northern Marianas College Combined Research and Extension Annual Report of Accomplishments and Results

**Status: Accepted**  
**Date Accepted: 08/22/2019**

**I. Report Overview**

**1. Executive Summary**

Despite the transitions in leadership and personnel that took place in FY 2018, Northern Marianas College-Cooperative Research, Extension, and Education Services (NMC-CREES) remains committed to addressing community needs and emerging issues in the areas of Agriculture Production, Family, Community, & Youth Development, Nutrition & Health, and Aquaculture and Natural Resources Development.

In FY 2018, new crop varieties were tested and workshops that have resulted in improved agricultural practices and outputs took place. The Agriculture Advisory Council was also re-established after a being on hiatus for several years. Many new youth volunteers availed of several capacity building opportunities and volunteered in the community. Aquaculture producers diversified their business which resulted in increased food production and profits. The Childhood Obesity Prevention Program noted a 4% decrease in childhood overweight and obesity as a result of the Children's Healthy Living Program integrated study.

**Total Actual Amount of professional FTEs/SYs for this State**

Year: 2018	Extension		Research	
	1862	1890	1862	1890
Plan	8.0	0.0	4.0	0.0
Actual	10.8	0.0	4.2	0.0

**II. Merit Review Process**

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

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

**2. Brief Explanation**

The merit review process included the following:

- Faculty reviewed proposals and then provided feedback to principal investigator and/or program leader.
- PI and/or PL present planned proposal to stakeholders and/or advisory council and document feedback.
- Suggestions were then considered by PI/PD and proposal updates were made.

- Proposal is then circulated again through the merit review process for a final review. This round of review includes administrator. If no feedback is given, proposal is considered for funding by dean.

### **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
- Survey of selected individuals from the general public

#### **Brief explanation.**

Northern Marianas College Cooperative Research, Extension, and Education Services consists of four programmatic areas: Agriculture Production, Family, Community, & Youth Development, Nutrition & Health, and Aquaculture & Natural Resources Development. Each programmatic area has an advisory council that convenes at least once a year (and often more) to discuss the needs of each programmatic area's target audience and proposed programming that addresses the needs or emerging issues. 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 Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- 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 current and emerging community needs. 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 in group and individual settings. Extension and research personnel also use their knowledge and experience of local industry, farmers, health personnel, and those who actively participate in CREES program areas to recommend individuals for local advisory group membership. 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
- 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 survey results 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. Stakeholder input (clienteles, government) was used to create yearly plans of work for each of the four program areas: Family, Community, and Youth Development, Nutrition and Health, Aquaculture and Natural Resources, and Agriculture. From these yearly plans of work, CREES Administration used these plans as a guide for financial prioritization per plan of work.

**Brief Explanation of what you learned from your Stakeholders**

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

positions needed are entomologist, horticulturist, animal scientist, agriculture economist, and food scientist. Additionally, there is a need to fill vacancies in the Nutrition and Health program. At the Rota site, which only has one staff employee, additional employees are needed to address the food security, nutrition, and health, and work force development needs of the community.

**IV. Expenditure Summary**

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

<b>2. Totaled Actual dollars from Planned Programs Inputs</b>				
	<b>Extension</b>		<b>Research</b>	
	<b>Smith-Lever 3b &amp; 3c</b>	<b>1890 Extension</b>	<b>Hatch</b>	<b>Evans-Allen</b>
<b>Actual Formula</b>	486374	0	403932	0
<b>Actual Matching</b>	0	0	0	0
<b>Actual All Other</b>	0	0	0	0
<b>Total Actual Expended</b>	486374	0	403932	0

<b>3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous</b>				
<b>Carryover</b>	89226	0	371734	0

**V. Planned Program Table of Content**

<b>S. No.</b>	<b>PROGRAM NAME</b>
1	Global Food Security and Hunger: Livestock Improvement Program
2	Childhood Obesity
3	Global Food Security and Hunger: Aquaculture and Natural Resources Program
4	Agriculture Production
5	Family, Community and Youth Development

**V(A). Planned Program (Summary)**

**Program # 1**

**1. Name of the Planned Program**

Global Food Security and Hunger: Livestock Improvement Program

Reporting on this Program

Reason for not reporting

No personnel to address this programmatic area. An animal scientist position vacancy is currently being announced.

**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	50%		50%	
902	Administration of Projects and Programs	50%		50%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2018	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	0.0	0.0	0.0	0.0
<b>Actual Paid</b>	0.0	0.0	0.0	0.0
<b>Actual Volunteer</b>	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**

This year our team continued to informally manage and coordinate the exchange, sharing, and documenting of the Senepol brood stock that were the offspring of our insemination program from 2012-2015. The overall performance of these cattle are drawing attention from ranchers, who continue to request for the use of these broodstock, in order to bring the benefits of the new infusion of Senepol genetics into their local herds.

In addition, our team continues to advice and coordinate with the Tinian Cattlemen's Association and the leadership on the development of a USDA certified meat processing facility and program for the island of Tinian. Our team has also played a role in coordinating with other USDA programs, to bring much needed recovery funds to the ranches adversely affected by Typhoon Yutu. Furthermore, our team has assisted in the development of water infrastructure improvements for ranchers and the development/modification of land lease terms for Agriculture Grazing Permit holders.

### **2. Brief description of the target audience**

- Youth and adult
  - Ranchers/farmers
  - Producers Organizations
  - 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**

2018	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	40	75	25	30

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

Year: 2018  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2018	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  
 2018 0

**Output #2**

**Output Measure**

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

Year Actual  
 2018 0



**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**

<b>Year</b>	<b>Actual</b>
2018	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**

<b>KA Code</b>	<b>Knowledge Area</b>
303	Genetic Improvement of 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**

<b>Year</b>	<b>Actual</b>
2018	0

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

**What has been done**

**Results**

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
902	Administration of Projects and Programs

## **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**

There were a number of super typhoons that passed over the Mariana Islands this year. Most notably, Typhoon Mangkut and Typhoon Yutu hit the islands hard, causing catastrophic damage to farms and our research facilities, negatively impacting our ability to facilitate research and extension programs.

## **V(I). Planned Program (Evaluation Studies)**

### **Evaluation Results**

We were not able to conduct any evaluations this year as we were not able to conduct research, demonstration, or educational programs this year. All our efforts were put into coordination and efforts to change policy, ultimately contributing to removing barriers to livestock production in the region.

### **Key Items of Evaluation**

**V(A). Planned Program (Summary)**

**Program # 2**

**1. Name of the Planned Program**

Childhood Obesity

Reporting on this Program

**V(B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
703	Nutrition Education and Behavior	50%		0%	
724	Healthy Lifestyle	40%		0%	
901	Program and Project Design, and Statistics	10%		0%	
	<b>Total</b>	100%		0%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2018	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	5.0	0.0	1.0	0.0
<b>Actual Paid</b>	1.5	0.0	0.0	0.0
<b>Actual Volunteer</b>	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
76053	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

- Conducted a pilot project focused on improving teacher wellness, which includes collecting anthropometric, blood sugar, and blood pressure measurement data with one public school system elementary school (Kagman Elementary School) to identify early signs of non-communicable diseases (NCD).
- In partnership with the Department of Public Health, convened a group of stakeholders to write and implement Northern Mariana Islands Non-Communicable Disease Strategic Plan.
- In partnership with Public School System, Head Start, Early Head Start, continued with enhancing and refining child growth assessments and BMI with the goal of establishing childhood overweight and obesity monitoring and surveillance in the CNMI and regionally.
- Provide Nutrition and Health training opportunities for undergraduate students in order to build the nutrition and health local workforce.
- Nutrition and physical activity summer camp for youth in Tinian.
- Analysis of Children's Healthy Living Program study results.
- Presentations on sugary drinks and healthier options and locally grown produce consumption then provided nutrition classes at the Youth Center for Staff and Youths
- Conducted one hour of physical activity daily for one week for Staff and Youths at the Youth Center as part of Summer Camp
- Conducted presentation on sugary drinks and healthier options and one week of one hour physical activities for youths for DYS Summer camp at the NMC campus.
- Conducted presentation on sugary drinks and healthier options and provided nutrition classes for youth at the Tinian Public Library.

**2. Brief description of the target audience**

- Public School System Teachers at Kagman Elementary School (pilot project site)
- Potential role models and community champions from identified villages
- Youth
- Current role models from TASA and Kagman
- 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 used to determine if other extension programs were conducting similar programming in the area of teacher wellness.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2018	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	407	2300	1000	400

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

**Patent Applications Submitted**

Year: 2018  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2018	Extension	Research	Total
Actual	1	4	3

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Number of role models trained

Year	Actual
2018	2

**Output #2**

**Output Measure**

- Number of trainings on increasing physical activity

Year	Actual
2018	11

**Output #3**

**Output Measure**

- Number of trainings and meetings with/for role models

Year	Actual
2018	2

**Output #4**

**Output Measure**

- Number of role model initiated projects

Year	Actual
------	--------

2018 1

**Output #5**

**Output Measure**

- Number of social marketing campaigns in identified villages

<b>Year</b>	<b>Actual</b>
2018	0

**Output #6**

**Output Measure**

- Number of new stores participating in Healthy Village Stores program  
Not reporting on this Output for this Annual Report

**Output #7**

**Output Measure**

- Number of child care centers that adopt nutrition and wellness policies  
Not reporting on this Output for this Annual Report

**Output #8**

**Output Measure**

- Number of elementary schools adopting nutrition and wellness policies  
Not reporting on this Output for this Annual Report

**Output #9**

**Output Measure**

- Number of Public School System Teachers Measured

<b>Year</b>	<b>Actual</b>
2018	17

**Output #10**

**Output Measure**

- Number of undergraduate students who join nutrition and health training opportunity

<b>Year</b>	<b>Actual</b>
2018	4

**Output #11**

**Output Measure**

- Number of trainings on writing Non-Communicable Disease Strategic Plan.



<b>Year</b>	<b>Actual</b>
2018	1

**Output #12**

**Output Measure**

- Number of children who participated in anthropometric measurements

<b>Year</b>	<b>Actual</b>
2018	400

**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
6	Establish infrastructure and programming for childhood overweight and obesity monitoring and surveillance building on current systems
7	Increase physical activity among 2-10 year olds
8	Increase water consumption among 2-10 year old children
9	Increase fruit and vegetable consumption among 2-10 year old children
10	Increase physical activity among 2-10 year old children
11	Improve health of teachers
12	Decrease childhood overweight and obesity

**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**

<b>Year</b>	<b>Actual</b>
2018	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**

<b>KA Code</b>	<b>Knowledge Area</b>
724	Healthy Lifestyle

**Outcome #2**

**1. Outcome Measures**

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

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2018	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**

<b>KA Code</b>	<b>Knowledge Area</b>
724	Healthy Lifestyle

**Outcome #3**

**1. Outcome Measures**

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

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Condition Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2018	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**

<b>KA Code</b>	<b>Knowledge Area</b>
724	Healthy Lifestyle

**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 Condition Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2018	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
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

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Condition Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2018	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
724	Healthy Lifestyle

#### Outcome #6

##### 1. Outcome Measures

Establish infrastructure and programming for childhood overweight and obesity monitoring and surveillance building on current systems

##### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

##### 3a. Outcome Type:

Change in Action Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2018	3

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Approximately, one in three children in the CNMI are overweight or obese. Among adults, the CNMI has one of the highest rates of Type II Diabetes. Despite this concerning data, the USAP, including CNMI, is not included in the National Health and Nutrition Examination Survey, or other population-level surveillance systems that provide anthropometric measures on young children despite the U.S.-affiliated Pacific Islands (USAPI) having some of the highest rates per capita of adult obesity and chronic diseases in the world. Monitoring and surveillance of young child health will allow programs to better target their activities and policies.

###### **What has been done**

In partnership with University of Hawaii Children's Healthy Living Program Center of Excellence, Northern Marianas College personnel worked for the second year directly with early childhood education programs and land-grant institutions in CNMI, Pohnpei, and American Samoa to enhance the current growth assessment measures and to establish and pilot a standardized system for collecting, analyzing, and disseminating child (ages 3-5) health data.

###### **Results**

Now in year two of implementation, aggregated data from each site continues to be used used to guide program and policy level planning in the areas of child health and growth in early childhood and other service provider agencies.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
901	Program and Project Design, and Statistics

#### Outcome #7

##### 1. Outcome Measures

Increase physical activity among 2-10 year olds

##### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

##### 3a. Outcome Type:

Change in Action Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2018	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
703	Nutrition Education and Behavior
724	Healthy Lifestyle



**Outcome #8**

**1. Outcome Measures**

Increase water consumption among 2-10 year old children

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2018	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**

<b>KA Code</b>	<b>Knowledge Area</b>
703	Nutrition Education and Behavior
724	Healthy Lifestyle

**Outcome #9**

**1. Outcome Measures**

Increase fruit and vegetable consumption among 2-10 year old children

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2018	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**

<b>KA Code</b>	<b>Knowledge Area</b>
703	Nutrition Education and Behavior
724	Healthy Lifestyle

**Outcome #10**

**1. Outcome Measures**

Increase physical activity among 2-10 year old children

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2018	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**

<b>KA Code</b>	<b>Knowledge Area</b>
703	Nutrition Education and Behavior
724	Healthy Lifestyle

## **Outcome #11**

### **1. Outcome Measures**

Improve health of teachers

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2018	17

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Teachers have limited time access during the weekdays to schedule a checkup with the doctors. Most clinics are not open on the weekends. Identifying early signs of non-communicable diseases like diabetes, heart diseases, and obesity in teachers can help to prevent the onset of these diseases and improve health and wellness. Teacher absences resulting from compromised health can negatively impact instructional time and academic progress of students

#### **What has been done**

The pilot project was a partnership between the Nutrition and Health Programs, the Department of Public Health, and Kagman Elementary School and was formulated with the input of participating school teachers and personnel. An onsite clinic that offered blood sugar, blood pressure and anthropometric measurements to interested teachers was conducted. Based on the results individual data, information was given to help the participant work towards a healthier lifestyle.

#### **Results**

A total of 16 participants went through the onsite clinic. Around 30% had results that require health intervention. The full implementation of this project was delayed due to post-natural disaster conditions. However, the project will continue next school year.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
703	Nutrition Education and Behavior
724	Healthy Lifestyle

## **Outcome #12**

### **1. Outcome Measures**

Decrease childhood overweight and obesity

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Condition Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2018	4

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Approximately, one in three children in the CNMI are overweight or obese. One statistical analysis, co-authored by this program area, estimated that around 45% of CNMI children are overweight or obese by age 8. Overweight or obese preschoolers are 5 times more likely than normal-weight children to be overweight or obese as adults. Childhood obesity may lead to social discrimination, heart disease, type II diabetes, sleep apnea and other health issues.

#### **What has been done**

The program partnered with community stakeholders who were from specific villages/sites to plan and implement various strategies to improve the environments that children live, learn, and play in. Strategies were developed based on science (comprehensive literature reviews), focus-group findings, and community meetings. Communities were randomly selected and assigned as either Intervention (primary intervention), Optimized (used at comparison communities & shorter optimized intervention), or Temporal based on established criteria. Child height and weight were collected, along with child diet (food logs), physical activity (6 days wearing accelerometer), and other health related data that parents/guardians of children age 2-8 provided at baseline and 24-months.

#### **Results**

The intervention communities showed significant improvement compared with control communities in overweight and obesity prevalence (effect size [d] = 0.395%; 95% CI, 0.747% to 0.43%), waist circumference (d = 0.71 cm; 95% CI, 1.37 to 0.05 cm), and acanthosis nigricans prevalence (d = 2.28%; 95% CI, 2.77% to 1.57%). Age and sex subgroup analysis revealed greater difference among the intervention communities in acanthosis nigricans prevalence in the group aged 2 to 5 years

years (d=3.40%), and the interaction was significant (d=0.59%, P<0.001), as well as the smaller difference in the group aged 2 to 5 years (d=1.07%) vs the group aged 6 to 8 years (d=0.97 hour per day, P=0.01). Note that this was a multi-site study that included specific villages in the Northern Mariana Islands.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle

#### V(H). Planned Program (External Factors)

##### External factors which affected outcomes

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

##### Brief Explanation

- Due to natural disasters that reigned over the NMI in October 2018 and current recovery efforts, we were forced to reschedule follow up dates for the teacher wellness project to mid-2019.
- Lack of personnel during this period made it challenging to be involved with collaborative projects.

#### V(I). Planned Program (Evaluation Studies)

##### Evaluation Results

- Scientifically-sound, community-based participatory approaches that integrate research, extension, and training programs can reduce childhood obesity. However, adequate funding is needed to carry-out integrated projects across multiple sites.

##### Key Items of Evaluation

The study that resulted in a 4% decrease in childhood overweight and obesity took a significant amount of resources (funding, expertise, and time) to implement.

**V(A). Planned Program (Summary)**

**Program # 3**

**1. Name of the Planned Program**

Global Food Security and Hunger: Aquaculture and Natural Resources Program

Reporting on this Program

**V(B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals	10%		50%	
302	Nutrient Utilization in Animals	10%		20%	
307	Animal Management Systems	20%		0%	
308	Improved Animal Products (Before Harvest)	60%		0%	
401	Structures, Facilities, and General Purpose Farm Supplies	0%		15%	
403	Waste Disposal, Recycling, and Reuse	0%		15%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2018	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	4.0	0.0	2.0	0.0
<b>Actual Paid</b>	0.4	0.0	2.6	0.0
<b>Actual Volunteer</b>	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
40515	0	140761	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**

- Worked with an ongoing aquaculture producer to diversify his Tilapia farm to include the production Macrobrachium rosenbergii or Malaysian Jumbo Prawn
- Participated in a NOAA-funded, training in Hawaii on the use of Fish Processing Waste (FPW) for making aquaculture feed. A&NR is currently refining the method to be compatible with local conditions and will conduct feed trials before transfer of knowledge and technology to clients.
- Conducted CNMI-wide workshops on production of fruiting vegetables using the Static Hydroponics method. Shared printed materials with the CNMI community on the findings of the Forktail Rabbitfish Development project in major public events after the successful captive breeding and rearing of larvae of said species

**2. Brief description of the target audience**

- Foreign Investors
- Local Entrepreneurs
- The unemployed
- The underemployed
- Youth ages 10 -17
- Teachers
- Public & Private School Students
- Current Aquaculture Producers
- Recent Retirees
- Homemakers
- Underserved Populations
- Underrepresented Populations
- Non-profit Organizations
- Decision makers
- Subsistence Farmers
- Stakeholders

**3. How was eXtension used?**

eXtension was not used in this program

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2018	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	1567	1463	560	650

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



Year: 2018  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2018	Extension	Research	Total
Actual	0	0	0

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Number of producers learning how to culture Rabbitfish, freshwater prawns, milkfish, and giant clams

Year	Actual
2018	1745

**Output #2**

**Output Measure**

- Number of producers learning how to add value to excess or non-marketable aquaculture commodities  
 Not reporting on this Output for this Annual Report

**Output #3**

**Output Measure**

- Number of producers making and using local feed

Year	Actual
2018	2

**Output #4**

**Output Measure**

- Number of producers culturing fish in ocean cages  
 Not reporting on this Output for this Annual Report

**Output #5**

**Output Measure**

- Number of producers sourcing inputs on their own

<b>Year</b>	<b>Actual</b>
2018	3

**Output #6**

**Output Measure**

- Number of producers learning aquaculture through audio visuals means

<b>Year</b>	<b>Actual</b>
2018	265

**Output #7**

**Output Measure**

- Number of extension publications and presentations

<b>Year</b>	<b>Actual</b>
2018	12

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Number of increased efficiencies
2	Number of Producers Indicating adoption of recommended practices
3	Number of producers reporting increased dollar return per acre or reduced cost per/acre
4	Number of new or improved value added products that can be sold by producers (and other members of the food supply chain)
5	Number of producers (and other members of the food supply chain) that have increased revenue
6	Percentage of youth who improved knowledge of food systems
7	Percentage of adults who improved knowledge of food systems

**Outcome #1**

**1. Outcome Measures**

Number of increased efficiencies

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Condition Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2018	3

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

- availability of and consistency of marine finfish seed stock for producers
- high price and availability of imported aquaculture feed
- limited and expensive land, limited freshwater resources, high cost and availability of agriculture inputs

**What has been done**

- ongoing, Hatch Forktail Rabbitfish Development project successfully reared larvae of this species to the juvenile stage which brings the program closer to providing seed stock to aquaculture producers
- A&NR program staff completed training in the production of aquaculture feed using Fish Processing Waste (FPW)
- CNMI trainings were conducted on static hydroponics production for fruiting vegetables that addresses issues related to traditional farming methods

**Results**

- The A&NR program recorded its second, successful larval rearing of Forktail Rabbitfish in the spring of 2018 and conducted its first ever grow out of this species in captivity.
- Hydroponics farmers have integrated the production of fruiting vegetables to their ongoing lettuce production.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
401	Structures, Facilities, and General Purpose Farm Supplies
403	Waste Disposal, Recycling, and Reuse

#### Outcome #2

##### 1. Outcome Measures

Number of Producers Indicating adoption of recommended practices

##### 2. Associated Institution Types

- 1862 Research

##### 3a. Outcome Type:

Change in Action Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2018	1

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Due to fluctuating demand in the tilapia market, farmer experienced lagging farm income.

###### **What has been done**

Recommended to farmer to diversify farm offerings by adding static hydroponics production for leafy vegetables which has no energy cost associated with the system while generating additional revenue for the farm.

###### **Results**

The farmer has constructed seven (7), 20' grow beds and has started growing and selling lettuce in addition to sales of Tilapia. As a result of the farm operation diversification, the farmer was able to increase his profits by 18%.

#### 4. Associated Knowledge Areas

<b>KA Code</b>	<b>Knowledge Area</b>
307	Animal Management Systems
401	Structures, Facilities, and General Purpose Farm Supplies

**Outcome #3**

**1. Outcome Measures**

Number of producers reporting increased dollar return per acre or reduced cost per/acre

Not Reporting on this Outcome Measure

**Outcome #4**

**1. Outcome Measures**

Number of new or improved value added products that can be sold by producers (and other members of the food supply chain)

Not Reporting on this Outcome Measure

**Outcome #5**

**1. Outcome Measures**

Number of producers (and other members of the food supply chain) that have increased revenue

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Condition Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2018	1

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

The high cost of food production is a challenge for established and emerging farmers. Underutilization of available, agricultural production space can increase overhead costs.

**What has been done**

Shared recommendations to diversify farm into hydroponics, leafy vegetable and crawfish production in underutilized space at the farm site.

**Results**

Farmer has diversified and now producing static hydroponics lettuce and is in the process of adding crawfish production to the farm.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
302	Nutrient Utilization in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
403	Waste Disposal, Recycling, and Reuse

**Outcome #6**

**1. Outcome Measures**

Percentage of youth who improved knowledge of food systems

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2018	534

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Limited and marginal agricultural production space, high cost of production inputs, and percentage of food imported to the CNMI are issues unique to small isolated geographical areas. Improving youth knowledge of food systems will result

**What has been done**

Trainings, tours, and outreach activities for the youths that demonstrate alternative production methods despite production challenges were held throughout the year. In school static hydroponics demonstration units were established and used to teach various aspects of a food system.

**Results**

Approximately 80% of youth indicated an increase in knowledge of food systems.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
401	Structures, Facilities, and General Purpose Farm Supplies
403	Waste Disposal, Recycling, and Reuse

#### Outcome #7

##### 1. Outcome Measures

Percentage of adults who improved knowledge of food systems

##### 2. Associated Institution Types

- 1862 Extension

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2018	71

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

A lack of knowledge on alternative vegetable production systems and climate change mitigation practices was found among program clients.

###### **What has been done**

Conducted eight (8) trainings on static hydroponics production for fruiting vegetables, climate change mitigation, and aquaculture development in FY 2018.

###### **Results**

Results from pre and post tests administered during the static hydroponics workshops showed evidence of knowledge gained by participants of the trainings: from 30% at pre-test to 80% at post test.



#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
307	Animal Management Systems
401	Structures, Facilities, and General Purpose Farm Supplies
403	Waste Disposal, Recycling, and Reuse

#### V(H). Planned Program (External Factors)

##### External factors which affected outcomes

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

##### Brief Explanation

The external factors that affect outcomes are high cost of production, natural disasters, competing public priorities, and immigration. Through the years there were a lot of public interest in aquaculture production, however, the high energy cost to run RAS and imported feed continues to hinder expansion by current producers and entry by new producers. With tourism being the main economic driver for the CNMI, agriculture, aquaculture, and other industries receive less of the meager government resources and focus required for development. The implementation of federal immigration policies in 2009 has affected the CNMI with the loss of nearly 20,000 individuals due to out migration and the availability of skilled aquaculture laborers for the industry. Last but not least, at the start of FY 2019, the CNMI was struck again by category 5 typhoon, this, while the territory was still recovering from another category 4 typhoon in 2015. Natural disasters will continue to be threat and an issue to the program and the industry.

#### V(I). Planned Program (Evaluation Studies)

##### Evaluation Results

- A&NR administers pre and post tests in our workshops to gauge the level of knowledge gained as a result of our activities. In our Static Hydroponics workshops conducted in FY 2018, on average, pre and post tests results have shown a 50% gained in knowledge at the conclusion of each training.
- The two successes that A&NR have had in the Forktail Rabbitfish Development project has been with the inclusion of copepods as the first live feed for the Rabbitfish larvae. Prior to this switch, we've been using Rotifers, which is the common first live feed in most conventional larval rearing protocols, without success. The addition and switch to copepods as the initial live feed resulted in the first ever rearing of this species to metamorphoses.

##### Key Items of Evaluation

It is important for NIFA to know that evaluation tools are extremely important in ensuring that the transfer of knowledge is taking place with the target audience. In our case, pre and post tests are tools that we use to ensure that our methods of teaching are effective and that, if not, will helps us determine why it is not and how can we modify the methods to

make them more effective.

**V(A). Planned Program (Summary)**

**Program # 4**

**1. Name of the Planned Program**

Agriculture Production

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
202	Plant Genetic Resources	25%		25%	
205	Plant Management Systems	25%		30%	
211	Insects, Mites, and Other Arthropods Affecting Plants	25%		20%	
216	Integrated Pest Management Systems	25%		25%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2018	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	4.0	0.0	4.0	0.0
<b>Actual Paid</b>	3.0	0.0	5.0	0.0
<b>Actual Volunteer</b>	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
136890	0	263171	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**

- Conduct research and extension projects utilizing disease and pest resistant crops varieties
- Conduct research and extension projects on plant management systems
- Conduct research and extension projects on Insects, mites, and other Arthropods Affecting Plants
- Conduct research and extension projects on animal management systems
- Conduct extension services on Integrated Pest Management
- Develop and Disseminate extension & educational services
- Conduct training, workshops, meetings on knowledge areas listed
- Conduct needs assessments and program evaluations
- Provide consultations to our current and prospective clientele and stakeholders

**2. Brief description of the target audience**

- Ranchers
- Farmers
- Crop producers and farm laborers
- Students (k-12, college students, 4-H)
- Business operators that buy Agricultural products
- Retail business owners and homeowners
- Backyard gardeners
- Government agencies
- Non-governmental organizations, such as non-profit organizations

**3. How was eXtension used?**

eXtension is primarily used for its plethora of resources available online which pertains to our university's current and future research topics. This online resource provides many scholarly publications and opportunity for networking within the Land Grant systems. It also provides updates on current issues and capacity building and funding opportunities for specific program areas of interest.

eXtension is also used to identify problems with our research's agricultural crops, for example, if a pest or disease cannot be identified by on-site experts, eXtension is used to reach out to peers, near and far, for technical assistance, such as the identification of pests and diseases.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2018	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	200	1000	500	800

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

**Patent Applications Submitted**

Year: 2018

Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

<b>2018</b>	<b>Extension</b>	<b>Research</b>	<b>Total</b>
<b>Actual</b>	4	0	0

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Number of vegetable variety trials completed

<b>Year</b>	<b>Actual</b>
2018	5

**Output #2**

**Output Measure**

- Number of plant management demonstrations completed

<b>Year</b>	<b>Actual</b>
2018	6

**Output #3**

**Output Measure**

- Number of livestock management systems demonstrations completed

<b>Year</b>	<b>Actual</b>
2018	0

**Output #4**

**Output Measure**

- Number of extension publications, brochures, & educational materials produced and distributed

<b>Year</b>	<b>Actual</b>
2018	0

**Output #5**

**Output Measure**

- Number of workshops and other educational events (field days)

<b>Year</b>	<b>Actual</b>
2018	12

**Output #6**

**Output Measure**

- Number of research projects completed on insect, mites, and arthropods affecting plants (invasive species)

<b>Year</b>	<b>Actual</b>
2018	2

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Number of farmers and ranchers adopting improved plant and animal management systems
2	Number of farmers adopting new Integrated Pest Management strategies to control the insects, mites and other arthropods affecting plants (Invasive species)
3	Number of newly introduced crop varieties being sold at local markets
4	Reduce cost of agricultural inputs

**Outcome #1**

**1. Outcome Measures**

Number of farmers and ranchers adopting improved plant and animal management systems

Not Reporting on this Outcome Measure

**Outcome #2**

**1. Outcome Measures**

Number of farmers adopting new Integrated Pest Management strategies to control the insects, mites and other arthropods affecting plants (Invasive species)

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2018	15

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

The use of pesticides on crops should be a last resort for farmers. Furthermore, limited availability of pesticides make it difficult or impossible to rely on commercial pesticides for crop protection. Therefore, farmers are encouraged to adopt integrated pest management strategies, in order to mitigate against pest damage and improve the marketability of locally grown produce, as being pesticide -free or minimized pesticide use.

**What has been done**

Workshops, demonstrations, field days, expos, farm visits, one-on-one consultation with farmers

**Results**

15 producers were employing Integrated Pest Management strategies on their farms, resulting in reduced pesticide use and improved crop performance. On average, producers reported a 30% decrease in the use of pesticides.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
----------------	-----------------------



- 211 Insects, Mites, and Other Arthropods Affecting Plants
- 216 Integrated Pest Management Systems

**Outcome #3**

**1. Outcome Measures**

Number of newly introduced crop varieties being sold at local markets

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2018	10

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

90% of fruits and vegetables sold in the CNMI are imported. Many of these have the potential to be grown locally in the islands. Introducing new crop varieties to farmers that have been proven to perform well locally, has shown potential to improve farmer resilience in the face of changing climate conditions, markets, and other factors. Successful adoption of newly introduced crop varieties has shown to improve profitability and sustainability of local farming systems.

**What has been done**

Crop variety trials were conducted, along with farm/field days, workshops, farm visits, etc.

**Results**

Farmers adopted a total of at least 10 new crop and fruit varieties that were observed in local markets as evidence that introduced varieties were successfully grown and adopted by local producers.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
202	Plant Genetic Resources
205	Plant Management Systems

#### **Outcome #4**

##### **1. Outcome Measures**

Reduce cost of agricultural inputs

##### **2. Associated Institution Types**

- 1862 Extension

##### **3a. Outcome Type:**

Change in Action Outcome Measure

##### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2018	30

##### **3c. Qualitative Outcome or Impact Statement**

###### **Issue (Who cares and Why)**

The high cost of fertilizers and top soil has been identified as a challenge to having a profitable farm business. Due to the Northern Mariana Islands proximity to wholesale fertilizer companies located in the continental United States, the cost of shipping exacerbates the already high cost of imported fertilizers. Also, availability of these products may fluctuate based on demand.

###### **What has been done**

Cover crop trials, Composting workshop and farm visits were held to provide farmers with the technical advice needed to use compost for farming in order to reduce the cost of and reliance on imported fertilizers.

###### **Results**

As a result of learning how to create and use compost for farming, those who attended the composting workshop reported a 10% reduction in the amount of money spent on purchasing fertilizers and top soil.

Cover Crop trials will identify crops efficacious in the CNMI to supply fresh organic matter to soils, improve soil structure, fix nitrogen, cycle nutrients, protect soil from erosion, and as a tool to manage weeds and other pests

##### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
205	Plant Management Systems

## **V(H). Planned Program (External Factors)**

### **External factors which affected outcomes**

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

### **Brief Explanation**

Our islands were hit by a number of Super-typhoons in 2018. Most notably, Super typhoons Yutu and Mangkut struck the main islands of Saipan, Rota, and Tinian, having a devastating effect. Power, Water, and other much of the overall infrastructure on all three islands were destroyed by 200+ mile/hour winds, leaving the citizens of the CNMI with the enormous burden of sustaining their lives directly after the storm, recovering from the storm damage, and re-building. Not fully recovered from Super typhoon Soudelor in 2015, the islands were once again thrown into a state of limbo, with power and water unavailable for months, accompanied by food shortages, and many other atrocities that are a part of impacts of natural disasters. Upwards of 88% of the Colleges assets were destroyed, all of which must be re-built. In this respect, our team has not been able to accomplish as much as we had hoped in 2018. Furthermore, many of the farms were obliterated by these storms, some of which were never able to recover, even 6 months after the storm has hit, making it difficult to engage and encourage the same number of farmers as participants in our programs. Slowly, we are making a comeback.

## **V(I). Planned Program (Evaluation Studies)**

### **Evaluation Results**

Thus far, local producers are grateful for the efforts of our Agriculture Production Team, in terms of the support that we provide them through our extension and research programs. Many who attend our workshops, programs, and who come in contact with our team share that they have made changes to their systems in meaningful ways, having a beneficial effect on their overall operations success.

### **Key Items of Evaluation**

**V(A). Planned Program (Summary)**

**Program # 5**

**1. Name of the Planned Program**

Family, Community and 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
801	Individual and Family Resource Management	20%		0%	
802	Human Development and Family Well-Being	15%		0%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	5%		0%	
805	Community Institutions and Social Services	10%		0%	
806	Youth Development	35%		0%	
901	Program and Project Design, and Statistics	15%		0%	
	<b>Total</b>	100%		0%	

**V(C). Planned Program (Inputs)**

**1. Actual amount of FTE/SYs expended this Program**

Year: 2018	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	3.0	0.0	0.0	0.0
<b>Actual Paid</b>	3.0	0.0	0.0	0.0
<b>Actual Volunteer</b>	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
232916	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**

**Building Partnerships**

The FCYD program established an after school program and coordinated a summer camp presented by partners/ stakeholders. The stakeholders served as content experts in their respective fields bringing forth knowledge that can be digested by an audience of varying age, ethnicity, and educational background. To ensure sustainability of efforts, the program established formal partnerships with various organizations such as the Youth Affairs Office (YAO), Department of Community & Cultural Affairs - Division of Youth Services (DCCA-DYS), the Bureau of Environmental Coastal Quality (BECQ), Micronesian Islands Nature alliance (MINA), Washington University's Ecology of Bird Loss Program, Northern Marianas College - School of Education, National Oceanic and Atmospheric Administration (NOAA), Marianas Music Association (MMA), Frances Sablan and the Man Antigo, the Lady Diann Torres Foundation and the Carolinian Affairs Office (CAO). The FCYD program provided capacity development training sessions for our adult and youth facilitators; supported community and youth led programs; provided technical assistance in facilitating and/or convening key stakeholders; provided the venue for established 4-H clubs; monitored volunteers, program implementation and data collection; and evaluated program implementation.

**Building local capacity**

**Number of Training Provided: 7**

4-H Riptide Training on Rota: 14 Youth

Two 4-H Marianas officers traveled to Rota and conducted a training on the Riptide program to the Eskuelan San Francisco De Borja students. As a result of the training, the 14 youth trained were equipped with the necessary tools to effectively implement the program within their school.

4-H Leadership and Facilitating Training: 11 Youth

Two 4-H Marianas officers traveled to Rota to conduct a training on Leadership and Facilitation to the Rota Sr./Jr. High School 4-H Club.

4-H Leadership and Public Speaking Training: 12 Youth

Two 4-H Marianas officers traveled to Tinian and conducted training on leadership, public speaking, and confidence to the Tinian High School 4-H club. The Tinian 4-H club members were able to use their newly gained skills to implement various educational activities such as one-week youth led summer camp.

4-H CPR & First Aid Training: 7 Youth. 3 Adult.

Several 4-H camp counselors and adult volunteers were certified on Basic First Aid and CPR by the American Red Cross.

4-H Basic Child Care: 18 Youth

Seasoned 4-H camp counselors conducted a child care basics training for new counselors to provide additional guidance, techniques and strategies to appropriately engage with participants.

4-H Camp Maga'lahi Orientation Training: Youth 12 Adult 3

An orientation on Camp Maga'lahi was conducted by our seasoned camp counselors for our new counselors. This orientation consisted of several training focused on team building, 4-H Basics, and camp basics.

Youth Money Management Training for Teachers (6 Elementary School Teacher)

The training provided the teachers with the necessary skills to assist the youth participants with following directions, filling out surveys and facilitating activities as part of the workshops requirements.

**Workshops Provided: 9**

Youth Money Management Workshop: (3 sessions conducted) 43 youth participants

The participants learned practical skills, such as budgeting their weekly lunch allowance to save money. Additionally, they made their own piggy bank using recycled materials. The students were eager to start a joint savings account with their parents.

Family Financial Management Workshops: 6

141 participants learned to develop a weekly, bi-weekly and monthly family budget using their food stamp dollars. Additionally, participants learned to become effective shoppers by developing a shopping list to avoid unnecessary purchases.

**Programs Offered:**

**2018 4-H Camp Maga'lahi** - One (1) Six-week session

Camp Maga'lahi successfully engaged sixty (60) campers between the ages of 6-to-14 in learning about agriculture, aquaculture, healthy living, music and culture, the environment and marine life, and STEM. Thirty (30) 4-H youth counselors facilitated the daily activities with participants. At the conclusion of the summer camp, parents and participants shared how much their kids enjoyed the sessions and are looking forward to the following year.

With an overwhelming response to Camp Magalahi, we were able to collaborate with the Lady Diann Torres Foundation and Youth Affairs Office to provide a 2-week mini summer camp session. Thirty-five (35) youth ages 7-to-14 were recruited from Camp Magalahi waiting list.

**2-week 4-H Summer Day Camp**

Fifty-three (53) youth ages 7-to-14 engaged in various cultural activities such as dancing, singing and arts and crafts. Additionally, the participants received nutrition education coupled with hands-on activities incorporating agricultural practices such as planting. Each participant received seedlings to take home.

**3-week Summer Swim Camp**

In collaboration with 500 Sails, a non profit organization, 57 youth ages 7-to-14 learned about water safety and basic swimming techniques.

**2018 4-H Riptide** - Five (5) Two-week sessions

Riptide successfully engaged seventy-three (73) participants between the ages of 7-to-14 in learning about agriculture, aquaculture, music and culture, the environment and marine life. Sixteen (16) 4-H youth volunteers facilitated the daily activities with participants. At the conclusion of the program, participants and partnering organizations shared how much they enjoyed the sessions and found a greater appreciation for our environment.

**4-H Outdoor Adventure** - ongoing throughout school year

The 4-H Outdoor Adventure Program works collaboratively with the DLNR-Fish and Wildlife Conservation Program and the Public School System, in providing opportunities to extend classroom learning to the outdoors by engaging in educational hikes, nature walks, overnight camps and youth fishing derbies. Total of 203 students and 21 adults participated.

**School enrichment program: Embryology**

106 6th and 7th grade students at Dandan Middle School through the STEM class observed chicken eating, sand bathing, mating, and laying eggs. They have collected eggs and on occasion candled them to determine their development status. The unhatched eggs have also been opened for observation and compared to the growth chart to see at what stage they expired as well as speculate on the reasons they might have not hatched. Students watched chicks crack from the shell and go from wet to dry and transferred to a brooding cage. They designed the coop and the brooding cages. They have installed an aquaponics and hydroponics system to grow vegetation for the use of cultivation and observation purposes.

**Number of schools participating in school gardens: 3** (Eskuelan San Francisco De Borja; Sinapalo Elementary; GRace Christian Academy)

In collaboration with the Agricultural Production Program within CREES and DLNR Specialty Crop Block Grant, we managed to assist three schools on the island of Rota to establish a school garden as well as incorporating the Learn, Grow, Eat, & Go (LGEG) curriculum to enhance student learning. 146 students participated in the school garden program.

**Green Leafy Vegetable project at Man Amko (Senior Citizen) Center**

Through the collaboration efforts of various partnering agencies such as the Department of Lands & Natural Resources (DLNR), Department of Community & Cultural Affairs (DCCA) Man'Amko (Senior Citizen) Center, Taga Riders and NMC CREES Agriculture and Aquaculture programs, we were able to replace all the ornamental plants with healthy produce through the Leafy Vegetable Initiative at the Man'Amko Center. This program was established to help the senior citizens play an active role in planting, harvesting and cooking healthy recipes as part of encouraging healthy living.

**2. Brief description of the target audience**

- Government officials / agency collaborators
- Grade school; middle school; high school; college students; teachers, staff
- Economically disadvantaged
- Senior citizens (Man'Amko)
- Caregivers for elderly
- Single parents

**3. How was eXtension used?**

eXtension was not used in this program

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2018	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	987	1891	2987	951

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

**Patent Applications Submitted**

Year: 2018  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2018	Extension	Research	Total
Actual	0	0	0

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Number of volunteers trained

Year	Actual
2018	85

**Output #2**

**Output Measure**

- Number of training provided for volunteers

Year	Actual
2018	7

**Output #3**

**Output Measure**

- Number of new schools participating in school enrichment programs

Year	Actual
2018	4

**Output #4**

**Output Measure**

- Number of partnerships established

Year	Actual
2018	11

**Output #5**

**Output Measure**

- Number of newly established entrepreneurs

Year	Actual
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2018 0

**Output #6**

**Output Measure**

- Number of youth and adults completing money management

<b>Year</b>	<b>Actual</b>
2018	339

**Output #7**

**Output Measure**

- Number of youth and adults completing life-skills training

<b>Year</b>	<b>Actual</b>
2018	1518

**Output #8**

**Output Measure**

- Integrated plan for youth development

<b>Year</b>	<b>Actual</b>
2018	2

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Program participants will have the knowledge to assist with program planning and implementation
2	Trained volunteers and program participants conduct training, workshops, and demonstrations

**Outcome #1**

**1. Outcome Measures**

Program participants will have the knowledge to assist with program planning and implementation

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2018	0

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Sustainable programs within the CNMI requires programming efforts to be community/youth driven. We partner with existing organizations within the community to create meaningful and sustainable development that is relevant to their environment. By providing opportunities for community and youth involvement in the developmental process, we enable programs to resonate with the stakeholders. This collaboration provides participants with perspective and the ability to recognize the strengths and limitations within their respective communities. Additionally, by giving participants the opportunity to dictate delivered programs, we are empowering them to take ownership in their community resulting in creating sustainable programs.

**What has been done**

Youth volunteers have been able to identify relevant partnerships with various organizations to help provide programs within the various villages. By utilizing existing venues, it has enabled us to recruit members in neighboring areas to participate in and identify possible programs that they feel will resonate in their village. Based on the feedback received, we were able to tailor our plans to meet their specific needs. The information was helpful in determining the best methods for increasing the youth's participation.

**Results**

Working collaboratively with partnering organizations, community members and the youth on refining the plan of work made programming efforts meaningful and practical. By establishing community buy-in in the beginning stages of the development process, we have been able to increase participation and decrease participant turnover. Positive programmatic feedback from partners, stakeholders, participants and parents provides us with information on how to revise planning for future programs.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
806	Youth Development
901	Program and Project Design, and Statistics

#### Outcome #2

##### 1. Outcome Measures

Trained volunteers and program participants conduct training, workshops, and demonstrations

##### 2. Associated Institution Types

- 1862 Extension

##### 3a. Outcome Type:

Change in Action Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2018	0

##### 3c. Qualitative Outcome or Impact Statement

###### Issue (Who cares and Why)

Volunteerism is the key and heart to building a sustainable and solid community. When we invest in building the local capacity of our volunteers, it is evident that the impact and effectiveness of program development is positive and more meaningful. In this increasingly competitive world, volunteering is also a way to get a foot in the workforce. Program participants make connections along the way and get a better idea of the career path they would like to pursue.

###### What has been done

The program provided a variety of training opportunities for new and ongoing 4-H volunteers and community partners. Examples of training included team building, leadership, and facilitation training. Other workshops included Physical Activity Curriculum Development training, CPR/First Aid Certification, general camp counseling which included camp protocols, child care, roles and various general overall camp training sessions. Our volunteers also participated in capacity training which include Social Connectedness/Interpersonal Relations, the Power of Collaboration and how to effectively manage a coalition. In addition to these training sessions, our volunteers actively participated in program events and activities and facilitated workshops, meetings, conferences, and college community events.

###### Results

By investing in developing the capacity of our local volunteers and community partners, they were able to independently implement programs effectively. Summer programs were youth-lead and successfully implemented. They were able to modify lessons and activities to fit the learning needs of our youth, and execute their leadership skills by conducting various training to other volunteers.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
806	Youth Development

#### V(H). Planned Program (External Factors)

##### External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Competing Programmatic Challenges
- Other (personnel)

##### Brief Explanation

There were programmatic challenges with personnel turnover coupled with a typhoon (Typhoon Mungkhut) that hit the island of Rota which affected program delivery. In addition, there was a change in leadership within the department.

#### V(I). Planned Program (Evaluation Studies)

##### Evaluation Results

Post surveys were conducted after each workshop. 100% of Adult Money Management Workshop participants claimed to have learned the importance of family budgeting, were able to decide which budgeting system worked best for them, and incorporated the skills learned into their practice.

At the end of the 4-H Camp Maga'lahi summer program, parents were asked to complete an online survey. 100% of the parents who responded said that the summer program met their expectations. One parent commented, " the camp was very exciting for my two boys, and they had lots of fun, also it was very educational for them. Everyday they had an educational story to tell me and their mom. We will put them in again next summer if the camp is still available."

##### Key Items of Evaluation

After each Adult Money Management workshop, 100% of the participants claimed to have learned the importance of family budgeting, were able to decide which budgeting system worked best for them, and incorporated the skills learned into their practice.

**VI. National Outcomes and Indicators**

**1. NIFA Selected Outcomes and Indicators**

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