

2009 Northern Marianas College Combined Research and Extension Annual Report of Accomplishments and Results

Status: Accepted

Date Accepted: 06/02/2010

I. Report Overview

1. Executive Summary

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

In relation to other Land Grant Institutions, NMC-CREES is small in size, with fewer than 30 employees distributed amongst the three most populated islands of Saipan, Tinian, and Rota. In order to provide equitable services to our stakeholders, NMC-CREES relies on key partnerships with government agencies, non-profit organizations and other entities throughout the region. Collaboration enables us to promote our educational programs, extension services, and research projects, while strengthening professional capacity to aid their respective organizations or agencies.

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

The NMC-CREES mission is accomplished through a range of technical programs offered through its two divisions of Agriculture Research & Extension (ARE) and Family & Consumer Sciences (FCS). NMC-CREES' integrated approach amongst its two divisions encourages a multidiscipline and multi-level collaboration that promotes efficiency and strong communication among scientists and extension faculty. This team effort aims to address the previous National Goals identified by the United States Department of Agriculture:

Goal 1: An agricultural system that is highly competitive in the global economy

Goal 2: A safe and secure food and fiber system

Goal 3: A healthy, well nourished population

Goal 4: Greater harmony between agriculture and the environment

Goal 5: Enhanced economic opportunity and quality of life for Americans

CREES PROGRAMS

Programs involved in Agriculture Research & Extension (ARE) include:

A. Livestock Improvement

B. Soil & Water Management

C. Plant Protection

D. Crop Production Improvement

E. Aquaculture Development Program

The Family Consumer Sciences programs (FCS) include:

A. Expanded Food & Nutrition Education (EFNEP)

B. Diet, Physical Activity, and Health

C. Community Resource Development

Family Financial Management

Sewing for Families with Limited Resources

D. 4-H Youth Development

Total Actual Amount of professional FTEs/SYs for this State

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	22.0	0.0	12.0	0.0
Actual	16.0	0.0	10.3	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

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

Internal University Panel
Expert Peer Review

Other (Program Leaders and Stakeholders representative)

2. Brief Explanation

Since the number of CREES faculty is relatively small, all professional level staff are encouraged to participate in Merit Peer Review. Also, external collaborators including other institutions of higher learning may send their comments before the Peer Review Committee. A draft of the proposal to be reviewed is e-mailed to all of the CREES staff for suggestion and comments, well before the review meeting. The suggestions and comments from the staff are collated and submitted to who initiated the proposal. The draft proposal is

revised and made available to all of the staff for the merit or peer review. All available professional research and extension staff participates in the review. During the review, we assess 1) the priority of importance of the proposed project; 2) the relevance of the proposal; 3) the quality and scientific value of the proposed research or extension activities and 4) the opportunities for cooperation with others. The proposals are revised to incorporate the suggestions given during the merit review and approved by the Director prior to submission.

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

Brief explanation.

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

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

2. Brief explanation.

NMC-CREES has established Advisory Councils on the islands of Rota, Tinian and Saipan. The Advisory council members include stakeholders within agriculture, homemakers, youth, businesses, the indigenous Chamorro and Carolinian communities. These individuals are appointed by the Northern Marianas College President and serve as the main tool for program mapping and review.

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

1. Method to identify individuals and groups

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

Brief explanation.

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

Brief explanation.

NMC-CREES has developed over the years as a major advocate for the integration of technology via the promotion of agriculture and food sciences areas. Because of its continued exposure in the community, the department has a strong following of supporters, especially during these rough economic times. Being that we represent a largely diverse community, we make efforts at continuously looking for new stakeholders to serve. Our program staff provide the administration with a list of viable entities based on service delivery data collected in previous years. By providing such a list, the administration then forwards these individuals and/or entities with invitations to participate in the program review process.

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

1. Methods for collecting Stakeholder Input

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

Brief explanation.

1. Methods for collecting Stakeholder Input

Meeting with traditional Stakeholder groups

Meeting with traditional Stakeholder individuals

Meeting with the general public (open meeting advertised to all)

Meeting with invited selected individuals from the general public

Brief explanation.

The Advisory Councils continue to hold their quarterly meetings and members discuss concerns that were brought to their attention from farmers, homemakers, and community leaders. NMC-CREES held periodic meetings with stakeholders and solicited advice on community needs and priorities. In addition to such actions, our program personnel reciprocated such by actively participating in meetings held by our partners. These include: The newly established CNMI Farmer Support Group, The 1st and 2nd CNMI Agriculture Summit, Soil and Water Conservation District meetings, Head Start Health Advisory Council, Division of Environmental Quality meetings, Parent Teacher Association meetings, Division of Youth Services meetings, Farm Service Agency meetings, and other stakeholder associations.

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.

A statement of how the input will be considered

Identified Emerging Issues

Redirect Extension Programs

Redirect Research Programs

In the Staff Hiring Process

Brief explanation:

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

In Creating Action Plans

To Set Funding Priorities

Brief Explanation of what you learned from your Stakeholders

Brief Explanation of what you learned from your Stakeholders

Because of input provided by our stakeholders we put focus on the following initiatives:

The acquisition of a Nematologist,

Continue efforts to seek funding for the development of a coconut crab, grouper, tilapia, abalone, and milk fish hatcheries

seek partnerships with tropical agriculture institutions

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
871374	0	761357	0

2. Totalled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	418034	0	303559	0
Actual Matching	0	0	0	0
Actual All Other	0	0	0	0
Total Actual Expended	418034	0	303559	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from				
Carryover	266535	0	219898	0

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Livestock and Aquaculture Improvement Program
2	Plant Protection Program
3	Crop Improvement Program
4	Soil and Water Quality Program
5	Community Resource Development
6	Diet, Physical Activity, and Health
7	Food Safety and Quality Program
8	Agriculture Economics and Marketing Program
9	4-H Youth Development

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Livestock and Aquaculture Improvement 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
111	Conservation and Efficient Use of Water	2%		0%	
301	Reproductive Performance of Animals	10%		10%	
302	Nutrient Utilization in Animals	10%		15%	
303	Genetic Improvement of Animals	15%		15%	
307	Animal Management Systems	10%		0%	
311	Animal Diseases	20%		30%	
312	External Parasites and Pests of Animals	5%		5%	
313	Internal Parasites in Animals	5%		5%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	10%		10%	
315	Animal Welfare/Well-Being and Protection	3%		0%	
722	Zoonotic Diseases and Parasites Affecting Humans	5%		5%	
902	Administration of Projects and Programs	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	2.8	0.0	0.3	0.0
Actual	1.5	0.0	1.5	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
61815	0	69981	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**

Livestock:

1. Research and Extension training of local Paravets and other extension personnel-provision of animal health technicians in regards to livestock genetic upgrading (Artificial Insemination), technology transfer research on plant medicine for livestock health care , animal disease survey, and sustainable agriculture.
2. Conducted animal disease survey for the CNMI for year 2008-2009. Identifying significant economic and public health diseases.
3. Promoted and Implemented USDA animal health program and sustainable agriculture system
4. Conducted on- farm training and small focus group for small farmers---- livestock enterprise and genetic upgrading, animal welfare, animal nutrition and husbandry management.
5. Conducted a regional animal health and livestock management workshops with co-extension and co-research collaborators from University of Guam, University of Hawaii and University of Virgin Islands.
6. Conducted tow mini-workshops on alternative livestock enterprise (duck production and small scale poultry production) in the islands of Tinian and Rota.
7. Implemented and promoted sustainable livestock waste management in cooperation with USDA NRCS in their EQIP with the support and collaborative efforts from Southwest Water Quality and US EPA Region 9.
8. Promoted alternative plant medicines to island producers, farmers, extension staff and paravets within the Western pacific region through island workshops, off-island PDP training in the Philippines. (This project was funded by Western Sustainable Agriculture Research Education)
9. Livestock client education info class on zoonotic diseases were provided through client visitations.
10. Faculty presented grants writing workshops for producers and extension staff.

Aquaculture:

1. Distributed 7,580, Red Hybrid, Gray, and White Tilapia fry to aquaculture farmers throughout the CNMI.
2. Provided technical assistance to 138 aquaculture farmers int the CNMI that ranges from culture systems design, water quality management, and general aquatic species husbandry.
3. Conducted workshops and demonstrations on the production of tropical abalone, Haliotis asinina and macroalga, gracilaria spp. aquatic species.Targeted existing farmers for further expansion as well as potential investment.
4. Provided Market analysis (economics) Tilapia-Green Production system
5. Made demonstration and promotion of aquaculture effluent management
6. Research production specifics of raising groupers, Asian Sea Bass, rabbit fish, mullets, milkfish, and freshwater prawns through inland, intensive, tank culture.
7. Conducted the first aquaculture census to determine the true number of aquaculture farmers for program data purposes.

2. Brief description of the target audience

1. Paravets and Agriculture extension staff
2. Youth and adults
3. Ranchers/farmers
4. Livestock producers
5. Government agencies
6. Policy makers
7. Aquaculture producers
8. Retirees looking at new investment
9. Entrepreneurs

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	300	1000	500	1500
Actual	250	1000	300	1000

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

Patent Applications Submitted

Year: 2009
 Plan: 0
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	3	2	
Actual	2	1	3

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Target	Actual
2009	4	7

Output #2

Output Measure

- Number of Livestock Workshops (Production, Animal Health, etc.)

Year	Target	Actual
2009	6	6

Output #3

Output Measure

- Number of Research Projects for Aquatic Species

Year	Target	Actual
2009	1	3

Output #4

Output Measure

- Numbers of new training projects for the CNMI paravets

Year	Target	Actual
2009	2	3

Output #5

Output Measure

- Number of aquaculture workshops

Year	Target	Actual
2009	5	6

Output #6

Output Measure

- Number of workshops for ANimal Welfare.Well-being and Protection
Not reporting on this Output for this Annual Report

Output #7

Output Measure

- Number of workshops in sustainable agriculture

Year	Target	Actual
2009	3	4

Output #8

Output Measure

- Number of new alternative business enterprise introduced to the CNMI

Year	Target	Actual
2009	1	1

Output #9

Output Measure

- Number of demonstration projects for public viewing

Year	Target	Actual
2009	3	3

Output #10

Output Measure

- Number of projects relating to Sustainable Agriculture (Professional development, research and education etc)

Year	Target	Actual
2009	2	5

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Number of New Farmers engaged in Alternative Small Scale Livestock Enterprise
2	Number of farmers used Artificial Insemination program (cattle, goats, and swine)
3	Numbers of farmers market their produce (egg/meat)
4	Number of Farmers who adapted the sustainable livestock waste managements
5	Number of farmers learning how to venture new aquatic species
6	Number of clients receiving animal health services thru consultations
7	Number of clients adapted the animal waste management and learned to conserve water
8	Number of farmers who becomes aware about animal welfare and protection from workshops
9	Number of farmers improved animal productivity thru improved pasture/rotation grazing
10	Number of proposals submitted for funding for animal nutrient utilization, animal production and animal health
11	Numbers of farmers learning from sustainable agriculture program
12	Number of farmers learning and engaging in small scale alternative livestock enterprise
13	Numbers of farmers become aware of economic and public health diseases of livestock animals (swine,poultry, cattle, goat etc.)
14	Number of youths learning animal management system and animal welfare and protection
15	Number of farmer/rancherss become aware of toxic weeds and poisonous plants in the CNMI
16	Number of farmers who venture to another livestock business because of success in previous farming
17	Number of farmers who learned to formulate local feeds stuff as feed supplement
18	Number of farmers who regularly dewormed their animals for ecto and endoparasitism

19

Number of farmers learning different types of potential aquatic specise for business

Outcome #1**1. Outcome Measures**

Number of New Farmers engaged in Alternative Small Scale Livestock Enterprise

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	6	6

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

There are some limiting factors that prevent producers in marketing their commodities. There is presently no slaughter house for swine and beef in the CNMI. Therefore, no meat inspection for export purposes. Only live animals are sold for exports to the neighboring islands. There remains an issue in the cost of shipping in commodities. Imported feeds from the Philippines as well as in the mainland US are too high for most ranchers in this community. These issues combined discourage farmers in engaging in small agriculture related endeavors.

What has been done

Different associations have been formed to work on this issues these include the Tinian Cattlemen's Association and Farmer Support Groups respectively. Recently, a slaughter house has been proposed under the solicitation for ARRA funds. Exportation of beef cattle to the Republic of Palau has been initiated and soon for Yap in the Federated States of Micronesia. The local farmers market "Sabalu" is now allowed to sell poultry eggs and live chicken.

Results

With the declining economy as a result of recent recession, local producers find it profitable and at the same time supplemental to their major source of income the small scale business. The demand for local produce is increasing. We just need to promote more and convert producers to less input more output system operation.

4. Associated Knowledge Areas

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

- 312 External Parasites and Pests of Animals
- 313 Internal Parasites in Animals
- 314 Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
- 722 Zoonotic Diseases and Parasites Affecting Humans

Outcome #2

1. Outcome Measures

Number of farmers used Artificial Insemination program (cattle, goats, and swine)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	30	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

So far there is only one rancher who received AI certification.. Due to some delays in orders, the first AI took place in his farm and results will be seen by 2010. Additional ranchers are scheduled to do AI for cattle and swine. Some limitations too are the limited or no working facility in the islands of Rota and Tinian. Fabrication of temporary working chute is currently in process.

What has been done

An artificial insemination grant was secured from USDA-Western SARE (\$27,904). Supplies and equipments were purchased. Training and demonstrations was made in the Island of Saipan with 13 interested ranchers attending the event. More trainings are schedule to happen for the Island of Tinian and Rota by 2010. Introduction of Senepol , Brangus and Red Angus cattle lines are expected to materialize by 2010.

Results

As of December 2009, 28 cows successfully inseminated at the Torres Ranch. There were quite a number of missed AI but the process behaved well as expected.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Numbers of farmers market their produce (egg/meat)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	15	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Due to high feed cost for both livestock and aquaculture, most of the expected producers stop their operation in addition to the recent limited supply of power on island. This made producers slow down to small scale businesses.

What has been done

Sustainable agriculture was promoted among producers. Some producers were encouraged to apply for grants to investigate alternative energy such as in Aquaculture and efficient farming system with low cost input such as alternative poultry production system and deer farming coupled with agri-tourism.

Results

Because of the dwindling economy, we promoted sustainable agriculture. Ten producers in the three islands submitted their proposal for the Western SARE competitive funding.

Fortunately, five farmers were funded through Western SARE Farmer Rancher grants. Results of their research and extension will be shared by 2010 and 2011.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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 #4

1. Outcome Measures

Number of Farmers who adapted the sustainable livestock waste managements

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	5	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Availability of a wood chipper for the islands of Rota and Saipan is the limiting factor. More education must be encouraged regarding dry litter waste management. So far the CNMI, Guam, The Republic of Palau and American Samoa have all adopted the system.

What has been done

The Dry Litter waste Management system was recently included in the USDA NRCS Best management Practices (BMP's). With this, farmers are now eligible to adopt the system for cost sharing under the EQIP program.

Results

Mr. Cruz of Tinian in addition to Gilbert Macaranas availed the USDA NRCS EQIP cost sharing program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection

Outcome #5

1. Outcome Measures

Number of farmers learning how to venture new aquatic species

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	50	138

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Aquaculture in the CNMI is limited due to the following constraints:

- Source of capital for start-up operations
- Rising feed and energy cost

What has been done

One on one client assistance in aquatic species husbandry, effluent management, water quality, and systems design and supervision

Results

A resurgence of aquaculture farms being established.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection
902	Administration of Projects and Programs

Outcome #6

1. Outcome Measures

Number of clients receiving animal health services thru consultations

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	150	60

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Availability of medicine on island and lack of veterinary services were the most common limitations. Limited visits by the CNMI veterinarian and the lack of information on animal health regimens for implementation. Paravets are not authorized by the CNMI vet to treat diseases in animals. More training should be provided to the paravets and extension staff. The State Department of Agriculture does not have the capacity to perform such services.

What has been done

Trainings on Herbal medicine for Livestock health care has been provided to some paravets and extension staff. A revolving fund was suggested to the State Department of Agriculture to purchase some medicine and supplies.

Education of the recent Animal health picture of the CNMI through the Animal Health Survey.

Results

Training opportunities were provided to the State Department of Agriculture to alleviate this continuing concern.

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
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
315	Animal Welfare/Well-Being and Protection
722	Zoonotic Diseases and Parasites Affecting Humans

Outcome #7

1. Outcome Measures

Number of clients adapted the animal waste management and learned to conserve water

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Number of farmers who becomes aware about animal welfare and protection from workshops

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	50	50

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Animal Welfare and protection are something new to most producers on island. It will take a lot of time for them to realize the benefits of animal welfare and protection. Simple provision of water all day in swine and ruminants is an issue of neglect.

With the economic situation, people will buy food first before animal food and medicine. That's the current scenario plaguing farmers and ranchers in the CNMI.

What has been done

The issue of animal welfare and protection is always incorporated in the livestock workshops provided such as proper feeds, feeding and the concept of animal disease prevention and treatment.

Results

Animal Welfare and Protection is a challenge but needs attention. More educational promotion is needed.

4. Associated Knowledge Areas

KA Code	Knowledge Area
315	Animal Welfare/Well-Being and Protection

Outcome #9

1. Outcome Measures

Number of farmers improved animal productivity thru improved pasture/rotation grazing

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	10	30

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There remains a lack of technical "know-how" in pasture development and rotational grazing. Limited land lease agreement keep ranchers from expanding their present operations. Limited supply and high cost of water to farm areas continue to be a problem in the furtherance of ranching.

What has been done

Our department has requested the State Legislature to include reduced rates for water usage for agriculture purposes in order to help farmers deal with some of the costs of production. Workshops were held by the Marianas Grazing Academy. Speakers from University of Hawaii and University of Virgin Islands came to teach local ranchers on grazing management and pasture development. The land issue is still pending due with the current U.S. military build up. The mitigation plan is expected to be out soon for the ranchers that will be affected.

Results

With the assistance from grants from USDA on outreach for disadvantaged farmers, some agriculture supplies as well as grass seeds were provided to each island for the furtherance of pasture development. More assistance will be provided by this 3 year project

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
307	Animal Management Systems

Outcome #10

1. Outcome Measures

Number of proposals submitted for funding for animal nutrient utilization, animal production and animal health

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	1	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Ten proposals were submitted and five were able to get funded. Two projects on Alternative poultry production and deer ag -tourism were funded. The other two funded are focusing on aquaculture related topics.

What has been done

The projects are currently in implementation stage. More trainings on grant writing is being offered to NMC faculty to assist local producers who will be potentially serving as Technical Advisors

Results

Three different grant writing workshops were offered to the three islands.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
307	Animal Management Systems
902	Administration of Projects and Programs

Outcome #11

1. Outcome Measures

Numbers of farmers learning from sustainable agriculture program

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	30	65

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Since the idea of Sustainable Agriculture program is something new to most island people effort must be made to increase awareness of the material. Information dissemination is a limiting factor. Much of the stakeholders do not have computer access and the coordinator has limited funding to travel back and forth to the other islands.

The lack of technical people to serve as advisers and limited specialties on island have been limiting factors.

What has been done

Two Sustainable Ag Tours were made in the Island of Tinian and Rota totaling 65 participants (extension staff, producers and youth) promoting all sustainable agriculture projects by CREES.

A calendar was produced for year 2010 focusing on the different sustainable practices being promoted. 1000 copies were distributed throughout the islands.

A series of workshops and news articles were made to promote the program throughout 2009.

Results

Sustainable agriculture - Western SARE have increased their level of awareness. People are now calling for assistance, there was an increase request for TA for grants assistance.

Two workshop were offered for producers with regards to Grants Writing and Western SARE RFP.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
902	Administration of Projects and Programs

Outcome #12

1. Outcome Measures

Number of farmers learning and engaging in small scale alternative livestock enterprise

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	15	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Due to economic downturn/recession, utility problems, high cost of livestock feeds, many old producers decided to slow down on their operations especially if their operation will require much inputs in terms of utility and maintenance cost.

What has been done

The program encourages producers to focus on low cost, low input and more output systems. Examples of such systems include alternative portable poultry production, grazing management as opposed to confinement systems(in both swine and ruminants).

Results

As a result of an aggressive education campaign, one farmer on Saipan is now weeding less as a result of the "chicken tractor" usage on his farm.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
307	Animal Management Systems

Outcome #13

1. Outcome Measures

Numbers of farmers become aware of economic and public health diseases of livestock animals (swine,poultry, cattle, goat etc.)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	50	64

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Technical words about significant economic and public health diseases are very uncommon in the Marianas. People did not know about zoonosis. To date, there was only two Animal health Surveys done in the CNMI. The first one in 1998 funded by ADAP and the other in 2008/9 funded by Hatch. So, people were not that aware about diseases in livestock. There has been less professional development for the Department of Agriculture staff and paravets this past year. There is only one Licensed vet in the CNMI and he is also serving as the Secretary of the DLNR. This dual duty is causing a lack in the service delivery available to farmers.

What has been done

A grant from Hatch has funded an Animal health Survey focusing on the significant economic and public health diseases. Serum samples were taken from livestock animals and submitted to NVSL in Iowa for laboratory diagnosis and analysis.

Preliminary results were distributed to public in several livestock workshops in the three islands. Terminal paper will be produced by 2010.

Results

Because of this survey tool we have determined that the CNMI is free from Brucellosis, Rabies, Avian Flu, FMD and many more public and economic diseases of importance.

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases
312	External Parasites and Pests of Animals
313	Internal Parasites in Animals
722	Zoonotic Diseases and Parasites Affecting Humans

Outcome #14

1. Outcome Measures

Number of youths learning animal management system and animal welfare and protection

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	5	50

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There should be more collaboration and involvement with the the youth in terms of information dissemination.

What has been done

In connection with the AG tour in the islands of Tinian and rota, we were able to reach 65 students from elementary and high school and were able to share some principles and concept of animal welfare and protection.

Results

It is evident in the interested youth that more information dissemination and education must be given to fully appreciate the program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection

Outcome #15

1. Outcome Measures

Number of farmer/ranchers become aware of toxic weeds and poisonous plants in the CNMI

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	50	100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Communication barrier/language, limited information brochure and poster, out of the priority list are the most common issues with toxic plants. It's has been the common cause of diarrhea case reported in ruminants.

What has been done

Due to problems in grazing, we were able to incorporate this issues with biological control and proper grazing management. Currently, this is one of the components being taught to ranchers in the three islands. Lectures and field trainings were offered to ranchers that started in 2009 and will end by 2011

Results

Increased use of biological controls on grazing land is being seen by some of the participants of the grazing academy.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
307	Animal Management Systems
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals

Outcome #16

1. Outcome Measures

Number of farmers who venture to another livestock business because of success in previous farming

Not Reporting on this Outcome Measure

Outcome #17

1. Outcome Measures

Number of farmers who learned to formulate local feeds stuff as feed supplement

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	30	30

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

High cost of livestock feeds in the region continues to be a problem.

What has been done

Identified as a top priority in the region, we submitted a sub-regional grant to Western SARE with University of Guam and College of Micronesia as collaborating agencies. The workshop featuring local crops as "feed stuff" was offered to Saipan, Palau, and Pohnpei.

Results

Increase awareness that local "feed stuff" can be utilized as a supplement in swine nutrition. Dry feed analysis is provided for reference

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals

Outcome #18

1. Outcome Measures

Number of farmers who regularly dewormed their animals for ecto and endoparasitism

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	20	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Limited access to medicine, high cost, and lack of technical know-how of producers, limited accessibility of paravets and extension staff from the State Department of Agriculture.

What has been done

The issue has been brought to DLNR to continue the release of revolving funds for the three islands. An alternative option is the usage of herbal plant for livestock health care. The project is on process that will help ranchers in depending to commercial medicine.

Preliminary workshop in alternative herbal medicine has been offered.

Results

Final manual will be released in 2010.

Increase awareness of alternative herbal medicine.

4. Associated Knowledge Areas

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

Outcome #19

1. Outcome Measures

Number of farmers learning different types of potential aquatic specise for business

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
------	---------------------	--------

2009

10

138

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Engagement with the general public helps in creating awareness of the program and results in the development of aquaculture in the CNMI.

What has been done

Participation in scheduled events, i.e., Flame Tree Festival, DEQ Environmental Awareness, San Vicente School Health Fair. Presentations in Agriculture and Economic summits. NMC Open House

Results

The start of aquaculture farms as a result of those activities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
301	Reproductive Performance of Animals
303	Genetic Improvement of Animals
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection
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 Programmatic Challenges
- Other (Cultural)

Brief Explanation

Economy: the lack of capital continues to hinder the development of aquaculture in the CNMI. While there is a lot interest in the community for aquaculture, the lack of money for starting an enterprise is keeping many potential farmers from venturing into aqua farming.

V(I). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.

- Other (Questionnaire/survey, evaluation)

Evaluation Results

Principal assessment of a project depends on the farmer, its local counterpart such as DLNR , and the educational component to sustain the practices promoted. Initially, everything is supplied by a grant, the problem lies on sustainability . The local counterpart should find ways how to sustain the project for it to be successful. There must be continued education and technical support for the farmers.

Key Items of Evaluation

Sustainability aspect of the project is a principal requirement for future funding of a project..

Commitment and Involvement of local collaborators-preferably in writing.

A Feedback report . After project completion.

V(A). Planned Program (Summary)**Program # 2****1. Name of the Planned Program**

Plant Protection 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	30%		20%	
212	Pathogens and Nematodes Affecting Plants	30%		40%	
213	Weeds Affecting Plants	10%		10%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	10%		10%	
215	Biological Control of Pests Affecting Plants	10%		10%	
216	Integrated Pest Management Systems	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	3.3	0.0	4.3	0.0
Actual	1.5	0.0	0.5	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
53599	0	61345	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 is conducting research to identify and control plant parasitic nematodes and other invertebrate pests. The department plans to make an illustrated list of the nematodes of the Mariana Islands. Biocontrol of invasive weeds, and invertebrates will continue to be a priority. The weed, *Coccinia grandis*, came to Saipan in the 1980's, and spread throughout the island of Saipan, Tinian and Rota. This invasive species has inundated forest areas climbing and covering vegetation, including

indigenous plants. In Hawaii, this invasive species is controlled by two beetles (*Acythopus coccinae* and *A. burkhartorum*) and a moth (*Melittia oedipus*). The two species of weevils were introduced in 2002; however only *A. coccinae* has become established and is causing severe defoliation. In August 2007, we introduced *Melittia oedipus* moth into Saipan and into Rota in October 2007. In Saipan the moth is established, but the population is still low. We aim to continue research on this weed and its parasites. Another example is the recently introduced Cuban slug, *Veronicella cubensis*, into the island of Rota, where it established, multiplied and has spread throughout most of the farm areas causing extensive damage to many crops. It has become a major agriculture pest and it has also become a threat to other islands in the CNMI where this pest is not present. In August 2007, a USDA Malacologist and accompanying staff conducted experiment on various molluscicides to determine how best to control this pest. In March 2006, the Papaya Mealybug (*Paracoccus marginatus*) was detected in Tinian, and in June and August 2007, we introduced three (3) parasitoids to control this pest. In October 2006, we found *Erythrina* gall wasp (*Quadrasticus erythrinae*) infesting *Erythrina variegata* in Saipan. Upon further survey, we found the gall wasp also infesting *Erythrina* in Tinian and Rota. In September 2006, a single specimen of the Coconut Rhinoceros Beetle (CRB) was collected in a warehouse on cement pallet at the Charley Dock in Saipan. We surveyed the coconut palms and potential breeding sites in the vicinity, but we found no sign of other CRB. Interestingly, in September 2007, the CRB was detected in Tumon, Guam. Infestations include adult beetle damage to coconut palms and larvae breeding in dead coconut stumps and debris. We will continue surveillance of this pest in the CNMI, particularly since it is established in Guam, which is only 40 miles south of the island of Rota. There have been additional sightings in 2009, but they were not confirmed. Our surveys and traps have not lead to a find. We intend to continue to apply the best management methods of control and to find natural enemies to supplement other methods of control. There pest 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

- Agriculture professionals and scientist - Farmers and farm helpers - Pesticide applicators - General Public - Students K-12 and College. We would like them to learn how to be better stewards of our natural resources and get them interested in the Agricultural and Natural Sciences. - Business that promote or sell farm products - 4-H club leaders and students

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	500	1000	500	1000
Actual	600	3000	600	2000

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

Patent Applications Submitted

Year: 2009
 Plan: 0
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	0	1	
Actual	0	1	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Research Projects completed on Invasive Species such as scarlet guard, melon fly, papaya mealy bug, and Cuban slug)

Year	Target	Actual
2009	2	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 infestation) by certain percentage:
3	Number of farmers able to identify some of the invasive species causing damage to their farm crops

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	Quantitative Target	Actual
2009	2	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Multiple farmers apply pesticides to crops to control invasive pest without rotating the pesticides or following an IPM strategy. Illegal pesticides from China are often use by farmers. The soil in shallow and below the soil the rock is porous coral limestone. Pesticides, fertilizers and pollutants quickly move to the ground water and the reef. Additionally, negligent use of pesticides can limit the efficacy of biocontrol agents and have negative health effects on people and the environment.

What has been done

The farmers are educated with workshops, farm visits, pesticide safety education courses, and extension publications.

Results

Multiple farmers are following recommendations. Neem has been promoted as an safe effective bio pesticide to control multiple invasive insect pest. Neem trees have been distributed around the islands and farmers have been informed on how to extract and apply Neem.

4. Associated Knowledge Areas

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

Outcome #2**1. Outcome Measures**

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

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	30	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

These pests are negatively impacting agriculture in the CNMI. They significantly reduce yield in crops. The Cuban slug is a vector of lung worm disease to humans, therefore creating a health concern. The Melon fly is a quarantine issue and prevents the CNMI from exporting their produce.

What has been done

Cuban slug: site demonstrations of various control practices have been conducted in the island of Rota. These practices are, the use of predatory ducks to feed on the slugs, chemical slug baits, and Neem extract. Data was collected based on the mortality of the treated plots of vegetable crops. Before choosing the slug bait used, research was conducted to identify the efficacy of different formulations on the mortality of Cuban slug.
Melon Fly: monitoring and suppression program is ongoing. Sweet Potato weevil: male annihilation program is ongoing. Whiteflies: monitoring with yellow sticky traps and biocontrol introductions is being contemplated for the future.

Results

Cuban slugs: the three practices tested have been recommended and multiple individuals have adopted the control practices recommended

Melon fly: This pest is still abundant in the CNMI, a more aggressive approach is needed. A plan is being developed for greater control.

Sweet potato weevil: Extension agents continue to educate farmers with the use of traps and lures and with further education on best management practices

Whiteflies: IPM methods have been recommended to the farmers and when applied provide acceptable control

4. Associated Knowledge Areas

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

216 Integrated Pest Management Systems

Outcome #3**1. Outcome Measures**

Number of farmers able to identify some of the invasive species causing damage to their farm crops

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	4	60

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

In order to apply appropriate control measures, knowledge of the pest identity is essential.

What has been done

Farmers have been educated regarding identification of invasive pest with workshops, farm visitations, extension publications such as pest alert advisories, posters, farmers meetings, newspaper articles and TV news.

Results

This has increased the number of farmers that can identify invasive species. It has also resulted in greater awareness in the general public.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants

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.)
- Other (staff limitation)

Brief Explanation

The plant protection team needs more staff

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Time series (multiple points before and after program)

Evaluation Results

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Crop Improvement 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	5%		5%	
125	Agroforestry	5%		5%	
136	Conservation of Biological Diversity	5%		5%	
202	Plant Genetic Resources	10%		10%	
204	Plant Product Quality and Utility (Preharvest)	20%		20%	
205	Plant Management Systems	30%		30%	
212	Pathogens and Nematodes Affecting Plants	10%		10%	
401	Structures, Facilities, and General Purpose Farm Supplies	5%		5%	
901	Program and Project Design, and Statistics	5%		5%	
902	Administration of Projects and Programs	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	2.0	0.0
Actual	1.0	0.0	1.3	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
43050	0	85981	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Micropropagation of economically important crops such as banana, sweet potato and taro continue to produce quality and disease free plants. Field trials and evaluations of new varieties in fruits, root crops and vegetables conducted in local soil and climatic conditions of CNMI. Research projects in the form of fruit and vegetable variety trials performed locally. Research and extension programs on underutilized crops (specialty crops) and medicinal plants conducted. Field days and taste testing (sensory evaluation) organized for the new varieties of taro, sweet potato and banana. Hands on training and workshops conducted for farmers, extension agents, and students on fruit trees grafting, soil and water conservation techniques, sustainable management of banana production, composting. Video production used whenever possible. Publications (brochures and fact sheets) and presentations produced and disseminated through informational seminars and lectures. Farmer-type gatherings such as association meetings, soil and water conservation district meetings and forums targeted. Students from the grade school, high school and college involved in activities and presentations when ever possible. Implemented best management practices on farms. Results of the resaerch projects were presented in national and interantional scientific meetings and conferences.

2. Brief description of the target audience

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

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	100	500	100	500
Actual	110	520	105	510

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

Patent Applications Submitted

Year: 2009
 Plan: 0
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	0	2	
Actual	2	2	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research projects completed on Crop Improvement Issues

Year	Target	Actual
2009	2	2

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

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

Outcome #1**1. Outcome Measures**

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

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	20	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Crop Improvement and Production Program has continued in conducting on farm demonstration trials on the islands of Saipan, Rota, and Tinian with cooperating farmers. There was an increase in the number of cooperating farmers who have participated in this program. We have increased numerous varieties of vegetables and root crops for trials to improve the production. Varieties have been tested for pest and disease resistance as well as yield result. Rota farmers continue to find vegetable production difficult after the ban of more effective chemicals used to be readily available in the market. Leafy vegetables in favor of root crops such as taro and sweet potato continue to decrease. However, taro and sweet potato have their own special problems with nematode infestation and sweet potato weevils. Neem based alternative organic pest and nematode control in vegetable production is on going in Rota through WSARE farmer rancher grant.

What has been done

The three islands collaborators contributed to the success of these programs through the field days, taste testing, continuous workshops, extension visits, and one on one sessions with the farmers. These events organized at the newly established demonstration plot and farm at the As Perdido Agriculture Experiment Station in Saipan. The demonstration plot has over fifty new varieties of taro, sweet potato and banana produced through tissue culture, fruit trees such as noni, dao'k, papaya, breadfruit, mango, canarium, citrus and avocado. Plant pathology team serviced over 160 farmers for 2009 in all the three islands. Client visitation and consultation are being done in regular basis that covers disease diagnosis, soil and nutrient management, soil analysis, disease prevention and treatment, composting and other related fields of crop production.

Results

This has resulted in an increase of the number of farmers interested to participate in this program. The farmers estimated revenue have increased resulted from reduced pest damage and using a prototype plow. Promoting low toxicity pesticides like Bacterial thurengiensis and Neem also reduces the risk of pesticide contamination and pest resistance to pesticides.

With the use of tissue culture plants in taro, sweet potato and banana, it is estimated that crop production and efficiency have improved well in three crops and in general overall crop production due to improved plant health services.

Increasing number of farmers wanted to learn and venture grafting of fruit trees such as mango, avocado, citrus

and nursery plant propagation of economically important and other staple crops. Farmers became aware of the potentials and strengths of grafting and tissue culture techniques. Number of farmers wanted to adopt sustainable agriculture practices to improve the soil, composting and nutrient management.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
125	Agroforestry
202	Plant Genetic Resources
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
212	Pathogens and Nematodes Affecting Plants
401	Structures, Facilities, and General Purpose Farm Supplies
901	Program and Project Design, and Statistics
902	Administration of Projects and Programs

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	6	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Commonwealth of the Northern Mariana Islands has had very minimal exposure to organic farming. The Crop Improvement Program stressed greater understanding of organic agriculture production systems to CNMI residents in this fiscal year.

What has been done

Demonstration plots on farm sites in the form of vegetable variety trials were performed throughout the three populated islands of the CNMI. A workshop on sustainable crop production with special focus on banana conducted through out the three islands Saipan, Rota and Tinian. The workshop covered training and demonstration on soil, nutrient, pest and disease management. The sponsored workshop was successful and attended by over 150 farmers/stakeholders showing strong promise of greater acceptance. Fertigation use, nutrient management, composting, and the use of soil analysis discussed.

Results

Although we have had numerous attendance at workshops, we do not have a quantitative numbers at the present. Farmers are currently using some of the techniques learned, however none have been organically certified.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
212	Pathogens and Nematodes Affecting Plants

Outcome #3

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	6	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Soil mismanagement on farmlands continues as a result of improper farming activities. This project will use methods of conservation in order to establish a model farm for any CNMI farmer to have access to. This demonstration facility will serve as a hub for agriculture producers as well as for the general public to view and mimic in their farming and gardening endeavors.

What has been done

A Conservation Innovative Grant (CIG) entitled: `Modeling Resource Conservation Techniques through Innovative Farm Practices continued this year. No-till vegetable trials conducted at the As Per Dido Agriculture Experiment Station. Various leafy vegetables and tomato, okra, hot pepper, eggplant, cucurbits tested at the farm. A workshop on soil and water conservation organized at the station and issues on mulching, no till vegetable production, benefits of vetiver grass, soil analysis, microirrigation/fertigation, mixed cropping and contour farming discussed. The project demonstrated enhanced agricultural profitability on the islands and development of As Per Dido Agriculture Experiment Station in a manner fitting modern agricultural trends and efficiency in production considered the benefits of both traditional and modern agricultural techniques with emphasis in the maximization of soil and water resources.

Results

Data on no-till vegetable trials yielded positive results in terms of acceptable yield and low level of infestation of insect pests and diseases. Ten kinds of vegetables tried were harvested successfully and data collected on the yield, insect pests, diseases etc. Over sixty farmers and fifty youths (grade school students) attended workshop.

Increased number of farmers adopted soil and water conservation techniques, mulching, cover crops, soil analysis tests and are aware of benefits of techniques.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
125	Agroforestry
136	Conservation of Biological Diversity
205	Plant Management Systems
212	Pathogens and Nematodes Affecting Plants
401	Structures, Facilities, and General Purpose Farm Supplies

Outcome #4

1. Outcome Measures

Number of farmers begin plant propagation and grafting techniques

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Issues with seeds viability, abnormality in fruits and vegetables, lack of planting material, diseases in rootstocks are currently being experienced in the farming community. Demand for fruits and vegetables seedlings among the farming community has increased. However, there is a lack of training, knowledge and skills in various methods of plant propagation.

What has been done

Crop Improvement team put together various workshops and "hands on" training sessions throughout the three islands Saipan, Rota and Tinian. Workshop on plant propagation, in which various methods of propagation demonstrated with special focus on grafting in fruit trees, such as mango, avocado and citrus. A project with a farmer was conducted in Saipan that will showcase various techniques on how to increase plantings of pineapple plants using various plant parts, such as quartering of crowns, suckers and stems to increase slips materials. This project will take time as to allow the seedlings to grow. In the meantime, outsourcing of planting materials is readily available from the neighboring islands which can be ordered for use.

Results

Farmers, agriculture extension agents, students and other interested people from the community learned the techniques of grafting, air layering and budding in fruit trees. Increased knowledge in the various plant

propagation methods and understanding. Scion budwoods of new cultivars of mango, avocado and citrus grafted on local varieties with different grafting techniques such as wedge, cleft, bark and side veneer graft in mango, avocado and T-budding in citrus demonstrated in three islands Saipan, Rota and Tinian. Grafted rootstocks and take transferred in the experiment farm in Saipan, Rota and Tinian.

4. Associated Knowledge Areas

KA Code	Knowledge Area
202	Plant Genetic Resources
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
212	Pathogens and Nematodes Affecting Plants

Outcome #5

1. Outcome Measures

Number of farmers begin to grow new varieties of staple crops

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Increased incidences of insect pests and diseases are a continued concern of the farming community in the CNMI. Banana bunchy top, black leaf streak, fusarium wilt in banana, taro leaf blight, stem and root rot, wilt in taro and sweet potato are a few which cause severe damage to these important staple crops.

What has been done

New varieties of banana, taro and sweet potato have been imported from regional institutions. These new varieties were established in-vitro and in-situ in the CNMI. New varieties produced through tissue culture technique and have been indexed for diseases(Elisa). The varieties multiplied in the tissue culture laboratory were distributed to the farming community. All the imported accessions have been established in the gene bank at the As Perdido experiment farm in Saipan. These strains have also been sent to islands of Rota and Tinian.

Results

Initial results indicate that twenty three accessions of taro, seventeen accessions of sweet potato and twelve accessions of banana established well in the local soil and climatic conditions of the CNMI. Farmers have adapted and are growing new varieties. Two farmers are now producing taro and sweet potato at commercial scale.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
136	Conservation of Biological Diversity
202	Plant Genetic Resources
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
212	Pathogens and Nematodes Affecting Plants

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

We did not experience any external factors that would hinder the progress of our projects for this fiscal year.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Time series (multiple points before and after program)

Evaluation Results

Results of field trials and evaluations indicated that new varieties of taro, sweet potato and banana performed well in local soil and climatic conditions of the Northern Mariana Islands. CA/JP-01, 06 and 09 rated excellent for taste, quality of corms, easy cooking, plant growth and yield comparable to other varieties. The selected varieties of three crops were identified as the economically and culturally important ones that have been tested for superior characteristics in the region. Details of evaluations have been published in peer reviewed journals and presented in scientific conferences. Extension publication for each of crop is under preparation.

Key Items of Evaluation

Over fifty varieties of taro, sweet potato and banana propagated through tissue culture were tested at the Agriculture Experiment Station. Field trials and taste testing of new varieties were successfully conducted throughout the islands of Saipan, Rota and Tinian. Field evaluations were conducted on the following:

Morphological characteristics, yield, tolerance to insect pests and diseases, adaptability to local soil and climatic conditions of the CNMI, taste, plant growth, quality of corms, easy cooking etc.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Soil and Water Quality Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	20%		20%	
111	Conservation and Efficient Use of Water	50%		50%	
403	Waste Disposal, Recycling, and Reuse	30%		30%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	0.0	1.0	0.0
Actual	0.5	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
2000	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

As with the promotion of any technology the care and safety of our citizenry is of utmost importance. In our promotion efforts we used temperature data loggers to characterize the survival of ELEPTOSPIRA and INTERROGANS to determine estimated probability of survival in passive compost piles from a Dry litter waste management systems for hogs. This was done to ensure that the system did not promote the spread of pathogens.

Water quality staff also participated in the proposal submission to the Region 9 Water Quality Division. This involved their active involvement in the strategic planning and priority setting process for water quality in the region. Because of the growing acceptance by members of the community, the NRCS EQIP program showed interest in learning how the system functions and the benefits it has on the environment. The department's role included consultation in the design

parameters and construction of new systems.

2. Brief description of the target audience

Government /Agency Collaborators

All farm crop producers and farm helpers in the CNMI

Business operators that promote or sell farm products

Grade school, High School and College students

Adult Volunteer Leaders (4-H Clubs)

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	100	500	100	500
Actual	70	300	50	100

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

Patent Applications Submitted

Year: 2009

Plan: 0

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	1	1	
Actual	1	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research projects completed on Soil and Water Quality Issues
Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

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

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	15	40

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Recycling is very new here on the island of Tinian. There has been a need to educate the public and build capacity for recycling.

What has been done

We obtained funds for recycling bins to be purchased. We painted the bins with designs and verbiage that students came up with and disseminate the bins a every major event on the island. The youth are responsible for spreading the word and encouraging recycling at these events and they use the funds gathered from sale of recycling the cans as fundraiser for future events.

Results

Many households are continuously recycling on the island. There is a clear improvement in terms of a reduction of the amount of cans found at beaches or on the sides of the roads. People on island are continuously cleaning up and recycling cans.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

Outcome #2

1. Outcome Measures

Number of households learning to safely use Rain-catchments systems

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	4	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Water is in short supply here in the islands, but there is an abundance of rainfall events. Residents and farmers are concerned with the rising cost of utilities, including water, and are interested in investing in rain catchments.

What has been done

In collaboration with the National Water Program, rain catchment educational publications were developed and disseminated to all people who were interested. Furthermore, outreach education was conducted with adults and youth at different public events such as the Environmental Expo.

Results

we are getting an increase in the number of calls/inquiries regarding rain catchments construction, care, and maintenance.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water

Outcome #3

1. Outcome Measures

Number of farmers using Dry Litter Waste Management Systems for Hogs

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	4	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Our outreach efforts have reached areas such as Samoa where waters contaminated with Leptosporosis from pig waste is a real human health concern.

What has been done

Our dry litter piggery is still being used at workshops, seminars, and one on one with farmers to introduce the system and discuss its benefits.

Results

A large number of producers in Samoa (about 18), and two producers on Tinian have either begun to build, or are currently modifying systems into dry systems.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	20	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Fertilizers for growing crops are virtually non-existent here in the CNMI. Furthermore, we spend half of the year in a drought.

What has been done

Outreach materials, workshops, and promotion of composting and how to utilize composting have been disseminated to encourage composting. Furthermore, demonstrations, farm visits, and trainings have helped to encourage adoption of composting on farms and in backyards.

Results

There are a number of early adopters of composting, especially those using the dry litter waste management system for hogs. These and other persons who have begun composting are now spreading the word about how useful composting is for them.

4. Associated Knowledge Areas

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

Outcome #5

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	6	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Sustainability of farms is a major issue here in the Marianas as production costs are incredibly high and resources slim.

What has been done

We have conducted trainings, demonstrations and farm field days to help promote and showcase different sustainable agriculture systems, such as rotational grazing and planting of improved legume varieties in pasture systems.

Results

Ranchers especially are beginning to visually see the benefits of managing their resources sustainably. The productivity of pastures is clearly growing and ranchers are spreading the word.

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

We are dealing with Super typhoons passing over the area and the threat of the military coming in and taking back lands that are currently being used for cattle ranching.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)

Evaluation Results

All workshops include a survey at the end of the training. We also follow up with producers periodically to survey for improvements in production or determine issue with adoption, if any.

Key Items of Evaluation

V(A). Planned Program (Summary)**Program # 5****1. Name of the Planned Program**

Community Resource Development

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 professional FTE/SYs expended this Program

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	6.0	0.0	0.0	0.0
Actual	2.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
56925	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

Numerous community workshops were conducted in 2009 by trained staff and CRD volunteers on safe and effective methods of home canning and food preservation. Sewing Classes for Beginners were also offered on the islands of Saipan, Tinian and Rota and certificates of successful completion were issued to those students who completed the 12 required sewing projects. Outside of our sewing program, the division also sponsored workshops on Youth and Adult Money Management.

Recently, NMC-CREES hired a Food scientist. He continues to address farmers, suppliers and homemakers' interest in food preservation, marketing techniques, value-added processing using local fruits and vegetables, and extended shelf-life of local produce in an effort to supplement family income. During the summer break in 2009, youth from Saipan participated in Food

Safety and Preservation mini workshops. As a result of the strong interest, some of the youths' parents also attended. After completing the Food Safety session, they attended a hands-on- demonstrations.

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

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	350	1500	2000	4000
Actual	400	1000	2000	3000

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

Patent Applications Submitted

Year: 2009
 Plan: 0
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	0	0	
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	Target	Actual
2009	200	300

Output #2**Output Measure**

- Number of established Entrepreneurs projects

Year	Target	Actual
2009	6	9

Output #3**Output Measure**

- Number of participants completed workshop and training on home canning and food preservations

Year	Target	Actual
2009	100	300

Output #4**Output Measure**

- Number of participants applying knowledge gained (home canning and food preservation

Year	Target	Actual
2009	100	200

Output #5**Output Measure**

- Number of youths and adults successfully completing the sewing for beginners on the CNMI

Year	Target	Actual
2009	175	275

Output #6**Output Measure**

- Number of youth and adults applying knowledge gained on sewing for their families

Year	Target	Actual
2009	100	275

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Number of participants completed workshop and training on home canning and food preservations.
2	Number of participants applying knowledge gained. (Home canning and food preservation)
3	Number of youths and adults successfully completing the Sewing for Beginners on the islands of Saipan, Tinian and Rota.
4	Number of youth and adults applying knowledge gained and sewing for their families.
5	Number of youths and adults completing workshops on Youth and Adult Money Management.
6	Number of youths and adults applying knowledge gained.

Outcome #1

1. Outcome Measures

Number of participants completed workshop and training on home canning and food preservations.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	150	300

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Majority of the small retail stores on Saipan are selling processed hot pepper sauce brought in from the islands of Rota and Tinian. The Sinapalo Safeway Market in Rota is now exporting hot pepper sauce, red radish, papaya, guava pickles and even bottle water to Guam, the US mainland and Japan.

What has been done

Information on home-canning, pickling and jam making along with varieties of processed food are displayed for sampling by the general public during NMC-CREES Open House which is one of CREES' annual event. NMC-CREES, CRD Program continues to distribute handouts on making jam, canning and pickling of vegetables to the general public. The handouts are shared materials from the Pacific Northwest Extension publications. Jointly produced by the three Pacific Northwest States - Washington, Oregon and Idaho.

Results

Our CNMI sons and daughters in the military, students attending colleges abroad, friends and relatives relocating to the United States and elsewhere are enjoying the variety of locally grown and processed fruits and vegetables sent to them by our participants who continue to apply the skills and knowledge that they have learned from NMC-CREES program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #2

1. Outcome Measures

Number of participants applying knowledge gained. (Home canning and food preservation)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	75	150

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Parents and schools are encouraging youth to attend workshops and training of Food Safety and Preservation.

Non-profit Organization are also volunteering to recruit participants to attend workshops in home-canning.

What has been done

The NMC-CREES program offered several workshops during summer break for youth. The newly hired Food Scientist, volunteered to conduct several Food Safety and Preservation workshops for the youth and their parents during the 2009 Summer break.

Results

Parents and youth made jam and pickles using locally grown fruits and vegetables for raising funds for off island sport competitions and for their children school. One parent does home-canning (jam and pickle) and sold them strictly for party favors.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #3

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	Quantitative Target	Actual
2009	175	275

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The enrollment for the Sewing Class for Beginner continue to increase. Unemployment could be a contributing factor. Many contract workers who are jobless, enrolled in the sewing program while seeking for jobs or waiting for a job interview. We see an increase in the number of single parents taking sewing classes as well. Many bring their children to the Center during Summer break.

What has been done

CRD's Sewing Program continues to monitor those participants who successfully completed the sewing projects and graduated. Those who claimed to continue applying the skills and knowledge learned from the sewing program also claimed to be saving money that could have been spent for clothing.

Results

In 2009, three (3) of our former students opened a small Dress Shop. One (1) is strictly concentrating in babies and childrens outfit and is shipping orders to one regular customer on Guam.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #4

1. Outcome Measures

Number of youth and adults applying knowledge gained and sewing for their families.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	100	275

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Majority of those students completing the sewing class for beginners continue to sew for their families.

Many returned and signed up for the Advance Sewing Class which is offered during weekends and for half days only.

What has been done

NMC-CREES' CRD Program now offers Home Arts and Designs lessons. one-on-one demonstrations and workshops on the islands of Saipan, Tinian and Rota.

All CRD programs' participants are encouraged and referred to EFNEP classes.

Results

In 2009, three (3) of our former students opened a small Dress Shop. One (1) is strictly concentrating in babies and children outfit and is now shipping orders to one of her regular customer on Guam.

Some of our former students are sewing dresses and pants and are selling them at the weekend Garage Sales Bonanza located at the Saipan Community Business Center in Susupe, Saipan.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #5

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	Quantitative Target	Actual
2009	200	300

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The CNMI public schools, juvenile detention program, division of youth services, probation and parole office, non-profit organization continue to request NMC-CREES, CRD Program to conduct Money Management workshops for both youth and adults.

What has been done

CRD Money Management Program realized that educating and conducting workshops on money management alone, could not be effective nor beneficial, for 90% of workshops' participants are either unemployed or relying 100% on public assistance.

Therefore, in 2009, CRD Money Management program incorporated lessons on different ways to make money. We always start our workshops by asking "What is the one thing that you can make or do better than 10 other people?"

Results

in 2009, NMC-CREES, CRD Program Manager assisted Yap and Kosrae, Family Consumer Sciences programs developed their Money Management Programs.

It is customary in the CNMI for families or neighbors to share their fresh harvest and catch (fish/coconut crabs etc),for it is sort of a gesture of friendship, trust and appreciations. CRD Money Management program strongly encourages participants to start selling, even at a very minimal price. To also understand that time is money and that whatever they sold could help supplement their family income.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #6

1. Outcome Measures

Number of youths and adults applying knowledge gained.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	100	275

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The CNMI public schools, juvenile detention program, division of youth services,probation and parole office, non-profit organization continue to request NMC-CREES, CRD Program to conduct Money Management workshops for both youth and adults.

High unemployment rate in the CNMI is one of the contributing factor for drastic increased for public assistance such as NAP, (commonly known as Food Stamps), LIHEAP etc,.

What has been done

In 2009, CRD Money Management program incorporated lessons on different ways to make money. We always start our workshops by asking "What is the one thing that you can make or do better than 10 other people?"

Results

Many of our former participants claimed to start selling their fresh harvest of fruits and vegetables to the convenience stores and even to friends.

Many do yard cleaning and auto/refrigerator repairs for friends and relative and accept payments of whatever amount their friends/relatives offered.

Many high school age youths claimed to start charging when cleaning or baby-sitting for relatives. Many reported that they used their earned income to go to watch movies on weekends.

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

One Youth Money Management workshop that was scheduled, with confirmed 20 youth participants was canceled to allow the NMC-Tinian ABE program staff to conduct the workshop themselves.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Before-After (before and after program)
- Other (ES 237)

Evaluation Results

Evaluation results for majority of the workshops and training conducted on Saipan, Tinian and Rota islands were above average.

The workshop and training conducted by the CRD Program Manager on the Island of Kosrae for both youth and adults received a very high rating. The pre/post evaluation was administrated by the Small Business Development Center (SBDC).

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Diet, Physical Activity, and Health

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

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

V(C). Planned Program (Inputs)

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

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	1.0	0.0
Actual	3.5	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
88601	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 Diet, Physical Activity, and Health Program staff went on a campaign to encourage healthier eating in the CNMI. Promoting fruit and vegetable consumption while decreasing unnecessary fats, oils, salt, and sugar in the diet was a major component of the program's efforts to encourage healthier food choices. The campaign was strengthened by food demonstrations that featured recipes that are inexpensive, easily prepared, and contain locally grown produce. The campaign was undertaken by setting up exhibits (with food demonstrations) at grocery stores, elementary schools, Head Start Centers and other community events throughout the program year.

The major policy-level activity undertaken was advocacy for the passage of Public Law 16-46 entitled, "CNMI Smoke-Free Air Act". DPAH worked with a group of health-focused agencies and community organizations to lobby for the passage of the bill.

This is the first bill pertaining to prohibiting smoking in public places that has successfully become law in the CNMI.

The next major activity to be reported is entitled "Farm-to-School Project". DPAH staff worked with the Public School System-Food and Nutrition Service (PSS-FNS) and the Sabalu Farmers' Market Association to change the school lunch menu. With the completion of this project, the school lunch menu now has at least one locally grown produce item a week on the menu. next school year will see an increase in the frequency that locally grown produce is on the PSS-FNS school menu.

DPAH staff also focused on educating health care workers and members of the Legislature about burden on Non-Communicable Diseases (NCD), NCD risk factors, and the critical role they play in deterring the early onset of NCDs. In late 2009, a continuing education conference was held for health care workers. A team of presenters' including medical doctors, public health professionals, and a keynote speaker from the World Health Organization talked about NCDs and its risk factors (diet, physical activity, tobacco use, alcohol abuse). All participants indicated that they learned at least 5 new pieces of information from the conference that they would be able to apply to the work setting. While only about 12 congressmen showed up, all of them reported increasing their knowledge of NCDs. They also indicated that they had a better understanding of the critical role that they play on the policy side of decreasing the incidence of NCDs.

2. Brief description of the target audience

The target audience includes the general public, elementary to high school students, and their parents. Particular emphasis will be paid on areas of the islands that have a majority of its' residence at or below the poverty level. Taking into consideration social-economic status, educational attainment, and lifestyle (diet, physical activity, tobacco) the majority of the general population can be considered "at risk".

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	125	6000	150	2000
Actual	875	6000	610	2000

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

Patent Applications Submitted

Year: 2009

Plan: 0

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	0	0	
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Diet, Physical Activity, and Health

Year	Target	Actual
2009	2	4

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Development of Physical Activity Social Marketing Campaign (PASMCM)

Outcome #1

1. Outcome Measures

Development of Physical Activity Social Marketing Campaign (PASMC)

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Competing Public priorities
- Other ()

Brief Explanation

Baseline data on the physical activity of adults in the CNMI does not exist. The WHO STEPS survey was suppose to be conducted in the CNMI since 2006. However, due to competing public priorities and perceived lack of funding the survey has not yet been carried out. It is now expected to be carried out in mid-2010 with the assistance of collaborators from the public and private sectors.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Before-After (before and after program)

Evaluation Results

Around 85% of direct youth contacts indicated that they would attempt to consume more fruits and vegetables.

100% of health care workers who attended the "Continuing Education Conference" indicated that they learned something new that would help them to better serve patients and their families.

Of the 12 legislators who attended the "Legislative Networking Session", 100% indicated that they would advocate for bills that decreased the incidence of NCDs in the CNMI.

The "Farm-to-School Project" resulted in a 200% increase in the amount of locally grown produce served to public school system children.

Key Items of Evaluation

V(A). Planned Program (Summary)**Program # 7****1. Name of the Planned Program**

Food Safety and Quality Program

V(B). Program Knowledge Area(s)**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
501	New and Improved Food Processing Technologies	10%		10%	
502	New and Improved Food Products	20%		20%	
503	Quality Maintenance in Storing and Marketing Food Products	20%		20%	
504	Home and Commercial Food Service	20%		20%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	20%		20%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	10%		10%	
Total		100%		100%	

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	1.5	0.0	1.5	0.0
Actual	0.5	0.0	0.5	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
13871	0	86252	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)**1. Brief description of the Activity**

1. Establishment of good post-harvest practices
2. Establishment of outstanding food safety training program
3. Development of various value-added food products using local produce
4. Introduction of new food processing technologies to the CNMI
5. 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 and so on.
 Grade schools, high schools and college students interested in food safety and quality
 Government agency/collaborators

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	100	500	100	500
Actual	120	500	100	500

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

Patent Applications Submitted

Year: 2009
 Plan: 0
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	0	1	
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Research projects on noble food processing technologies

Year	Target	Actual
2009	1	1

Output #2

Output Measure

- Number of research on food quality improvements

Year	Target	Actual
2009	1	1

Output #3

Output Measure

- Number of novel food processing technology workshops

Year	Target	Actual
2009	4	6

Output #4

Output Measure

- Number of workshops related with food safety and quality

Year	Target	Actual
2009	4	6

Output #5

Output Measure

- Numbers of newly developed value-added products

Year	Target	Actual
2009	2	2

Output #6

Output Measure

- Numbers of technical information provide to the public

Year	Target	Actual
2009	4	6

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

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

Outcome #1

1. Outcome Measures

Numbers of farmers/producer to develop value added products

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	5	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Consumers have a tendency to seek out more convenient, fresh, low-calorie, and healthy natural food. This trend is creating potential markets for well-being foods. Major Asian cities such as Tokyo, Seoul, and Shanghai can be unlimited markets for these value added products since these cities are geographically close and have huge populations. The military build-up in Guam may provide additional markets for these export products. For these reasons, it is essential to develop appropriate food processing technologies and facilities in order to produce value-added products using agricultural produce in this area.

What has been done

Local farmers and producers have been encouraged to develop unique value-added products using exotic tropical fruits in the CNMI such as noni, bananas, papayas, soursops, lemons, coconuts, pineapples, mangoes, guavas, and so forth. The Food Safety and Quality program has been helping local farmers and producers to develop value added food products and taught them the importance of food safety and safe food handling by hosting several value added processing workshops.

Results

Even if the production of value-added fruit products is still undeveloped and limited in the CNMI, several farmers and producers have been trying to develop value added food products to generate beneficial economic influence.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
502	New and Improved Food Products
504	Home and Commercial Food Service

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 Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	5	5

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

It is very important to develop post-harvesting handling, transportation, distribution systems and technology. It is essential to help better maintain the local produce, preserve, nutritional value, and increase the shelf-life of local produce. These practices include logistics, sorting, inspection, waste stream management, and packaging. Recently, it has been one of the most important issues to produce and supply high quality agricultural commodities since the military build-up in Guam may provide additional markets for farmers/producers in the CNMI. For these reasons, it is very important for farmers and producers in the CNMI to implement good post-harvest practices.

What has been done

Farmers and producers in the CNMI have been encouraged to implement good post-harvest practice to maintain the quality of their produce as well as developing value-added food products. The Food Safety Quality program has been helping local farmers and producers to develop their own post-harvest procedures by personal visitations and consultations. In addition, the Food Safety and Quality Program has provided various information about the importance of food safety and safe food handling after harvesting by several food safety workshops.

Results

The implementation of good post-harvest practices in the CNMI is in its initial phase and will be reporting its progress in future reporting periods.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
503	Quality Maintenance in Storing and Marketing Food Products
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

We did not experience any external factors that would hinder the progress of the program.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Other (summative, implementation, progress)

Evaluation Results

In implementation evaluation, it is concluded that the program has been implemented as planned. According to the progress evaluation, all outcomes from the program activities were very successful. As a whole the program achievement was very productive based on the outcomes of the program.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Agriculture Economics and Marketing 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
603	Market Economics	100%		100%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	0.0	0.0	0.0
Actual	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

Because of funding constraints, this planned program did not receive the necessary FTE to bring about implementation.

2. Brief description of the target audience

Livestock Producers Fruit and Vegetable Producers Cut Flower Industry Government agencies Non-Profit Organizations

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	25	100	25	100
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2009

Plan: 0

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	0	0	
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Variety of commodities being sold as a result of program interaction
Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of farmers participating in a Cooperative.
2	Number of farmers/ranchers selling their commodities outside of the CNMI

Outcome #1

1. Outcome Measures

Number of farmers participating in a Cooperative.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Number of farmers/ranchers selling their commodities outside of the CNMI

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
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

Although we are still interested in the implementation of this planned program, we were unable to hire the necessary staffing due to the implementation of austerity measures in the CNMI government.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Time series (multiple points before and after program)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

4-H Youth Development

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	20%		0%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	20%		0%	
805	Community Institutions, Health, and Social Services	20%		0%	
806	Youth Development	40%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

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

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	0.0	0.0
Actual	3.0	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
98173	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The CNMI 4-H program collaborates with other government and non-government groups to develop relationships and design programs for youth development. For the second year in a row, NMC-CREES has developed a winning proposal and has been funded for a second year under the USDA-4-H Children Youth, Families at Risk(CYFAR) Program. The project entitled: "Positive Reinforcement for Youth Development and Empowerment" is a collaborative project involving NMC staff, community-based non-profit organizations, the public school system, and members of the community. This is the second year of our project

2009

400

350

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

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

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	20	40

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Recycling is a new idea for people here. Never before has recycling been an option for folks here.

What has been done

We have built capacity for recycling by seeking funding, purchasing recycling bins and involving youth in the collection and education of the community in order to promote recycling.

Results

Recycling is a constant at all major public events here. Furthermore, cans are no longer littered across beaches and roads as they used to be since they are being picked up or recycled on a regular basis.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #2

1. Outcome Measures

Number of 4-h volunteers recruited

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	2	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

We lack volunteers on the island since these islands are small and we lack the available large source of human resources for seeking volunteers.

What has been done

We have engaged our partners and staff to actively seek volunteers for programs in youth development by offering them a chance to make a positive change in the lives of the youth.

Results

We were able to get a least 15 people to volunteer for different 4-H events and these people have really added value to our program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #3

1. Outcome Measures

Number of youth participants attending 4-H workshop activities

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	60	45

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The youth in the CNMI do not have access to resources that keep them busy and healthy. There are not many after school activities and clubs for them to participate in.

What has been done

We basically have established a number of in-school and out of school programs aimed at youth development, bonding with caring adults and encourage the youth to stay on track and graduate from High School.

Results

Kids have been receptive to the programs offered and are showing progress in their school activities as well.

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

Brief Explanation

We will always have to deal with typhoons

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)
- Time series (multiple points before and after program)

Evaluation Results

We survey students at periodic intervals to monitor their progress and monitor the effectiveness and quality of the programs provided.

Key Items of Evaluation