

# 2010 University of Guam Extension Plan of Work

**Status: Accepted**  
**Date Accepted: 05/29/09**

## I. Plan Overview

### 1. Brief Summary about Plan Of Work

The University of Guam Cooperative Extension Service (CES) engages the University Community through a multi-disciplinary approach to address the complex issues facing the People of Guam. CES has significantly increased its collaborations with Government agencies, private entities and non-governmental organizations. The core programs are focused on Agriculture and Natural Resources, with activities on agriculture for the next generation, integrated pest management, invasive species, sustainable agriculture and soil and water conservation. Economic and Community Systems activities emphasize community resource development, multi-cultural and diversity issues, disaster preparedness, and information technology. Family, 4H, Food and Nutrition and Education Program activities include, 4H and Youth Development, adding value to new and old agriculture products, food quality and food safety, and human nutrition. The plans of work are focused on: 1) managing the environment; 2) educating individuals and families; and, 3) strengthening communities.

One of our greatest strengths is our ability to collaborate and partner with government and private entities to address the issues and needs of our residents. These partnerships allow CES to leverage limited resources to optimize available professional expertise. Our multistate activities in the Pacific Region allows professionals and partners to share information and knowledge that is relevant and to provide solutions affecting individuals, families, communities and environment.

A major factor that influences our program activities in the next five years is a shift in our island demographics. Guam can expect a 16.7% population increase to 180,692 by 2010. This is similar to the 1990-2000 16.3% percent increase to 133,152. Today, Guam's population is 154,805 (Guam's 2000 Census) with residents in 19 villages. Over 40% of the population is under 20 years old, 22% of the population lives in poverty, and is ethnically composed of 37% Chamorro, 27% Filipino, 7% Caucasian and 29% others. Adding to this challenge is a recent decision by the U.S. Pentagon to move an estimated 40,000 military personnel and their dependents to Guam.

There are many challenges facing the region and Guam, the University of Guam Cooperative Extension has a responsibility to respond to identified and emerging community needs and issues, empowering individuals, families and communities to improve the quality of life. CES will continue to engage and prioritize its plans of work and program activities to create and assess the outcomes and results as we meet these challenges over the next five years.

### Estimated Number of Professional FTEs/SYs total in the State.

Year	Extension		Research	
	1862	1890	1862	1890
2010	1.4	0.0	0.0	0.0
2011	1.4	0.0	0.0	0.0
2012	1.4	0.0	0.0	0.0
2013	1.4	0.0	0.0	0.0
2014	0.0	0.0	0.0	0.0

## II. Merit Review Process

### 1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

- Internal University Panel
- External Non-University Panel

## 2. Brief Explanation

The stakeholders input provide the essential and critical guidance to the priorities of the University of Guam Cooperative Extension during the five year plans of work. The internal panel review includes a two phase process. The first phase involves extension professionals working with stakeholders to identify critical needs and the level of problem solving. Faculty across campus will be invited as a resource professional. The second phase will include the program leaders and extension professionals working closely with other partners who can collaborate to find solutions. The partners will assess what resources and expertise can be provided.

The external partners who will be invited are government and non-government entities who can provide support and critical resources to the plans of work. The external and internal panel will serve as the coalition engaging in the critical and emerging identified issues. Assessment and relevance will be key to prioritizing extension resources to the plans of work

## III. Evaluation of Multis & Joint Activities

### 1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

The planned programs of work are focused on: 1) educating individuals and families; 2) managing the environment; and, 3) strengthening communities. Our multi-institution activities in the Pacific Region allows professionals and partners to share information and knowledge that is relevant and to provide solutions affecting individuals, families, communities and environment. The planned program is inter-disciplinary, multi-institution and multi-partnership that engages on the identified and critical issues. The extension professionals and paraprofessionals are from the core program areas in Agriculture and Natural Resources, Economic Community Systems, 4-H and Youth, Food and Nutrition.

### 2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

The Plans of Work does not discriminate in its activities as it works with the population of Guam. Based on the demographics of the Guam's population, Over 22% of the residents' lives in poverty and ethnicity consisting of 37% Chamorro, 27% Filipino, 7% Mainland Statesiders or Caucasian, and 29% others. The Island is a melting pot of ethnicity with no lines drawn between people. The activities of the plans of work are brought into the community and an awareness through publication and notices of workshops, and meetings in newspapers, newsletters, electronic distribution and other electronic media. Collaborations and partnerships with local and federal government agencies and non-government organizations and entities create a coalition and engagement of partners to address the needs of the population on Guam. Every resident has full accessibility to the program activities of the University of Guam Cooperative Extension.

### 3. How will the planned programs describe the expected outcomes and impacts?

Each plan of work and planned program activities will be evaluating and assessing the changes in knowledge, skills, level of awareness, and aspirations of the targeted audiences and stakeholders. The plans of work coordinators will be responsible for reporting and making the evaluation of outcomes and results of the planned activities. Continuing program support and plans of work will be based on outcomes and results reported.

### 4. How will the planned programs result in improved program effectiveness and/or efficiency?

A follow-up survey and assessment of targeted audiences, partners, traditional and non-traditional stakeholders will be done by each of the core program leaders as to whether the goals and objectives have been met and whether the impacts have been realized. The advisory body will be ask to informally assess Cooperative Extension organizational effectiveness through its collaborations and partners, its reported results and impact, and informal and formal feedback from the individuals, families, and community. The organizational effectiveness and efficiency will be a continual process and its effectiveness will be reported to its key internal and external stakeholders of the University of Guam.

## IV. Stakeholder Input

### 1. Actions taken to seek stakeholder input that encourages their participation

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

#### Brief explanation.

The following actions were taken to gather stakeholder input:

General Public and Traditional Stakeholder Survey (March and April 2006) The UOG Cooperative Extension conducted an island-wide stratified, random telephone survey of the general public (N=140) and targeted clientele (N=98), which asked people's opinions on issues related to families, children, nutrition, quality of life and agriculture. The responses support trends identified in targeted clientele survey collected by the project team - it provided a comparison between the general public and clientele. The sampling method for the general population sample was designed to make it highly representative of family households on Guam, and thus trustworthy for giving estimates of people's awareness and interests in Extension programs. Quota selection was used to weight the number of phone calls made in each village region to match the regional distribution of the general population across island village districts. The target population (N=98) were traditional clientele of CES programs or services - the list was generated by each program unit.

Focus and Listening Group Sessions (May 2006) A total of 90 people participated in the sessions. Invitations to traditional stakeholder groups and individuals were delivered and personal contacts were made to each group and individual to encourage participation. Announcements were published over a four day period in the local media. The results of the sessions centered on economic, social, environmental and cultural issues. From this three major themes were identified: 1) managing the environment; 2) educating individuals and families; and 3) strengthening communities

Advisory Group Session (May 2006)

Issues gleaned from the surveys and focus group sessions were presented to the advisory group. Advisory group members have been identified as key leaders and heads of boards, councils and commissions and have worked closely with CES in major projects. Using "filters" (i.e. critical needs matrix) the group was asked whether the issues were on track, whether anything important was missing and how the issues should be prioritized.

A few groups and organizations represented in the stakeholder input included:

Traditional Stakeholders

4-H Clubs – Volunteers, Leaders and Youth

Northern and Southern Farmers and Producers

Soil Conservation District

Volunteers

Sanctuary Inc. ( A home for troubled, abused and runaway youth.)

Guam Public School System – Nutrition Department

EFNEP Clientele

Guam Mayor's Council

NRCS, USDA

Non Traditional Stakeholders

Administrators, Boards, Commissions and staff of government and non-government organizations from Department of Labor, Department of Public Health, Department of Youth,

Guam Community College, Guam Economic Development Commerce Authority, Guam Environmental Protection Agency, Small Business Development Center and Guam Public School System Teachers, Military and Businesses.

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

**1. Method to identify individuals and groups**

- Needs Assessments
- Use External Focus Groups
- Use Advisory Committees
- Use Internal Focus Groups
- Use Surveys
- Open Listening Sessions

**Brief explanation.**

{NO DATA ENTERED}

**2(B). A brief statement of the process that will be 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**

- Survey specifically with non-traditional individuals
- Meeting with traditional Stakeholder groups
- Meeting with the general public (open meeting advertised to all)
- Survey of traditional Stakeholder groups
- Survey specifically with non-traditional groups
- Survey of the general public
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals

**Brief explanation**

{NO DATA ENTERED}

**3. A statement of how the input will be considered**

- In the Staff Hiring Process
- To Identify Emerging Issues
- Redirect Extension Programs
- To Set Priorities

**Brief explanation.**

{NO DATA ENTERED}

**V. Planned Program Table of Content**

<b>S. NO.</b>	<b>PROGRAM NAME</b>
1	Community Capacity Building
2	Tropical Food Processing and Safety
3	Guam Families, 4-H Youth Development and Communities
4	Nutrition Education for Guam
5	The New Farmer: Agriculture for the Next Generation
6	Plant Health and Pest Management
7	Sustainability of Small Scale Swine and Poultry Farms on Guam
8	Our Environment and Home & Urban Landscapes

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

**Program #1**

**1. Name of the Planned Program**

Community Capacity Building

**2. Brief summary about Planned Program**

The prime purpose of this planned program is to strengthen communities to develop their capacity to source local solutions to their specific concerns. There is a growing need in Guam to help people, public and private organizations and communities respond to increasingly complex issues facing individuals, families and communities. The community capacity building program aims to develop skills and abilities of the members of a community in such a way that they are better able to identify and help meet their needs to engage more fully in society. Community capacity building is based on the precepts of providing opportunities for people to learn through experience - opportunities that would not otherwise be available to them - and involving people, public and private entities in collective effort so they gain confidence in their own abilities and their ability to influence decisions that affect them.

These precepts, although broad and expansive, undergirds the development of the program to strengthen communities by focusing on areas which cuts across other planned programs (i.e. nutrition, youth and development, families, and the environment). These focus areas are:

Community Development

Local Government Education

Public Policy Education

Non-Profit and Board Development and Governance

Civic Engagement

Strategic Planning

Economic Development

Community Asset Mapping

Adult and Youth Entrepreneurship

Workforce Development

Economic and Social Impact Analysis

Land Use

Health

Program and Project Support and Administration, Education and Communication

Program planning and design

Evaluation and Assessment

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

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

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
606	International Trade and Development	5%			
608	Community Resource Planning and Development	20%			
609	Economic Theory and Methods	10%			
610	Domestic Policy Analysis	5%			
611	Foreign Policy and Programs	10%			
801	Individual and Family Resource Management	20%			
802	Human Development and Family Well-Being	10%			
805	Community Institutions, Health, and Social Services	10%			
902	Administration of Projects and Programs	10%			
	<b>Total</b>	100%			

### V(C). Planned Program (Situation and Scope)

#### 1. Situation and priorities

Guam's cost of living continues to increase and outpace income per household. The unemployment rate remains steady at 7.7%, gas prices have soared to \$3.32 per gallon. Information from 38,770 households in 2000 shows a median household income of \$39,317.00 from a population 154,805. Population increases in 2006 are estimated to be 171, 019.

The struggles faced by many of Guam's residents are affecting their lives and the communities in which they live – there is an increase in the number of child abuse cases, high school dropout rates continue to increase, many families are working two or more jobs to make ends meet putting their children at risk. The impending transfer of 7,000 U.S. Marines and their dependents from Okinawa, Japan to Guam - estimated at a 10% increase in population – will collapse the already strained environmental and physical infrastructure. Socio-economic structures will surely be tested. How we respond to these changes and factors will largely depend on three priorities: 1) facilitating and providing economic and social data to support decision-making, 2) providing educational programs responsive to the needs of diverse populations, and 3) remaining focused on developing economic strategies that will take Guam beyond the cash infusion associated with the transfer.

Public decision-making on Guam occurs in a concentrated fashion with the Governor of Guam responsible for almost all decision-making policies and actions for Guam. These decisions are heavily influenced by expertise and departmental authority across 28 government agencies and numerous commissions and boards. Each entity must make the important decisions that impact its future and the future of its citizens, property owners, local businesses, and others. As a result, agencies operate in a myopic fashion which results in a breakdown of communication and planning.

Three levels of stakeholder input were used to identify issues and set priorities. First, an awareness and interest survey

showed that 49% were concerned with quality of life issues and 39% were interested in community policy topics (N=140). Quality of life and community policy topics included -parenting, couple communication, caring for the elderly, healthy lifestyles, coping in an a new environment, health, education, government efficiency and effectiveness, and economic and employment development.

Second, qualitative data from focus group sessions showed that quality of life was greatly influenced by economics, policy and culture. One participant succinctly describes the pervasiveness of these factors: "University of Guam CES should take a leadership role in developing public policy. For example political science class do a review of legislatures responsibility, develop action plans for the island – pilot project by conservation, collaborate with other agencies; work with military community to integrate them into local projects, getting DODEA kids to participate in activities with local kids; urban-planting programs for all the parks; 4-H programs within villages that address village waste issues."

Last, advisory groups set priorities to educating individuals and families, supporting agriculture environment and strengthening communities.

**2. Scope of the Program**

- Multistate Extension
- In-State Extension

**V(D). Planned Program (Assumptions and Goals)**

**1. Assumptions made for the Program**

•Communities are held together by multiple, cross-cutting bonds, networks sharing common demand for economic and social data to assist policy and decision-makers identify economic, infrastructure, health, employment and education needs. The data will support priorities and policy for community planning, community capacity building, leadership development and disaster preparedness; •Health is community issue and communities will form partnerships to resolve health care problems  
 •Information on socio-economic status, systems and data is required for informed decision-making •Communities can influence and shape public and market policy •The CES system as External agents provides an effective interdisciplinary approach to addressing community development work (working in partnerships with communities, can serve as catalysts for change). •Strategies utilizing coalitions and collaborations will be successful to fund and support programs •Community assets is an untapped resource •Disaster preparedness is an integral part of living on Guam

**2. Ultimate goal(s) of this Program**

To build the capacity of communities by providing to individuals and entities technical assistance in building and acquiring unique skills and expertise, strategies, structures and trainings that strengthen their ability to better understand community development issues and how to better address issues and opportunities.

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

**1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2010	5.0	0.0	0.0	0.0
2011	5.0	0.0	0.0	0.0
2012	5.0	0.0	0.0	0.0
2013	5.0	0.0	0.0	0.0
2014	5.0	0.0	0.0	0.0

**V(F). Planned Program (Activity)**

**1. Activity for the Program**

•conduct community development workshops and trainings that foster more inclusive decisionmaking process and action (to teach policy leaders to interpret and apply economic data to local development decisions) •conduct community asset mapping •provide technical assistance in strategic planning, conducting needs assessments, survey design to help people understand the economic impact of policy changes, and implementation capabilities •access and interpret objective data and conduct assessments (suvey design and field data collection); •establish and maintain collaborations with local and federal



government •establish partnership and/or collaborativeMOAs and MOUs •establish coalitions for placed based economic development (community-based entrepreneurs) •survey legislative and government agencies and prepare summaries  
 •conduct focus groups sessions

**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Education Class</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> <li>● Workshop</li> <li>● Other 1 (Listserves)</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Public Service Announcement</li> <li>● Web sites</li> </ul>

**3. Description of targeted audience**

The target audiences in the program include: local government leaders (15 senators, 19 village mayors and 26 government agencies, 2 public corporations), numerous commissions and boards; 4 federal government agencies; non-governmental organizations. Other target audiences also include economic development professionals, small businesses and industries, community groups and the general public

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

**1. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	75	150	15	40
2011	75	250	20	50
2012	75	250	20	50
2013	75	250	20	50
2014	75	250	20	50

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

**V(H). State Defined Outputs****1. Output Target**

- number of extension articles

<b>2010</b> :1	<b>2011</b> :1	<b>2012</b> :1	<b>2013</b> :1	<b>2014</b> :1
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- number of workshops

<b>2010</b> :4	<b>2011</b> :5	<b>2012</b> :5	<b>2013</b> :5	<b>2014</b> :5
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- number of brochures

<b>2010</b> :1	<b>2011</b> :1	<b>2012</b> :1	<b>2013</b> :1	<b>2014</b> :1
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- number of disseminated research results, new technology and information

<b>2010</b> :1	<b>2011</b> :1	<b>2012</b> :1	<b>2013</b> :1	<b>2014</b> :0
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- number of surveys

<b>2010</b> :1	<b>2011</b> :2	<b>2012</b> :2	<b>2013</b> :2	<b>2014</b> :1
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- number of focus groups conducted

<b>2010</b> :4	<b>2011</b> :4	<b>2012</b> :5	<b>2013</b> :5	<b>2014</b> :5
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- number of popular articles in newsletters, magazines and newspapers

<b>2010</b> :2	<b>2011</b> :2	<b>2012</b> :2	<b>2013</b> :2	<b>2014</b> :2
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- number of one to one intervention

<b>2010</b> :3	<b>2011</b> :3	<b>2012</b> :5	<b>2013</b> :5	<b>2014</b> :7
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**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	number of participants gaining increased knowledge and understanding in community development practices
2	number of participants increasing knowledge, understanding and awareness of data set models
3	number of data supported legislation enacted
4	number of entities adopting of data models for decision-making
5	number of entities developing strategic plans
6	number of entities increasing knowledge, understanding and awareness of data set models
7	number of participants increasing knowledge and skills in personal finance practices
8	Number of participants increasing knowledge in disaster preparedness programs and adopting emergency plans

**Outcome #1**

**1. Outcome Target**

number of participants gaining increased knowledge and understanding in community development practices

**2. Outcome Type :** Change in Action Outcome Measure

**2010** :15                      **2011** : 20                      **2012** : 20                      **2013** 20                      **2014** :20

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services
- 902 - Administration of Projects and Programs

**Outcome #2**

**1. Outcome Target**

number of participants increasing knowledge, understanding and awareness of data set models

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** :10                      **2011** : 20                      **2012** : 20                      **2013** 20                      **2014** :20

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development
- 609 - Economic Theory and Methods
- 610 - Domestic Policy Analysis
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services

**Outcome #3**

**1. Outcome Target**

number of data supported legislation enacted

**2. Outcome Type :** Change in Action Outcome Measure

**2010** 2                      **2011** : 1                      **2012** : 1                      **2013** 1                      **2014** :1

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development
- 609 - Economic Theory and Methods
- 610 - Domestic Policy Analysis
- 802 - Human Development and Family Well-Being

- 805 - Community Institutions, Health, and Social Services
- 902 - Administration of Projects and Programs

**Outcome #4**

**1. Outcome Target**

number of entities adopting of data models for decision-making

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** 4                      **2011** : 5                      **2012** : 5                      **2013** 5                      **2014** :5

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development
- 609 - Economic Theory and Methods
- 610 - Domestic Policy Analysis
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services
- 902 - Administration of Projects and Programs

**Outcome #5**

**1. Outcome Target**

number of entities developing strategic plans

**2. Outcome Type :** Change in Action Outcome Measure

**2010** 3                      **2011** : 3                      **2012** : 3                      **2013** 3                      **2014** :3

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services
- 902 - Administration of Projects and Programs

**Outcome #6**

**1. Outcome Target**

number of entities increasing knowledge, understanding and awareness of data set models

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** 2                      **2011** : 2                      **2012** : 3                      **2013** 3                      **2014** :3

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

- 609 - Economic Theory and Methods
- 610 - Domestic Policy Analysis
- 611 - Foreign Policy and Programs
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services
- 902 - Administration of Projects and Programs

**Outcome #7**

**1. Outcome Target**

number of participants increasing knowledge and skills in personal finance practices

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** 25                      **2011** : 30                      **2012** : 35                      **2013** 40                      **2014** :40

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management

**Outcome #8**

**1. Outcome Target**

Number of participants increasing knowledge in disaster preparedness programs and adopting emergency plans

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** 20                      **2011** : 20                      **2012** : 20                      **2013** 20                      **2014** :20

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development
- 801 - Individual and Family Resource Management

**V(J). Planned Program (External Factors)**

**1. External Factors which may affect Outcomes**

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

**Description**

Competing public priorities will affect direction of the program. Decision-making across the 28 government agencies and competing priorities of each will be an external factor to this planned program. Ability for agencies and other seeking external funding sources (i.e external grants) will be hindered by a lack of social and economic data. The nature of the gubernatorial and senatorial tenure (4 and 2 years respectively), will affect public policy direction, affecting priorities and intended outcomes. To

the extent that we can control these external factors, our challenge will be increasing awareness of the continuous need for data regardless of a change in political dynamics.

Population changes due to new cultural groups migrating to the island will pose language and cultural barriers. Integration and assimilation of these groups will be factors that influence the program. Workshops, seminars and training in coping skills in a new environment will help increase awareness of expected social and cultural norms allowing an easier transition into Guam.

The local and regional economy will affect families and residents quality of life and social-psychological well-being. The high cost of living will be a challenge for residents and businesses. In addition, natural disasters are a constant reality on Guam and the region which will interrupt and shift priorities and goals. Increasing awareness and training in disaster preparedness as well as disaster aftermath will reduce injuries, deaths and illnesses.

Other external factors affecting this program will be the difficulty of recruiting qualified professionals, lack of background and lack of expertise. UOG CES is currently developing a mentoring program to provide development of current extension professionals.

## **V(K). Planned Program (Evaluation Studies and Data Collection)**

### **1. Evaluation Studies Planned**

- Case Study

#### **Description**

To measure the success of program outcomes, evaluation studies will include collecting information from government personnel, government agencies and legislators currently using data to support policies and legislation. Subsequent surveys will compare policies and laws that were developed and enacted using data sets against those that did not. A survey of legislative bill-writers who use internal data, external data and non data will measure the prevalence of using data sets in to crafting legislation. Additional surveys and time series tools will be conducted over a two year cycle to allow us to measure the increase or decrease use of data sets in policy development and legislation. Case studies will be used to compare and illustrate adoption of data supported policies and legislation. Other studies include time series designs of participants in community-based entrepreneurial coalitions that will measure the successes of establishing enterprises or businesses

### **2. Data Collection Methods**

- Telephone
- Sampling
- Mail
- Case Study
- Unstructured
- On-Site
- Structured
- Observation

#### **Description**

Data collection methods will include observations at legislative hearings, public hearings, commissions and board meetings. Structured observations will use protocols to monitor policies and legislation buttressed by data information. Unstructured observations will use recordings of meetings and sessions which will be coded using Atlas TI. Codes will be used to capture types of interactions occurring and the order of frequency. Open-ended formal interviews of government agency personnel will be conducted to elicit relationships, program content, and program history. Other forms of data collection will be through structured survey interviews, purposive sampling and case studies.

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

Tropical Food Processing and Safety

**2. Brief summary about Planned Program**

This planned program "Promote tropical food processing and safety" is to achieve the long term goal of increasing processed food products on the market using regional tropical crops and reduce the risk of foodborne illness in community on Guam. The program is planned based on the community interest survey and the needs identified by stakeholders in focus groups as well as the suggestions provided in an advisory group meeting. The identified issues in community on Guam are: (1) lack of local processed food products and (2) high frequency of foodborne illness. We assume that providing residents knowledge and training and educating to do the best practice can address the issues. In this program, the Smith Level funds and other federal grants will be invested to conduct research, extension and educational activities. The input activities include: (1) conducting research in determine values of tropical and subtropical of plants, fruits and vegetables, and identifying technologies and potential food products that can success for marketing in community; (2) investigating pathogens in ethnic foods and food handling practices of consumers in community; (3) developing extension curriculums of home food processing and food safety for target audiences; (4) conduct food processing and food safety workshops and training in community; (5) providing consultant services and disseminate scientific-based information in food technology and food safety in community. The target audiences include entrepreneurs, farmers, families, individuals, children, youth, food workers, and food safety educators. The program activities are expected to increase knowledge, skills, and abilities of participants in conducting home food processing to market products in communities, and to change food safety knowledge, attitude and behaviors of participants to conduct their best practices in handling food. The behavior changes of food handlers will reduce the risk and eventually decrease frequency of foodborne illness in community on Guam. Although tropical environment and natural disaster such as Typhoon will affect crop productions and food safety practices, supports and efforts from the government and communities will provide a promising to achieve the success of the program to improve the quality of life and promote economic growth on Guam.

**3. Program existence :** Mature (More than five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

**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	20%		20%	
502	New and Improved Food Products	15%		15%	
503	Quality Maintenance in Storing and Marketing Food Products	5%		5%	
604	Marketing and Distribution Practices	5%		5%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	50%		50%	
806	Youth Development	5%		5%	
	<b>Total</b>	100%		100%	

## V(C). Planned Program (Situation and Scope)

### 1. Situation and priorities

There is an increasing need of using local produces to process value added products on Guam. Ninety percent of foods on Guam are imported from U.S. and other Asian countries. Few small scale food manufactures use local agricultural crops to process food products. Seasonal agricultural crops are often saturated in the local markets. The saturation of agricultural produces in the local market results in reduction of agricultural production. Promoting processing food products can avoid wasting of agricultural produces, balance local fresh produce market, and motivate farmers to increase agricultural production. In addition, Guam possesses unique tropical resources, which have biological components beyond the functions of traditional nutrients. These tropical plants, fruits and vegetables have precious values to benefit human health. Investigation of health benefits and identifying functions of the unique tropical plants, fruits and vegetables is a foundation to process and market value added food products on Guam. Each year Guam attracts 2 million international tourists, which form a potential market for value added food products.

Guam is a tropical island with an average temperature of 28°C through the year. Every year about 10 outbreaks and 150 cases are reported from the Guam Department of Public Health and Social Services. Most of foodborne illness occurs in private homes and fast restaurants. The estimated number of foodborne illness occurred on Guam each year are between 13,000 and 152,000. The estimated economic cost is from \$5.0 to 40.0 million per year. The frequency of foodborne illness on Guam is higher than the frequency in the United States. The identified foodborne illnesses occurred on Guam were Salmonellosis, Staphylococcal gastroenteritis, Shigellosis, fish poisoning, Campylobacteriosis, and Vibrio parahaemolyticus. The vehicles highly associated foodborne illness were fish, seafood, chicken, and ethnic food 'kelaguen'. Lack of food safety knowledge and poor food handling practice are attributed to the high frequency of foodborne illness, especially in temperature/time abuse, proper cooking and unsafe food resources. Although consumers have good knowledge in personal hygiene and cross contamination, consumers may not handle food properly. Many local Chomorro families have outdoor kitchen, in which hot water is not supplied and sanitation is poor. Foods are often subjected to no temperature and time control for safety at parties and fiestas on the islands.

The above two issues were identified as priorities in the areas of food and safety by the CES 2006 Awareness and Interest Survey, stakeholder focus group discussions, and advisory group meetings. The Awareness and Interest Survey showed that 48% of households (n = 140) having a member interested in food processing and food safety, and 62% of CES target clients (n = 98) exhibited interests in food processing and food safety. Stakeholders in thirteen focus group discussions expressed that processing value added food products and educating food safety are the needs of community. The participants in advisory group meetings supported to address the selected issues. Setting the priority of the selected issues will fulfill the mission of the

Guam Cooperative Extension Service "Through innovative community outreach education programs, we extend research-based knowledge to the people of Guam so as to engage in positive change".

**2. Scope of the Program**

- Integrated Research and Extension

**V(D). Planned Program (Assumptions and Goals)**

**1. Assumptions made for the Program**

Access the knowledge and training is the first step to make changes of a situation. Farmers, families and individuals need knowledge and skills to preserve and process food products for consumption and marketing. Most Chamorro families on Guam have a backyard where various fruits and vegetables grow. Chamorro culture encourages people to plant and eat indigenous fruits and vegetables and to preserve and process food products. In 2002, the Government of Guam issued a law to protect and encourage residents to use local crops to process food products. The local Fisherman’s Co op is a successful example that uses fish resource to process and sell fish products for local residents. The two million tourist industry provides a potential market for the local value added products. For example, a tourist evening market each Wednesday in the Chamorro Village provides an opportunity for people to sell home made products. Some value added food products such as beef jerky, coconut candy, and chocolate are sold to tourists in the evening markets. Investigation of functional values and health benefits of tropical plants, fruits and vegetables is essential to develop unique tropical food products. Studying optimum processing with new technology will insure high quality of value added food products to benefit consumers.

Effective education of food safety provides consumers knowledge in proper food handling practices. Such knowledge is essential for consumers to changes in attitudes and behaviors in handling food, resulting in reduction of foodborne illness. Food safety education to children will have significant long term impact on food safety in the communities. Microbiological investigation of pathogens on high risk ethnic foods will provide valuable information for effective food safety education to consumers. Food safety education to residents is traditionally appreciated in village centers and senior citizen centers on Guam. Various community food fairs in community provide opportunities to deliver food safety information and updated knowledge about foodborne illness to consumers. The Guam Department of Public School System also supports food safety education to children in schools. Local media such as Pacific Daily News and radio stations are collaborators in providing food safety knowledge and information to communities. The Guam Food Safety Task Force established in 2005 also advocates and support any kinds of food safety education to both food establishments and general consumers in community.

**2. Ultimate goal(s) of this Program**

Increase locally value-added food products at markets in community on Guam.

Reduce the risk or the frequency of foodborne illness in community on Guam.

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

**1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.8	0.0	0.5	0.0
2011	0.8	0.0	0.5	0.0
2012	0.8	0.0	0.5	0.0
2013	0.8	0.0	0.5	0.0
2014	0.6	0.0	0.4	0.0

**V(F). Planned Program (Activity)**

**1. Activity for the Program**

To achieve the goal of increasing locally processed food products in community, the activities include:

- (1) Identify potential value-added food products for local markets;
- (2) Develop the capacities of home food processing;
- (3) Investigate health benefit and values of tropical plants, fruits, and vegetables;
- (4) Develop and deliver scientific based-knowledge of home food processing in community through workshops, publications, and dissemination of information; and
- (5) Assist individuals and entrepreneurs in marketing value-added food products in community.

To achieve the goal of reducing the risk and the frequency of foodborne illness in community, the activities include:

- (1) Conduct microbiological study associated with issues of foodborne illness in community
- (2) Develop and prepare food safety education materials;
- (3) Deliver food safety education in community through workshops, publications, and dissemination of information; and
- (4) Collaborate with local agencies and organizations to ensure safe foods in community.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● One-on-One Intervention</li> <li>● Workshop</li> <li>● Demonstrations</li> <li>● Education Class</li> </ul>	<ul style="list-style-type: none"> <li>● Public Service Announcement</li> <li>● Web sites</li> <li>● Other 2 (Articles)</li> <li>● Other 1 (Dissemination of information)</li> </ul>

**3. Description of targeted audience**

The target audiences in the program include:

- (1) Local farmers
- (2) Food manufactures
- (3) Entrepreneurs
- (4) General consumers
- (5) Children and youth
- (6) Food safety educators
- (7) Food retailers
- (8) Food workers in food establishments

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

**1. Standard output measures**

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	150	500	50	500
2011	150	500	50	500
2012	150	500	50	500
2013	150	500	50	500
2014	150	500	50	500

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	1	1	2
2011	1	1	2
2012	1	1	2
2013	1	1	2
2014	1	1	2

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

**1. Output Target**

- # of Research Paper

2010 :1                      2011 :1                      2012 :1                      2013 :1                      2014 :1

- # of Research Citations

2010 :4                      2011 :6                      2012 :8                      2013 :10                      2014 :12

- # of extension fact sheets or articles

2010 :1                      2011 :1                      2012 :1                      2013 :1                      2014 :1

- # of workshops

2010 :6                      2011 :6                      2012 :6                      2013 :6                      2014 :6

- # of brochures

	2010 :1	2011 :1	2012 :1	2013 :1	2014 :1
● # of dissemination of information					
2010 :400		2011 :400	2012 :400	2013 :400	2014 :400
● # of one to one intervention					
2010 :2		2011 :2	2012 :2	2013 :2	2014 :2
● # of work with media					
2010 :1		2011 :1	2012 :1	2013 :1	2014 :1

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Changes (%) of participants in action of food processing in the community
2	Changes (%) of participants in action of food safety in the community
3	Changes of condition in food processing: number of value-added products in the community markets
4	Changes of condition of food safety: reduction (%) of frequency of foodborne illness in the community
5	Changes (%) of participants in knowledge of food safety and processing in workshops

**Outcome #1**

**1. Outcome Target**

Changes (%) of participants in action of food processing in the community

**2. Outcome Type :** Change in Action Outcome Measure

**2010** :10                      **2011** : 10                      **2012** : 10                      **2013** :10                      **2014** :10

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 604 - Marketing and Distribution Practices

**Outcome #2**

**1. Outcome Target**

Changes (%) of participants in action of food safety in the community

**2. Outcome Type :** Change in Action Outcome Measure

**2010** 20                      **2011** :20                      **2012** : 20                      **2013** 20                      **2014** :20

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

**Outcome #3**

**1. Outcome Target**

Changes of condition in food processing: number of value-added products in the community markets

**2. Outcome Type :** Change in Condition Outcome Measure

**2010** 2                      **2011** : 2                      **2012** : 2                      **2013** 2                      **2014** :2

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 604 - Marketing and Distribution Practices

**Outcome #4**

**1. Outcome Target**

Changes of condition of food safety: reduction (%) of frequency of foodborne illness in the community

**2. Outcome Type :** Change in Condition Outcome Measure

**2010** :5                      **2011** :5                      **2012** :5                      **2013** :5                      **2014** :5

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

**Outcome #5**

**1. Outcome Target**

Changes (%) of participants in knowledge of food safety and processing in workshops

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** :60                      **2011** :60                      **2012** :60                      **2013** :60                      **2014** :60

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

**V(J). Planned Program (External Factors)**

**1. External Factors which may affect Outcomes**

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

**Description**

External factors which may affect the outcomes of processed food products on the market include: (1) tropical climate, diseases and typhoon disaster, which affect agricultural production; (2) collaboration between farmers and food entrepreneurs; (3) tourist industry, a major industry on Guam, may affect the market of locally processed food products; (4) guam government and community supports to establish community kitchen; (5) changes of Chomorro cultures may influence activities in planting crops and food preservation and processing; and (6) external federal competitive grants, which are needed to support the food processing program activities.

External factors which may affect the outcomes of reduction of the risk or decrease the frequency of foodborne illness include: (1) tropical climate influences sanitation especially in large group outdoor fiestas and parties; (2) the recovery after typhoon disaster challenge consumers and food establishments to handle food properly due to outage of power and shortage of water; but the typhoon disaster forces consumers to recognize the importance of food safety; (3) collaboration among the government agencies, organizations, and media to delivery food safety knowledge and information in community; and (4) competitive extension and research projects and limited resources.



## **V(K). Planned Program (Evaluation Studies and Data Collection)**

### **1. Evaluation Studies Planned**

- Before-After (before and after program)
- Case Study
- During (during program)
- Comparisons between program participants (individuals,group,organizations) and non-participants

#### **Description**

To evaluate the success in achieving the program outcomes, the evaluation studies include Before After (before and after program), during program, case study, comparisons between program participants and non participants.

In Before After evaluation study, surveys, data collections, or direct observations will be used to compare the knowledge and skill of participants in the area of food processing and food safety before and after program implementation. In study of during program, pre and post tests, surveys, data collection from the other agencies or direct observations will be used to evaluate the improvement of participants in knowledge and practice of food processing and food safety. In the case study, structured and unstructured interviews will be used to evaluate the success of individuals who accomplish the long-term outcomes. In the study of comparisons, surveys, or direct observations will be used to evaluate the difference of participants and non participants in knowledge, skills and practices.

### **2. Data Collection Methods**

- Tests
- Other (Data from other agencies)
- Mail
- Unstructured
- Case Study
- Observation
- Telephone

#### **Description**

Survey will be used to evaluate participants' knowledge and attitudes before and after implementation of program. Case study will be used to evaluate the achievements and success of individuals in processing and marketing food products after they gain knowledge and skills. Observation methods will be used to evaluate if consumers handle food properly after they obtain knowledge in program activities. Tests will be used in pre and post tests of participants how much knowledge or skills that they gain workshops. Searching for data from other agencies will be used to provide evidences of the success of the planned program.

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

**Program #3**

**1. Name of the Planned Program**

Guam Families, 4-H Youth Development and Communities

**2. Brief summary about Planned Program**

The program is designed to educate and empower families, youth and communities to understand how individuals and families can both obtain and use resources of time, money, and human capital to develop their potential as participative members of society. UOG CES will conduct and facilitate workshops that will help families understand the significance human development and family well being. To achieve our goal, staff and volunteers will conduct workshops focused in the following emphasis areas: economic preparedness (resource management, time, money and human capital, youth entrepreneurship), interrelationships between society and households to improve family well being, human development (child, adolescent, adult), and workforce preparation. Staff and volunteers will assist and facilitate targeted youth (5-19) to increase awareness and knowledge through camps, school enrichment youth activities, after school programs, projects and curricula. The programs will focus on increasing knowledge in essential elements in the sense of belonging and sense of safety, self confidence and self esteem, literacy, communication, problem solving, volunteerism and community service for youth, interaction and relationships with adults and peer groups, leadership development and opportunities, youth initiatives in non-formal science, engineering, and technology and civic engagement.

**3. Program existence :** Mature (More than five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

**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	10%			
802	Human Development and Family Well-Being	30%			
803	Sociological and Technological Change Affecting Individuals, Families and Communities	10%			
806	Youth Development	50%			
	<b>Total</b>	100%			

**V(C). Planned Program (Situation and Scope)**

**1. Situation and priorities**

According to data from the local Guam Police Department there has been an increase in family violence that continues to

have devastating effects on the island of Guam and its residence. Families no longer feel safe within their homes, neighborhoods and communities. The high school drop out continues to increase at an alarming rate. With the increased drop out rate, teen pregnancy is notable and reported to be reaching middle school. Teenage suicide in Guam is amongst the highest in the nation and teenage alcohol and drug abuse is increasing. Sexual activities are reported to have been increasing among teenager exposing the youth, families and communities to sexually transmitted diseases. In addition, Guam is experiencing a spur in population growth as residents of the Freely Associated States of Micronesia migrate with their families to Guam to seek better quality of life. As a result, social and welfare systems are burdened and the education system must shift its programs to meet the needs of language other than English students. School infrastructure is also impacted as double sessions are implemented to accommodate the increase in student populations.

An anticipated increase in military operations in Guam estimates 8,000 US Marines with 10,000 dependents and support personnel will be arriving over a two year period will be a significant community issue. As we partner with the military, added programs will be needed to support our troops and their families. Issues to be addresses include, labor force preparedness, community safety, cultural understanding of both the military culture and the diversified island communities.

Program priorities are to create an environment where opportunities for youth to gain and increase their sense of belonging, independence, master and generosity to enable them and master the skills needed to make positive life choices, become civically engaged, act responsibly and be a positive influence in their communities.

**2. Scope of the Program**

- In-State Extension

**V(D). Planned Program (Assumptions and Goals)**

**1. Assumptions made for the Program**

- 1) Guam multi ethnic communities pose a challenge to program planning and development.
- 2) Extension has had extensive researched based programming experiences in the areas of youth, family and community.
- 3) Extension research based curricula and the resources of the Land Grant Institutions will allow us to develop partnership with local and federal agencies to address these issues.
- 4) Research have shown that youth who participate in activities which promote hands on experience are more likely to increase their self esteem, feel secure and take responsibility for their action and having good decision making skills.
- 5) Youth assets is an untapped resource

**2. Ultimate goal(s) of this Program**

The Program goal is to provide education, programs and experiences that provide prospects and opportunities to master learning of essential life skills that allows young people to be trustworthy, respectful, responsible, fair and caring citizens. The program aims to help youth, adults and families integrate these principles into their everyday lives.

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

**1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2010	4.0	0.0	0.0	0.0
2011	4.0	0.0	0.0	0.0
2012	4.0	0.0	0.0	0.0
2013	4.0	0.0	0.0	0.0
2014	4.0	0.0	0.0	0.0



## 3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

## V(H). State Defined Outputs

## 1. Output Target

- (1) # of club members

2010 :350                      2011 :400                      2012 :450                      2013 :500                      2014 :550

- (2) # of volunteer leaders

2010 :20                      2011 :25                      2012 :30                      2013 :35                      2014 :40

- (3) # of workshops

2010 :30                      2011 :35                      2012 :40                      2013 :45                      2014 :50

- (4) # of brochures

2010 :3                      2011 :4                      2012 :4                      2013 :4                      2014 :4

- (5) # of surveys

2010 :1                      2011 :1                      2012 :2                      2013 :2                      2014 :2

- (6) # of media articles and promotions

2010 :5                      2011 :5                      2012 :6                      2013 :6                      2014 :6

- (7) # of focus group

2010 :1                      2011 :1                      2012 :1                      2013 :1                      2014 :1

- (8) # of volunteers trained

2010 :12                      2011 :15                      2012 :18                      2013 :21                      2014 :24

- (9) # of extension staff trained

2010 :20                      2011 :25                      2012 :30                      2013 :35                      2014 :40

- (10)# of collaboration established

2010 :10                      2011 :12                      2012 :14                      2013 :16                      2014 :18

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	(1) Number of youth through communication and expressive arts programming demonstrate increased self efficacy in public speaking, presentations, visual arts and performing arts
2	(2) Number of youth participants in 4H natural resources and environmental education programs demonstrate environmentally responsible behavior
3	(3) Number of youth participants who study plant, soil and entomology learn the interconnectedness of organisms and their environment
4	(4) Number of youth reporting positive attitude change and/or aspirations about learning and careers in a 4-H project area
5	(5) Number of youth increasing participation in science and technology educational programming/clubs
6	(6) Number of volunteers completing a training program and successfully leading a program, activity, event or club
7	(7) Number of youth indicating increased knowledge/skills related to economic education and/or entrepreneurship
8	(8) Number of youth indicating knowledge and/or skills related to leadership
9	(9) Number of youth reporting positive attitude change and/or aspiration related to volunteering and community service

**Outcome #1****1. Outcome Target**

(1) Number of youth through communication and expressive arts programming demonstrate increased self efficacy in public speaking, presentations, visual arts and performing arts

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** :300                      **2011** : 325                      **2012** : 350                      **2013** :375                      **2014** :400

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 806 - Youth Development

**Outcome #2****1. Outcome Target**

(2) Number of youth participants in 4H natural resources and environmental education programs demonstrate environmentally responsible behavior

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** :300                      **2011** : 325                      **2012** : 350                      **2013** :375                      **2014** :400

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 806 - Youth Development

**Outcome #3****1. Outcome Target**

(3) Number of youth participants who study plant, soil and entomology learn the interconnectedness of organisms and their environment

**2. Outcome Type :** Change in Action Outcome Measure

**2010** :20                      **2011** : 25                      **2012** : 35                      **2013** :40                      **2014** :40

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities

- 806 - Youth Development

**Outcome #4**

**1. Outcome Target**

(4) Number of youth reporting positive attitude change and/or aspirations about learning and careers in a 4-H project area

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** :3000                      **2011** : 3025                      **2012** : 3050                      **2013** :3075                      **2014** :3100

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 806 - Youth Development

**Outcome #5**

**1. Outcome Target**

(5) Number of youth increasing participation in science and technology educational programming/clubs

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** :300                      **2011** : 325                      **2012** : 350                      **2013** :375                      **2014** :400

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 806 - Youth Development

**Outcome #6**

**1. Outcome Target**

(6) Number of volunteers completing a training program and successfully leading a program, activity, event or club

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** :100                      **2011** : 125                      **2012** : 150                      **2013** :175                      **2014** :200

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 806 - Youth Development



**Outcome #7****1. Outcome Target**

(7) Number of youth indicating increased knowledge/skills related to economic education and/or entrepreneurship

**2. Outcome Type :** Change in Knowledge Outcome Measure

<b>2010</b> 300	<b>2011</b> : 325	<b>2012</b> : 350	<b>2013</b> 375	<b>2014</b> :400
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**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 806 - Youth Development

**Outcome #8****1. Outcome Target**

(8) Number of youth indicating knowledge and/or skills related to leadership

**2. Outcome Type :** Change in Knowledge Outcome Measure

<b>2010</b> 300	<b>2011</b> : 325	<b>2012</b> : 350	<b>2013</b> 375	<b>2014</b> :400
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**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 806 - Youth Development

**Outcome #9****1. Outcome Target**

(9) Number of youth reporting positive attitude change and/or aspiration related to volunteering and community service

**2. Outcome Type :** Change in Knowledge Outcome Measure

<b>2010</b> 300	<b>2011</b> : 325	<b>2012</b> : 350	<b>2013</b> 375	<b>2014</b> :400
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**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 806 - Youth Development

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

### **1. External Factors which may affect Outcomes**

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

#### **Description**

Given the frequency of typhoons on Guam, natural disasters will definitely cause a shift in priority programming to that of immediate recovery.

There are external factors such as the economic environment and political dynamics could shift priorities play a major role in the communities as Guam depends on tourism and federal dollars.

## **V(K). Planned Program (Evaluation Studies and Data Collection)**

### **1. Evaluation Studies Planned**

- Before-After (before and after program)
- Other (Observations)

#### **Description**

The Targeting Life Skill curriculum has a built in pre and post evaluation instrument that will be modified and used to measure participant knowledge and understanding of the planned activity. 4-H club members involved in curriculum based activities will be given a survey before and after participating in selected program activities. A direct observation will be compiled along with a program survey for all the families, 4-H and community participants. Two time series surveys will be conducted to measure how knowledge gain has been used to enhance quality of lives.

### **2. Data Collection Methods**

- Observation
- Other (4-H ES 237 Enrollment Form)

#### **Description**

A comprehensive electronic data collection required by the CSREES: Annual ES 237 Enrollment Form to be completed by all 4-H programs. Observation of participant testimonials will be collected and posted in the annual report to the Director of Extension Service.

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

**Program #4**

**1. Name of the Planned Program**

Nutrition Education for Guam

**2. Brief summary about Planned Program**

This program focuses on food and nutrition educational activities designed to lead participants to healthy lifestyle choices. A variety of nutrition education lessons are offered to a large cross-section of community members designed to meet their individual needs in nutrition education. The program focuses on skill areas for practical everyday choices with an emphasis on incorporating this knowledge into their everyday lives. The program includes: MyPyramid Food Safety (Kitchen & Safe Food Handling) Importance of Exercise Fruits & Vegetables Shopping Tips Budgeting Meal Planning Reading Food Labels Promoting the use of herbs and spices to help reduce the intake of salts, fats, and sugars Chronic disease awareness & prevention

**3. Program existence :** Mature (More than five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

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

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
701	Nutrient Composition of Food	15%			
702	Requirements and Function of Nutrients and Other Food Components	20%			
703	Nutrition Education and Behavior	20%			
704	Nutrition and Hunger in the Population	5%			
724	Healthy Lifestyle	20%			
802	Human Development and Family Well-Being	15%			
805	Community Institutions, Health, and Social Services	5%			
	<b>Total</b>	100%			

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

;Current data from the Guam Department of Public Health and Social Services Vital Statistics office continues to show high numbers of chronic and preventable diseases such as diabetes, cardiovascular disease and cancer as primary causes of deaths. There is a great need for preventive nutrition educational programs and services because there has been an increase in preventable chronic diseases related to diet. The program will offer a wide array of nutritional programs to our community audiences designed to promote healthy lifestyles in relation to exercise, food and nutrition as the main objective. Cooperative Extension on Guam continues to provide the community with a variety of nutrition education programs. Recent need assessment focus groups continue to identify the need for expanding these programs. Guam Cooperative Extension will continue to develop and improve these programs while incorporating current issues that relate directly to leading healthy lifestyles, such as the benefits of physical activity.

**2. Scope of the Program**

- In-State Extension

**V(D). Planned Program (Assumptions and Goals)****1. Assumptions made for the Program**

An underlying assumption is that obesity rates and associated medical complications on Guam is preventable. Through nutrition education the people of Guam would be informed of the many health benefits of proper nutrition intake of foods and the importance of regular exercise. Obesity rates on Guam are best addressed through education programs targeting both adults and youths. There will be an increase in the number of diabetics on Island due to the lack of proper nutrition and exercise.

**2. Ultimate goal(s) of this Program**

Associated goals include: To help the community learn to choose and prepare foods that protect their overall health. Provide education that leads to better diets and health for all members of the community. Increased knowledge of nutrition. Improved ability to buy and prepare nutritious food. Improved ability to manage resources that relate to food. Improved food storage, safety and sanitation practices. Adoption of knowledge and skills integrated for healthy life. The program strives to create, in the minds of our participants, an awareness linking what we eat to our health in order to ultimately change their dietary behaviors.

**V(E). Planned Program (Inputs)****1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2010	1.4	0.0	0.0	0.0
2011	2.0	0.0	0.0	0.0
2012	2.0	0.0	0.0	0.0
2013	3.0	0.0	0.0	0.0
2014	3.0	0.0	0.0	0.0

**V(F). Planned Program (Activity)****1. Activity for the Program**

(1) provide basic nutrition education classes on topics that relate to nutrition and food which include: 'MyPyramid'; Food Safety (Kitchen & Safe Food Handling); Importance of Exercise; Fruits & Vegetables (Vitamins); Shopping Tips; Budgeting; meal Planning; Reading Food labels; promoting use of herbs and spices to help reduce the intake of salts, fats and sugars; and chronic disease prevention. (2) conduct nutrition workshops to target population (3) Develop culturally relevant curriculum for promoting physical activity; education to prevent obesity; localized general nutrition education materials (brochures/pamphlets) and also develop a curriculum on food portion control and over-eating. (4) Develop curriculum for nutrition education for chronic disease prevention along with educational materials. (5) Develop recipe books that feature favorite local recipes. (6) Create a local recipe book that incorporates healthful modifications of local dishes. (7) Conduct food demonstrations on local dishes that

incorporate healthful modifications. (8) Develop booklet and/or calendar that identifies locally grown fruits and vegetables with high nutritive value and suggest ways to healthful ways to prepare the local produce. (9) Create a model fiesta menu incorporating local dishes and providing samples of healthful recipes (10) Develop a fact sheet of common causes of preventable chronic diseases that are prevalent on Guam and show how related to poor nutrition. (11) Conduct workshops promoting locally grown fruits and vegetables with healthful recipes for both farmers and experienced cooks (marketing healthful recipes with locally grown produce) (12) Maintain partnership with local food sources businesses to promote a greater variety of healthful foods and education awareness within food source facilities.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Other 1 (Food Demonstrations)</li> <li>● One-on-One Intervention</li> <li>● Education Class</li> <li>● Group Discussion</li> <li>● Workshop</li> </ul>	<ul style="list-style-type: none"> <li>● Public Service Announcement</li> <li>● Web sites</li> <li>● Other 1 (Static Displays)</li> <li>● Newsletters</li> <li>● Other 2 (Disseminating education handouts)</li> </ul>

**3. Description of targeted audience**

The target audiences of the program include: (1) school-aged children (elementary through high school level) (2) families in public assistance programs (3) families with young children (4) general consumers (5) military families (6) elderly (7) health educators (8) school teachers (9) local farmers (10) working professionals (11) other

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

**1. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	160	625	2150	1000
2011	170	650	2100	1000
2012	180	675	2150	1500
2013	190	700	2200	1500
2014	200	725	2250	1500

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

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

**1. Output Target**

- # of workshops

<b>2010</b> 50	<b>2011</b> 50	<b>2012</b> :50	<b>2013</b> 50	<b>2014</b> 50
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- # of brochures

<b>2010</b> 2	<b>2011</b> 2	<b>2012</b> :2	<b>2013</b> 2	<b>2014</b> 2
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- # of dissemination of research results and new technology and information

<b>2010</b> 200	<b>2011</b> 200	<b>2012</b> :200	<b>2013</b> 200	<b>2014</b> 250
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- # of one to one intervention

<b>2010</b> 50	<b>2011</b> 50	<b>2012</b> :50	<b>2013</b> 50	<b>2014</b> 60
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- # of focus group

<b>2010</b> :1	<b>2011</b> 1	<b>2012</b> :1	<b>2013</b> :1	<b>2014</b> :1
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- # of work with media

<b>2010</b> :1	<b>2011</b> 1	<b>2012</b> :1	<b>2013</b> :1	<b>2014</b> :1
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- # of articles in newsletter, magazines, and newspapers

<b>2010</b> 2	<b>2011</b> 2	<b>2012</b> :2	<b>2013</b> 2	<b>2014</b> 2
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**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	# of participants exposed to nutrition, exercise, and chronic disease prevention information
2	# of participants gaining an increase in nutrition knowledge and skills, especially for: MyPyramid, food labels, menu planning, smart shopping, healthy food preparation and food safety
3	# of participants gaining an increase in physical activity knowledge and skills, especially as it pertains to maintaining mental and physical well-being, prevention of chronic disease, and improving overall health

**Outcome #1**

**1. Outcome Target**

# of participants exposed to nutrition, exercise, and chronic disease prevention information

**2. Outcome Type :** Change in Condition Outcome Measure

**2010** :1200                      **2011** : 1400                      **2012** : 1600                      **2013** :1800                      **2014** :2000

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services

**Outcome #2**

**1. Outcome Target**

# of participants gaining an increase in nutrition knowledge and skills, especially for: MyPyramid, food labels, menu planning, smart shopping, healthy food preparation and food safety

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** :50                              **2011** : 75                              **2012** : 75                              **2013** :100                              **2014** :100

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services

**Outcome #3**

**1. Outcome Target**

# of participants gaining an increase in physical activity knowledge and skills, especially as it pertains to maintaining mental and physical well-being, prevention of chronic disease, and improving overall health



**2. Outcome Type :** Change in Condition Outcome Measure

2010 :50

2011 :75

2012 :75

2013 :100

2014 :100

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

- Other (Nutritionist hired at .30 FTE)
- Public Policy changes
- Populations changes (immigration,new cultural groupings,etc.)
- Government Regulations
- Competing Programmatic Challenges
- Competing Public priorities

**Description**

To achieve the indicated types of output activities, most especially in regards to producing publication materials relating to preventable chronic diseases, there is a great need to hire another extension professional specializing in nutrition and health. CES hired a Nutrition faculty in January 2008 at 0.30FTE. This was an improvement, however, we still need additional faculty support to accomplish program outcomes. In the past years, the Direct Instruction (reading) Program (DI) in the Guam Public School System (GPSS) negatively impacted our ability to reach school-aged children. DI consumed most of the instruction day, and minimized the time set aside for instruction outside of the daily curricula; therefore severely limiting our ability to develop our programs to local school children. However, many schools within GPSS are decreasing or eliminating DI from the curriculum. As instruction hours for DI decrease, our ability to reach school-aged children within schools will continue to increase. Time constraints of working families also impact our ability to reach this target audience. Because of the high cost of living on Guam, as well as the recent economic downturn, most families are forced to work 2-3 jobs to make ends meet. Therefore, less time is available for nutrition education. In addition, strong ties of extended family and cultural obligations demand much of the spare time of local residents. The main challenge is making the community more aware of the importance of a healthy diet, physical activity and other lifestyle choices that can prevent obesity and other chronic diseases. Another factor that may affect our outcomes would be population changes (immigration, new cultural groupings, etc.). Guam is a U.S. Territory that has experienced an increase in immigration from other Micronesian islands and will soon experience a huge Military build-up. Language barriers of different cultures may also be a factor in the distribution and delivery of nutrition education.

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

- During (during program)
- Other (Study Assessments)
- Before-After (before and after program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Time series (multiple points before and after program)

### **Description**

Assessment tools will be used to evaluate the successes in achieving the program outcomes throughout the variety of nutrition activities. Behavioral change will be monitored after the contact and compared with the knowledge at entry. Studies of assessments would be done to provide data on behavioral change. Comparisons between participants and non participants will be monitored as well to indicate lifestyle changes in relation to good nutrition and exercise practices.

## **2. Data Collection Methods**

- Telephone
- Structured
- On-Site
- Observation
- Tests
- Other (data from other agencies)
- Whole population
- Mail
- Case Study

### **Description**

The method for data collection using pre and post test results will be utilized as an indicator of behavioral change in relevance to the lessons presented. If no positive results are seen a reevaluation of tests education delivery will occur. Program surveys will also serve as an indicator of a level of understanding towards the subject area and interest of information delivery. Case studies will be conducted based on behavioral change in order to indicated positive results towards program education. Observations on attitudes and selections of making healthier food choice will also be evaluated. Data from health agencies that indicate positive changes in relation to healthier lifestyle choices will be another indicator towards providing quality program delivery. Time series survey will be conducted 6 months to 1 year after education classes and workshops.

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

The New Farmer: Agriculture for the Next Generation

**2. Brief summary about Planned Program**

In these times of limited budgets both federal and local, cooperative partnerships can leverage the efficiency of local agencies supporting the agricultural industry and increase the chance for meeting each agency's mission. Partnership has developed between the Guam Cooperative Extension (GCE) the Guam Department of Agriculture (DoAG), the Chamorro Land Trust Commission (CLTC), the Guam Farmers' Cooperative Association, and the Guam Soil and Water Conservation Districts to address common concerns with the agricultural industry and increase the effectiveness of outreach efforts. This effort seeks to promote the economic development and sustainability of the agriculture industry on Guam in three ways. First, encourage and support the many new commercial and subsistence farmers under the Chamorro Land Trust agriculture land lease program by developing a New Farmer curriculum. Second, encourage a new generation of farmers by adapting this curriculum into a youth agricultural entrepreneur program in collaboration with Sanctuary, Inc. and village mayors' offices. Third to improve outreach and educational efforts of the partner agencies by sharing support of field outreach staff and field demonstrations.

This POW will pioneer an innovative approach to outreach through the training of local agencies' outreach staff, and sharing of land, equipment and supply resources. Under this POW grant funds have already been secured for two field agents for demonstration and outreach efforts to be shared by the collaborating agencies and time from local agencies will be devoted to the POW. Recognizing that long-term demonstrations are difficult for a single organization to support, this POW addresses this issue through a collaborative effort to pilot multi-agency supported small model farms which reflect local production environments. This effort will utilize these farms to develop and demonstrate best management conservation and production practices within the context of existing plans for each farm. Under this POW the partner agencies and POW clients will identify common areas of concern and continue to seek outside grant funding and local support to jointly address these issues. Regular assessment of the agriculture industry to identify new or unresolved issues will also be apart of this POW.

An initial identified need is for outreach programs on traditional and innovative conservation practices. This need is heightened by the dramatic increase in number of new farms on Guam through the Chamorro Land Trust Commission's agricultural lease program. Many of these farmers have limited farm experience. The educational needs could be overwhelming for any single agency's staff, but in a coordinated partnership several agencies may effectively address these needs. Curriculum devoted to concerns of new farmers will be developed. This curriculum will include conservation planning, government programs available to local farmers, best management practices in several priority areas like livestock waste management systems, windbreaks using economic species, contour hedgerows and filter strips, and construction of water catchments as well as other supporting practices. The primary target audience is the 1000+ agriculture land lease recipients of the Chamorro Land Trust Commission and youth participants from Sanctuary Inc., the mayors' offices and local 4-H programs.

In October 2008 a regional conference hosting participants from across the Pacific Islands was held on Guam, to review the efforts of the past decade addressing issues of sustainability of island agriculture and to identify the needs of the coming decade. One finding of this conference was the amazing similarity of the issues among the islands. There was a strong consensus that the islands need more collaborative project to address these needs. An effort of this POW will be to utilize the PEACESAT communication network to hold distance education workshops that address these issues and to facilitate regional needs assessment, strategy development and collaborative projects to address these issues.

**3. Program existence :** Mature (More than five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

**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	10%			
104	Protect Soil from Harmful Effects of Natural Elements	10%			
125	Agroforestry	10%			
205	Plant Management Systems	10%			
307	Animal Production Management Systems	10%			
403	Waste Disposal, Recycling, and Reuse	10%			
601	Economics of Agricultural Production and Farm Management	20%			
608	Community Resource Planning and Development	10%			
806	Youth Development	10%			
	<b>Total</b>	100%			

### V(C). Planned Program (Situation and Scope)

#### 1. Situation and priorities

Guam Cooperative Extension (GCE) and other agricultural support agencies (Guam Department of Agriculture, Chamorro Land Trust Commission, the Guam Farmers' Cooperative Association, and the Guam Soil and Water Conservation Districts on Guam identified several issues common to the industry. The first is that agriculture support agencies on Guam are small and lack the breadth of expertise that would be found in analogous agencies on the mainland. Island-wide the expertise pool is probably adequate to meet the island's needs but is fragmented among several agencies. Consequently, farmers have difficulty accessing the information they need, or finding the expertise to explain key concepts to them when they seek advice.

The need for outreach programs on traditional and innovative conservation and production practices is highlighted by the number of new farms on Guam through the Chamorro Land Trust agricultural lease program with limited farming experience. These educational needs will be addressed through a coordinated partnership of several agencies.

The partners in this project, have identified three issues/needs where outreach efforts are needed. These topics are:

Need to promote conservation practices for conditions unique to tropical islands.

Farmers' groups need education and technical support in developing plans to address issues impacting the agricultural industry.

The need and activities of the 1000 plus agriculture leaseholders on the Chamorro Land Trust Land are unknown and

these are underserved potential clients that need to be made aware of the outreach efforts Cooperative Extension and its partners.

Recent regional needs assessment on the sustainability of agriculture identified other areas needing collaborative programs these include:

Education programs for farmers and agricultural professionals on agricultural marketing especially focusing on building farmer chef linkages given our islands large tourism industry.

More work variety trials and education on alternative crops like herbs and fruits.

Alternative methods of handling animal waste.

Development of locally produced feeds or feed supplements to reduce feed cost and at least partially substitute for high cost imported feeds.

A farmer desire for education and certification programs in Organic agriculture.

Research and Extension Education in value added agriculture products.

Through a collaborative grant funding will be secured to work on these issues and other emerging issues.

## 2. Scope of the Program

- In-State Research
- In-State Extension
- Integrated Research and Extension
- Multistate Extension

## V(D). Planned Program (Assumptions and Goals)

### 1. Assumptions made for the Program

Outreach efforts of agencies supporting development of the agricultural industry will be strengthened through common goal setting, sharing of resources and collaboration in outreach efforts.

Farmers learn best through observation of successful demonstrations and through peer-to-peer sharing of information.

Many of the CLTC agricultural leases are not being developed due to lack of knowledge, both technical and of how to obtain the necessary resources. The assumption is that education programs and demonstrations can make an impact on this underutilization of land resources.

That this POW will evolve and expand each year as new needs are identified and partnerships form to pursue and mobilize resources to address these needs.

Issues concerning the sustainability of agriculture and its impact on the environment are shared across the Pacific islands. Curriculum developed for one island is often appropriate for other islands. There is a need for sharing of these curriculum materials. There is also a need to plan more collaborative programs that address these issues.

### 2. Ultimate goal(s) of this Program

Economic development of the island through expansion of the island's agriculture industry and building the capacity of local agricultural organizational entities by:

1. Increasing the number and profitability of new commercial and subsistence farms.
2. Increase the effectiveness of all participant agencies' outreach efforts.
3. To bring POW clients and partner agencies together to identify priorities and obtain resources to address these priorities.
4. To increase the number and profitability of enterprises in natural resource based industries through participatory research and demonstrations.
5. To promote environmentally friendly sustainable practices and government programs and incentives that supports these practices through educational programs
6. Provide educational programs that address the need of new agricultural land lease holders who are not utilizing their land for productive purposes.
7. Include Extension and other professionals from the American affiliated Pacific islands in these programs through distance education workshops.

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

**1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2010	1.0	0.0	0.0	0.0
2011	1.0	0.0	0.0	0.0
2012	1.0	0.0	0.0	0.0
2013	1.0	0.0	0.0	0.0
2014	1.0	0.0	0.0	0.0

**V(F). Planned Program (Activity)**

**1. Activity for the Program**

•Farmers with agricultural land leases that are not utilizing the land for agricultural or underutilizing the land will be targeted for recruitment into the education and demonstration activities and survey on barriers to their agriculture implementation. •In order to increase the skills of the islands agricultural professionals train the trainer workshops will be held on the New Farmer curriculum prior to holding workshops at the demonstration farms or New Farmer Trainings for the general public. The joint agency generation of outreach publications on the demonstrated conservation or production practices. •Each year several planning meeting between the cooperating agencies will be held to identify priorities in order to jointly apply for grant funding to address these priorities. Funded grants are a planned output of this POW, demonstrating capacity building through training, collaborative planning and presentation of needs. •Best management conservation and sustainable agricultural practices will be demonstrated on multi-agency demonstration farms, new enterprises and production methods will also be demonstrated. • A farmer Mini grant program will be implemented to demonstrate innovative agricultural practices, several grants will be awarded each year. At least one workshop each year will be held on government incentive programs and funding opportunities for farmers. •Outputs of this outreach collaboration each year will include; conducting two workshops at each shared demonstration farm and one workshop at participating farmers' fields. Additionally quarterly workshops will be held for the general public comprising the New Farmer curriculum. •In cooperation with the PEACESAT communication and the Land Grant Extension Offices in the Pacific islands, conduct quarterly train-the-trainer workshops on the curriculum developed under this program.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Demonstrations</li> <li>● Other 2 (Distance Education Workshops)</li> <li>● Workshop</li> <li>● One-on-One Intervention</li> <li>● Other 1 (field days &amp; farm tours)</li> </ul>	<ul style="list-style-type: none"> <li>● Other 1 (extension fact sheets &amp; articles)</li> <li>● Public Service Announcement</li> <li>● TV Media Programs</li> <li>● Web sites</li> <li>● Other 2 (newspaper articles &amp; radio spots)</li> </ul>

**3. Description of targeted audience**

The primary target audience is the one thousand plus agricultural lease holders of the Chamorro Land Trust Commission (CLTC) agricultural lands programs and the more than 100 existing full and part time commercial and subsistence agricultural producers on Guam. In addition, a secondary target population is the island youth interested in entrepreneurial agricultural activities. Additionally clients of mayors' offices interested in small scale and community agricultural activities are also targeted.

The secondary target audience is the agricultural professional community on Guam. This program is a collaborative effort to build the capacity and enhance the performance of the agricultural professionals in Guam Cooperative Extension, and partner agencies so these agricultural professionals can better identify issues and mobilize resources to assist the agriculture

community on Guam.

A third potential audience are the agricultural professionals in the partner land grant programs, and their partners, throughout the American Affiliated Pacific.

A third target audience is Extension, education and island Department of agriculture professionals as participant trainers in a train the trainer distance education workshop series on the curriculum materials. These participants will also serve as key contacts in future needs assessments so that the islands needs may be incorporated in our curriculum development efforts.

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

**1. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	90	1000	15	0
2011	90	1000	15	0
2012	90	1000	15	0
2013	90	1000	15	0
2014	90	1000	15	0

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	1	0
2011	0	1	0
2012	0	1	0
2013	0	1	0
2014	0	1	0

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

**1. Output Target**

- number of popular articles in newsletters, magazines and newspapers

2010 2                      2011 2                      2012 2                      2013 2                      2014 2

- number of workshops

2010 4                      2011 4                      2012 4                      2013 4                      2014 4

● number of extension fact sheets/brochures/pamphlets					
<b>2010</b> 2	<b>2011</b> 2	<b>2012</b> 2	<b>2013</b> 2	<b>2014</b> 2	
● number of one to one intervention					
<b>2010</b> 10	<b>2011</b> 10	<b>2012</b> 10	<b>2013</b> 10	<b>2014</b> 10	
● workshop curriculum developed and piloted with agricultural professionals					
<b>2010</b> 4	<b>2011</b> 4	<b>2012</b> 4	<b>2013</b> 4	<b>2014</b> 4	
● number of multi-agency agriculture best management practiced demonstrations conducted					
<b>2010</b> 2	<b>2011</b> 2	<b>2012</b> 2	<b>2013</b> 2	<b>2014</b> 2	
● Number of Distance Education Workshops conducted on curriculum materials.					
<b>2010</b> 4	<b>2011</b> 4	<b>2012</b> 4	<b>2013</b> 4	<b>2014</b> 4	
● # of new Chamorro Land Trust Leasholders participating in workshop and field day activities					
<b>2010</b> 20	<b>2011</b> 20	<b>2012</b> 20	<b>2013</b> 20	<b>2014</b> 20	
● # memorandums and understanding and cooperative agreements with partner agencies and organizations					
<b>2010</b> 1	<b>2011</b> 1	<b>2012</b> 1	<b>2013</b> 1	<b>2014</b> 1	



**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	# of Chamorro Land Trust Commission lease holders increasing knowledge of sustainable agriculture production technologies, marketing practices and available government services
2	# of agricultural professionals gaining knowledge of sustainable agriculture production technologies, marketing practices, available government programs, and grant opportunities
3	Number of organizations that leveraged/or increased their outreach efforts by participating in the New Farmer Programs.
4	# of farmers adopting recommended demonstration practices
5	# of participants increasing knowledge of sustainable agriculture production technologies, marketing practices and available government services
6	# cooperating agency and organization personnel adopting and utilizing curriculum materials developed under this POW (both Guam and Distance Education).

**Outcome #1**

**1. Outcome Target**

# of Chamorro Land Trust Commission lease holders increasing knowledge of sustainable agriculture production technologies, marketing practices and available government services

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** 20                      **2011** : 20                      **2012** : 20                      **2013** 20                      **2014** :20

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 125 - Agroforestry
- 205 - Plant Management Systems
- 307 - Animal Production Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management

**Outcome #2**

**1. Outcome Target**

# of agricultural professionals gaining knowledge of sustainable agriculture production technologies, marketing practices, available government programs, and grant opportunities

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** 6                      **2011** : 6                      **2012** : 6                      **2013** 6                      **2014** :6

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 125 - Agroforestry
- 205 - Plant Management Systems
- 307 - Animal Production Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management
- 608 - Community Resource Planning and Development
- 806 - Youth Development

**Outcome #3**

**1. Outcome Target**

Number of organizations that leveraged/or increased their outreach efforts by participating in the New Farmer Programs.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** 3                      **2011** : 3                      **2012** : 3                      **2013** 3                      **2014** :3

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 125 - Agroforestry
- 205 - Plant Management Systems
- 307 - Animal Production Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management
- 608 - Community Resource Planning and Development
- 806 - Youth Development

**Outcome #4**

**1. Outcome Target**

# of farmers adopting recommended demonstration practices

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** 8                      **2011** : 8                      **2012** : 8                      **2013** 8                      **2014** :8

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 125 - Agroforestry
- 205 - Plant Management Systems
- 307 - Animal Production Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management

**Outcome #5**

**1. Outcome Target**

# of participants increasing knowledge of sustainable agriculture production technologies, marketing practices and available government services

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** 60                      **2011** : 60                      **2012** : 60                      **2013** 60                      **2014** :60

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 125 - Agroforestry
- 205 - Plant Management Systems
- 307 - Animal Production Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management
- 608 - Community Resource Planning and Development
- 806 - Youth Development

**Outcome #6**

**1. Outcome Target**

# cooperating agency and organization personnel adopting and utilizing curriculum materials developed under this POW (both Guam and Distance Education).

**2. Outcome Type :** Change in Action Outcome Measure

<b>2010 #</b>	<b>2011 : 4</b>	<b>2012 : 4</b>	<b>2013 #</b>	<b>2014 :4</b>
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**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 125 - Agroforestry
- 205 - Plant Management Systems
- 307 - Animal Production Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management
- 608 - Community Resource Planning and Development
- 806 - Youth Development

**V(J). Planned Program (External Factors)**

**1. External Factors which may affect Outcomes**

- Natural Disasters (drought,weather extremes,etc.)
- Other (change in gov't. admin.)
- Public Policy changes
- Appropriations changes

**Description**

In any collaboration with local government agencies there is the potential for a complete change over of the upper level of administrative partners every four years. In selecting priorities and conducting needs assessments we work with both the classified staff as well as the administration to provide continuity and sustainability to the POW's programs. Additionally, attempts

are made to enter into long term MOUs that may span administrations.

In many of our field level projects the is frequent (every 5-7 year) occurrence of super typhoons impacting long term demonstrations and projects. The possibility of these typhoons must be accounted for in planning of activities of the demonstrations.

Funding priorities change part of this POW's objective is to monitor these changes and develop collaborative multi agency strategies to adapt and take best advantage of these changes.

Others:

- 1) Potential change in Government administration every 4 years through gubernatorial elections.
- 2) Super typhoons
- 3) Changes in federal funding levels and priorities, and successful grant applications.

## **V(K). Planned Program (Evaluation Studies and Data Collection)**

### **1. Evaluation Studies Planned**

- Case Study
- Other (focus groups)
- After Only (post program)
- Before-After (before and after program)
- Retrospective (post program)

#### **Description**

Structured interviews of agricultural professionals in local agencies and follow up interviews to see if there is a perceived increase in number of participants and in the quality of their participation (application submission and follow through) after targeted educational programs on these government initiatives.

Post evaluations of perceptions of each educational activity.

Follow up farm visits and phone calls to participants to determine level of adoption of demonstrated or recommended practice.

Focus groups will be used to determine farmer perceptions of the outreach efforts of the program activities.

### **2. Data Collection Methods**

- On-Site
- Structured
- Observation
- Other (post activ. survey & focus group)
- Telephone
- Case Study
- Tests

#### **Description**

After educational activity follow up visits (field observations) and phone calls (survey telephone) will be used to identify adopted practices.

For some activities pre- and post tests will be used to identify knowledge gained.

Structured interviews will be used to identify partner agencies' staff perceptions of improved farmer knowledge and application.

Focus groups will be used to document changes in farmer perception of and economic impact on farm profitability of program activities.

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

**Program #6**

**1. Name of the Planned Program**

Plant Health and Pest Management

**2. Brief summary about Planned Program**

The Plant Health and Pest Management Program is an outreach education program that informs clientele of issues that deal with plants and pests. The information and its delivery are designed to reduce the environmental and economic impact of plant cultivation, plant importation, and pest control activities. This is accomplished through education and research projects conducted by Guam Cooperative Extension and other federal and local agencies such as the Pesticide Applicator Training Program (PAT), Guam Integrated Pest Management (IPM), National Plant Diagnostic Network (NPDN), Guam Invasive Species Advisory Committee (GISAC), and Pacific Islands Distance Diagnostics and Recommendation System (PIDDRS).

**3. Program existence :** Mature (More than five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

**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%			
205	Plant Management Systems	10%			
211	Insects, Mites, and Other Arthropods Affecting Plants	10%			
212	Pathogens and Nematodes Affecting Plants	15%			
213	Weeds Affecting Plants	5%			
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	5%			
215	Biological Control of Pests Affecting Plants	10%			
216	Integrated Pest Management Systems	40%			
	<b>Total</b>	100%			

### V(C). Planned Program (Situation and Scope)

#### 1. Situation and priorities

The University of Guam Extension Service is charged with providing the best possible advice for dealing with current and new emerging pests and diseases. In a 2002 farmer survey report, from the Eggplant, Pepper, and Tomato Production Guide for Guam, 48% of the farmers reported pests as their number one farm problem followed by plant diseases at 22%. There are several steps that can be taken to reduce the impact of pests, weeds, and diseases. The first is identification. There have been no comprehensive insect surveys in Micronesia for many years nor a record of plant diseases on Guam. As a result, pest records do not accurately reflect the fauna, nor describe the animal/plant-arthropod relationship existing within Micronesia. The Cooperative Extension Service must remain vigilant in its pest and disease identification efforts to detect new introductions to the island. Since all of Guam's new pests are the result of accidental introductions of invasive species, Guam will continue to get new pests as long as people travel to Guam and plants are imported. With the rise in terrorist activities worldwide, the intentional introductions of pests and diseases must also be considered. The Cooperative Extension Service must cooperate with other agencies with similar goals. The Guam Invasive Species Advisory Committee (GISAC) was formed to provide technical expertise in management of organisms that are already here and prevention of further introductions. The Committee has established a website at <http://gisac.guam.net> as a repository for information on Guam's invasive species. The University of Guam is also part of the Western Plant Diagnostic Network (WPDN) (<http://www.wpdn.org/>) which is a part of a larger network: National Plant Diagnostic Network (NPDN). The NPDN enhances United States' agricultural security through a functional nationwide network of public agricultural institutions with a cohesive, distributed system to quickly detect deliberately introduced, high consequence, biological pests and pathogens into our agricultural and natural ecosystems by providing means for quick identifications and establishing protocols for immediate reporting to appropriate responders and decision makers. Since Guam is limited in its animal and plant diversity, invasive species quickly establish themselves due to the lack of natural predators. One of the best ways to reduce the impact of such pests is through biocontrol, which is a method of pest control that uses natural predators to reduce pests as contrasted by chemicals. Biocontrol agents are routinely

introduced to Guam by researchers in the Agriculture Experiment Station, with follow up efforts and distribution of the agents to farmers and homeowners, the Cooperative Extension Service can improve the effectiveness of this pest control method and its acceptance. The key components that make up any IPM program include pest identification, efficacy of control practices (chemical, biological, and cultural) and environmental impact. Of the key components, the first and foremost is plant diagnostics. Only with good diagnostic protocols can the cause of a plant problem be determined and only then can effective and safe control methods be advised. Licensing of pesticide applicator, through the Pesticide Applicator Training program, insures that applicators know how to handle pesticides safely. Proper handling of pesticides is of paramount importance for the safety of agricultural workers, farmers, the islands water supply, and the environment. Whenever people cultivate plants they disturb the environment: soil, plant and animal species. Through proper management practices many pests, weeds, and plant disease problems can be eliminated or reduced. If proper management practices are not followed soil will be washed away, plant pathogens will multiply, and insects will become resistant to insecticides. The Cooperative Extension Service through education awareness programs needs to get the farmers and homeowners to adopt low environmental impact plant cultivation practices.

**2. Scope of the Program**

- Integrated Research and Extension

**V(D). Planned Program (Assumptions and Goals)**

**1. Assumptions made for the Program**

There are four main causes for an unhealthy plant: plant pathogens, animal pests, weeds, and unfavorable factors. The cornerstone to solving plant problems is proper identification of the causal agent. Once a causal agent is properly identified, there is a greater chance that it can be eliminated before it gets out of control and causes substantial damage. The use of IPM (Integrated Pest Management) principles offers an economical way to control pathogens, pests, and weeds using minimal amounts of chemicals. Biocontrol offers the ideal means of controlling these organisms but often take years to develop and become established. For the average citizen of Guam, the greatest exposure to toxic chemicals comes from pesticides used in the home and in the garden. Through education and public awareness the risk of pesticide exposure can be reduced.

**2. Ultimate goal(s) of this Program**

• Identification of all pests, weeds, and plant diseases on Guam  
 • Establishment on Guam of all known suitable biocontrol agents  
 • Full adoption of IPM practices by farmers and homeowners  
 • Full adoption of low environmental impact cultivation plant practices by farmers and homeowners

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

**1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2010	3.0	0.0	0.0	0.0
2011	3.0	0.0	0.0	0.0
2012	3.0	0.0	0.0	0.0
2013	3.0	0.0	0.0	0.0
2014	3.0	0.0	0.0	0.0

**V(F). Planned Program (Activity)**

**1. Activity for the Program**

The establishment of a comprehensive insect pest survey list for Micronesia, with continuous updating. Provide one-on-one consulting on IPM to individuals who have problems with crops, weed and/or pests. The establishment of a plant diagnostic clinic that will take a lead role in diagnosing plant problems and will provide outreach by providing space, equipment, and expertise for publications, courses and workshops. Through the Pesticide Applicator Training program instruct applicators on the safe handling of pesticides and administer certificates.



**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● One-on-One Intervention</li> <li>● Education Class</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Public Service Announcement</li> <li>● TV Media Programs</li> <li>● Web sites</li> </ul>

**3. Description of targeted audience**

The target audience for this program includes local farmers, homeowners, nurseries, landscapers and golf course superintendents and their crews, teachers, school children, and government agencies.

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

**1. Standard output measures**

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	350	450	145	445
2011	360	460	150	450
2012	370	470	155	455
2013	375	475	160	460
2014	380	480	165	465

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

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

**1. Output Target**

- # of research papers

2010 :1                      2011 :1                      2012 :1                      2013 :1                      2014 :1

● # of research citations	2010 5	2011 6	2012 6	2013 6	2014 6
● # of extension fact sheets or articles	2010 3	2011 3	2012 3	2013 4	2014 4
● # of workshops/trainings/classes	2010 10	2011 10	2012 10	2013 10	2014 10
● # of brochures	2010 4	2011 4	2012 4	2013 4	2014 4
● # of research or new technology reports	2010 3	2011 3	2012 3	2013 3	2014 3
● # of one-on-one interventions	2010 185	2011 190	2012 195	2013 200	2014 205
● # of surveys	2010 2	2011 2	2012 2	2013 2	2014 2
● # of focus groups	2010 1	2011 1	2012 1	2013 1	2014 1
● # of news media activities (TV and radio)	2010 1	2011 1	2012 1	2013 2	2014 2

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	% of participants gaining skills in identification of insects and related pests
2	% of participants gaining skills in identification of plant diseases
3	% of participants gaining skills in identification of weeds
4	% of participants gaining knowledge about pesticides and their application
5	% of participants reducing indiscriminate use of chemical pesticides
6	% of participants adopting some established IPM practices

**Outcome #1**

**1. Outcome Target**

% of participants gaining skills in identification of insects and related pests

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** 85                      **2011** : 85                      **2012** : 85                      **2013** 85                      **2014** :85

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 216 - Integrated Pest Management Systems

**Outcome #2**

**1. Outcome Target**

% of participants gaining skills in identification of plant diseases

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** 85                      **2011** : 85                      **2012** : 85                      **2013** 85                      **2014** :85

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 205 - Plant Management Systems
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems

**Outcome #3**

**1. Outcome Target**

% of participants gaining skills in identification of weeds

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** 85                      **2011** : 85                      **2012** : 85                      **2013** 85                      **2014** :85

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants
- 216 - Integrated Pest Management Systems

**Outcome #4****1. Outcome Target**

% of participants gaining knowledge about pesticides and their application

**2. Outcome Type :** Change in Knowledge Outcome Measure**2010** 85**2011** : 85**2012** : 85**2013** 85**2014** :85**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 205 - Plant Management Systems
- 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
- 216 - Integrated Pest Management Systems

**Outcome #5****1. Outcome Target**

% of participants reducing indiscriminate use of chemical pesticides

**2. Outcome Type :** Change in Action Outcome Measure**2010** 60**2011** : 60**2012** : 60**2013** 65**2014** :65**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 205 - Plant Management Systems
- 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 #6****1. Outcome Target**

% of participants adopting some established IPM practices

**2. Outcome Type :** Change in Condition Outcome Measure**2010** 60**2011** : 60**2012** : 60**2013** 65**2014** :65**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems

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

#### **1. External Factors which may affect Outcomes**

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

#### **Description**

Guam's horticulture and agricultural activities are constantly being reshaped by the availability of imports, frequency of damaging typhoons, number of tourists and proliferation of exotic pests and diseases. Guam's agricultural land is being replaced with housing, golf courses, hotels, parks, and landscaping. With each shift in land use new pests, diseases and weed problems arise. Typhoons have a major impact on the outcome of our program because of its impact on plants, pests, insect and insect-like pests, diseases, weeds, biological control agents, and cultural practices. Immediately after a typhoon, client concerns shift from garden and farm production to home and farm clean up and restoration. After a typhoon, several months often pass before home gardens and farms are back into productions. Extension services such as the operation of a diagnostic center depends heavily on personnel and support staff for daily operations. When cutbacks occur, adjustments must be made in program delivery to keep the center's doors open.

### **V(K). Planned Program (Evaluation Studies and Data Collection)**

#### **1. Evaluation Studies Planned**

- Before-After (before and after program)
- Comparisons between program participants (individuals, group, organizations) and non-participants

#### **Description**

To evaluate the effectiveness of a planned activity a knowledge based comparison will be made between participants (before and after the presentation) and between participants and non-participants. Comparison will be done using survey questions of knowledge that will be covered during the presentation. The survey will be the same for participants and non-participants and for participant before and after the session. Questions types will be true and false and multiple choice. At the end of the presentation, participants will also be given a series of evaluative questions. Participants will be asked to respond on a sliding scale from strongly disagree to strongly agree.

#### **2. Data Collection Methods**

- Telephone
- Sampling
- On-Site
- Mail
- Journals
- Other (internet)
- Observation

#### **Description**

Data will be collected through field surveys, pesticide licensing examinations, plant clinic submissions, and 4-H presentations. Field surveys and client submissions will be used to measure the impact of invasive pests on Guam and the release of biocontrol agents. Pesticide training and licensing procedures will be used to collect data on pest control practices of

growers. Presentations for the military and 4-H will be used to collect data on basic pest knowledge and control practices used by the general public and youth.

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

Sustainability of Small Scale Swine and Poultry Farms on Guam

**2. Brief summary about Planned Program**

Small-scale farms are the backbone of the animal industry on Guam. Swine farms on Guam typically have one to 20 sows and poultry farms have 25 to one hundred layers. The planned program will utilize an integrated approach to small-scale swine and layer production linked with fruit and crop production. A two - sow unit and 100 layers will be maintained at the Guam Department of Agriculture Breeding Facility for demonstration purposes. Best practices in swine and poultry production will be showcased with emphasis on lowering costs and increasing environmentally sustainable practices. For example, local feeds (grated coconut, tangan-tangan, bananas, breadfruit) will be highly incorporated as the cost of imported livestock feeds continue to increase due to high shipping cost. Dry litter manure disposal will be designed and integrated with crop production in such a way that nutrients will be utilized. Feeders, waterers, nest boxes, and brooders will be made out of local materials.

With the emerging threats of animal diseases around the world, regional and national trade of animals may be suspended. Guam then, should establish and develop its own source of replacement broodstocks. Genetic improvement will be maintained through low-input breeder - hatchery for poultry and bringing frozen semen for swine. This demonstration farm will become an educational tool for farmers to learn and create innovative ideas to apply to their farms. The Guam Department of Agriculture and Guam Cooperative Extension will partner to implement the demonstrations and associated

education programs. Department of Agriculture will provide the service and infrastructure support and GCE will provide the educational and practice development roles. Farmers that are willing to adopt new practices will be encouraged to apply for competitive grants through various SARE grants such as Farmer Rancher Grant, Ag Producer + Ag Producer Grant and many more. Through these grants, if approved for funding, producers will have the opportunity to improve their farm productivity and sustainability.

The facility will also be open for visitation from school children, 4-H clubs, GCC and UOG students. This site will serve as a laboratory classroom for students to learn aspects of swine and poultry production. Life skills program for 4-H related with animals will be conducted at the site. The animals will be displayed at school fairs, environmental campaign drives and village celebration.

Economic and production costs of these small scale operations will be evaluated to pinpoint areas where producers will have to make adjustments in their operational expenses. This "educational facility" approach will be a learning and training center for producers, agriculture extension agents and staff and students in all levels. It will be an opportunity for Extension agents and the agricultural professional community to really showcase what we "preach" by actually collaboratively "running" a "mini" swine and layer unit.

Aspects of food safety, and education of nutrient values of poultry meat and meat by-products will also be emphasized among producers, school children and customers.

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Medium Term (One to five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

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



KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
302	Nutrient Utilization in Animals	15%			
307	Animal Production Management Systems	35%			
601	Economics of Agricultural Production and Farm Management	10%			
703	Nutrition Education and Behavior	15%			
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.	10%			
806	Youth Development	15%			
	<b>Total</b>	100%			

## V(C). Planned Program (Situation and Scope)

### 1. Situation and priorities

The survival of small-scale animal farms on Guam is threatened by several factors. These factors include: (1) the geographical distance of Guam from the US mainland and Hawaii and strict USDA quarantine regulations being imposed on Guam makes the regular replacement of broodstocks very costly and difficult for animal producers. (2) natural disasters such as super typhoons. (3) high costs of feeds. (4) heavy importation of animal products. (5) decreasing numbers of animal producers as current generation retires.

Global threats of outbreaks of animal diseases may cause Guam to close its importation of live animals for replacement broodstocks or meat and meat by-products. If this happens, there will be a severe shortage of protein source if local broodstocks are not available.

In the focus group sessions, it was clearly pointed out that the community wants fresh eggs and fresh poultry meat and pork. The focus group members mentioned that agriculture must be taught at elementary schools so these young people know where all these agriculture produce come from. The advisory board also agreed on the need for this planned program. In fact, the members of the advisory board suggested that

this program be expanded to accommodate subsistence producers who may want to go on commercial scale.

The traditional way of CES in educating and disseminating information is mostly individual contacts / workshops and publications. Mostly stateside reading materials were given out for farmers. The information is difficult for the farmers to relate to because of the wide difference of operations between stateside and Guam farms, there is a need for local demonstrations of best management practices.

The education and training of livestock producers on key sustainable management practices has not had a long lasting impact over the past years because there were no educational programs and tools linked to demonstration which actually show them the aspects of production in a local and regional situation.

This educational facility will serve as a means of producing local replacements for swine and poultry broodstocks (DoAg's service role) and at the same time a learning center for the community to improve husbandry skills and better decision-making abilities on farm management (Extension's education role).

### 2. Scope of the Program

- Integrated Research and Extension

**V(D). Planned Program (Assumptions and Goals)**

**1. Assumptions made for the Program**

Small-scale farms operate in a "hit and miss" system. Due to the size of their farms, they tend to be "less managed" compared to commercial farms. They don't have a long-range plans for their farms; in terms of planning their production forecast, feeding programs and how to handle waste management (a major environmental risk). Yet, they also invest a lot of time, efforts and resources to their farms.

The demonstration facility of this planned program will show the impact on small-scale farms of planning and best management practices. The two-sow unit in the facility will show to producers how sows can reach their maximum productivity by meeting basic needs are met (a well-designed farrowing area, effective waste management minimum nursing period and proper nutrition). The 100 layers unit will show that layers can be productive under low input systems. The housing facility can be an old container van, or a "range management" or portable pens "chicken tractors" for the layers and supplement feeding with non-conventional feeds to reduce feed costs.

The Cooperative Extension Service and the Guam Dept. of Agriculture anticipate success in running a small - scale farm unit through a collaborative partnership pulling local resources demonstration. This partnership and collaboration of both agencies will enable this program to run during the 5 year period. One program directly resulting from this partnership is the animal and plant integration portion of the Conservation Innovation Grant that will be housed at this facility.

**2. Ultimate goal(s) of this Program**

Economic development of the livestock industry by:

1. Running demonstration and education programs to enhance the economic viability of new and existing farm operation. Small-scale farms will continue to contribute to the local economy of Guam by operating sensibly through sustainable practices. Small-scale farms will be the main source of fresh eggs, fresh chicken and fresh pork. Food security will be established in case of closure of imports due to outbreaks of zoonotic diseases in the region or worldwide. Small –scale farms will always be a part of the culture and tradition of the people.

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

**1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2010	1.4	0.0	0.0	0.0
2011	1.4	0.0	0.0	0.0
2012	1.4	0.0	0.0	0.0
2013	1.4	0.0	0.0	0.0
2014	0.0	0.0	0.0	0.0

**V(F). Planned Program (Activity)**

**1. Activity for the Program**

1. A partnership with the Department of Agriculture (service support) and the Guam Cooperative Extension Service (education and outreach) to operate a small-scale livestock and poultry demonstration facility.
2. Conduct workshops and training to local and regional producers at the facility
3. Deliver services and products (Department of Agriculture) and educational and technical support (Guam Cooperative Extension Service) to local and regional producers
4. Conduct applied research and field experiments at the facility and on farmers farms to conduct participatory and demonstrations
5. Conduct field tours to educate students, 4-H club members and Military Kids through tours of the facility

**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Demonstrations</li> <li>● Other 1 (Field trips)</li> <li>● Education Class</li> <li>● One-on-One Intervention</li> <li>● Other 2 (Field demonstrations)</li> <li>● Workshop</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Web sites</li> <li>● Public Service Announcement</li> <li>● Billboards</li> </ul>

**3. Description of targeted audience**

Primary local clients will include former, existing and potential new animal producers (swine and layer) both small-scale and subsistence level. On Guam over the past decade, 1,000+ new agriculture land leases have been signed by the Chamorro Land Trust. Many of the producers possess limited resources and are in desperate need of education and technical support programs.

Second target groups are the island's youth particularly youth at risk and military kids. Life skills program by 4-H that relates to animals care and management will also be conducted at the demonstration site and the animals will be displayed at various schools during schools' celebration of Chamorro Week and fairs. The 4-H military Kids program will also utilize the demonstration farm for hands-on learning on animal care, and integration with gardening..

A third target group is the local and regional agricultural professionals. Regional workshops related to animal production will be conducted at the demonstration farm. Extension agents and local and regional professionals from the different Land Grant Institutions from Micronesia and Northern Marianas will participate in activities at the site. Guam will continue to be the source of swine breeders and replacement chicks for Marianas and Micronesia.

A fourth audience is University agricultural students. The demonstration farm will be utilized as laboratory classroom for students enrolled in agriculture courses (Introduction to Agriculture and Introduction to Animal Science) at the University of Guam.

**V(G). Planned Program (Outputs)****1. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	100	200	240	600
2011	125	250	300	700
2012	100	300	300	500
2013	100	200	300	500
2014	100	200	300	500

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

2010 :0

2011 :0

2012 :0

2013 :0

2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

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

**1. Output Target**

- # of workshops

2010 4                      2011 4                      2012 4                      2013 4                      2014 4

- # of extension publications

2010 2                      2011 2                      2012 2                      2013 2                      2014 2

- # of field trips

2010 4                      2011 4                      2012 5                      2013 5                      2014 5

- # of applied research conducted in demonstration site

2010 2                      2011 2                      2012 2                      2013 2                      2014 2

- # of visitors

2010 150                      2011 150                      2012 150                      2013 150                      2014 150

- # of one to one contacts

2010 100                      2011 100                      2012 100                      2013 100                      2014 100

- # of request for animal displays

2010 5                      2011 5                      2012 5                      2013 5                      2014 5

- # of 4-H / Military Kids programs conducted at site

2010 3                      2011 4                      2012 4                      2013 4                      2014 4

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	# of producers increasing in knowledge and husbandry skills on an integrated to approach to animal and plant farm operations (short term)
2	# of producers adopting demonstrated practices
3	# of producers practicing regular replacements of broodstocks (medium term)
4	# of producers decreasing in feeding imported commercial feeds (medium term)
5	% increase in sustainable small-scale farms (long term)

**Outcome #1****1. Outcome Target**

# of producers increasing in knowledge and husbandry skills on an integrated to approach to animal and plant farm operations (short term)

**2. Outcome Type :** Change in Knowledge Outcome Measure

2010 :50                      2011 : 55                      2012 : 40                      2013 :40                      2014 :40

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 302 - Nutrient Utilization in Animals
- 307 - Animal Production Management Systems
- 601 - Economics of Agricultural Production and Farm Management
- 703 - Nutrition Education and Behavior
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 806 - Youth Development

**Outcome #2****1. Outcome Target**

# of producers adopting demonstrated practices

**2. Outcome Type :** Change in Knowledge Outcome Measure

2010 :5                      2011 : 6                      2012 : 4                      2013 :5                      2014 :5

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 302 - Nutrient Utilization in Animals
- 307 - Animal Production Management Systems
- 601 - Economics of Agricultural Production and Farm Management
- 703 - Nutrition Education and Behavior

**Outcome #3****1. Outcome Target**

# of producers practicing regular replacements of broodstocks (medium term)

**2. Outcome Type :** Change in Knowledge Outcome Measure

2010 :40                      2011 : 45                      2012 : 40                      2013 :40                      2014 :40

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 307 - Animal Production Management Systems
- 601 - Economics of Agricultural Production and Farm Management

**Outcome #4**

**1. Outcome Target**

# of producers decreasing in feeding imported commercial feeds (medium term)

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010** :45                      **2011** : 50                      **2012** : 40                      **2013** :40                      **2014** :40

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 302 - Nutrient Utilization in Animals
- 307 - Animal Production Management Systems
- 601 - Economics of Agricultural Production and Farm Management

**Outcome #5**

**1. Outcome Target**

% increase in sustainable small-scale farms (long term)

**2. Outcome Type :** Change in Condition Outcome Measure

**2010** :10                      **2011** : 10                      **2012** : 10                      **2013** :10                      **2014** :10

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 302 - Nutrient Utilization in Animals
- 307 - Animal Production Management Systems
- 601 - Economics of Agricultural Production and Farm Management
- 703 - Nutrition Education and Behavior
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 806 - Youth Development

**V(J). Planned Program (External Factors)**

**1. External Factors which may affect Outcomes**

- Natural Disasters (drought,weather extremes,etc.)
- Government Regulations
- Economy
- Appropriations changes
- Other (Change in government leaders)

**Description**

1. In any collaboration with local government agencies there is the potential for a complete change over or the upper level of administrative partners every four years.In selecting priorities and conducting needs assessments we work with both the classified staff as well as the administration to provide continuity and sustainability to the POW's programs. Additionally, attempts are made to enter into long term MOU's that may span administrations

2. Local funds for program activities are subject to fluctuations in the local economy. Funding priorities change part of this POW's objective is to monitor these changes and develop collaborative multi-agency strategies to adapt and take best advantage of these changes.

3. In many of our field level projects there frequent (every 5-7 years) occurrence of super typhoons impacts long term demonstrations and projects. The possibility of these typhoons must be accounted for in planning of activities of the demonstrations

## **V(K). Planned Program (Evaluation Studies and Data Collection)**

### **1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)
- After Only (post program)
- Comparisons between program participants (individuals,group,organizations) and non-participants

#### **Description**

1. Post evaluations of perceptions of each educational activity.
2. Follow up on farm visits and phone calls to participants to determine level of adoption of demonstrated or recommended practice.
3. During program, farms will be visited to determine level of adoption of recommended practices and to compare participation farms with non-participating farms

### **2. Data Collection Methods**

- Observation
- Unstructured
- On-Site
- Sampling
- Telephone

#### **Description**



**V(A). Planned Program (Summary)****Program #8****1. Name of the Planned Program**

Our Environment and Home & Urban Landscapes

**2. Brief summary about Planned Program**

The environmental concerns from the community are evident from responses by focus groups and others. To focus the community on home and yard environmental issues and solutions, there needs to be a cooperative partnership to leverage the effectiveness of local agencies supporting the environment and increase the chance for meeting each agency's goals. Recent partnering with the Guam Environmental Protection Agency, the Guam Department of Agriculture, and the Guam Public School system has begun to develop information that can be used to develop programs to address other environmental concerns identified by the community. This effort will look at the issues of drinking water quality, effects of erosion, non-point source pollution, the Guam landfill, and others. The POW will augment grant funds that have been secured for outreach efforts for the conservation and efficient use of water and the reduction of commercial fertilizer application on Guam farms and residential homes and to demonstrate efficient conservation practices and recycling techniques to homeowners. Recognizing that long term demonstrations are difficult for a single organization to support, this POW addresses this issue through a collaborative effort to establish hands-on learning demonstration sites throughout the island. A curriculum will be developed and offered to schools and civic groups, as well as individuals, to encourage better stewardship of our environment. The demonstration sites will serve to show examples of conservation or recycling techniques and allow extension clients to evaluate the effectiveness of the process and allow them to visualize the result of this process. Curriculum devoted to best management practices of the environment will be developed. This curriculum will include conservation planning, best management practices in several areas, including construction of water catchments, soil and water management, reduction of non-point source pollution, erosion control, as well as other supporting practices. The primary target audience are the mayor's offices, local 4-H programs, private and public schools, NGOs, and the general public.

The University of Guam Cooperative Service also supports efforts of the other US Land Grants in the Pacific islands. These islands also face most of the above issues. Curriculum developed for Guam is often appropriate in their context with minimum modification. A multi-state outreach of this program will be to partner with the University of Guam's TADOE program particularly the PEACESAT (satellite, internet and radio communication network) to offer a series of regional satellite workshops to train the trainer on the curriculum and programs developed in this and the New Farmer POW of Guam Cooperative Extension service. Trainers provided with these curriculum tools hold the potential of expanding the outreach of this program across the American Affiliated Pacific islands.

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

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

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
104	Protect Soil from Harmful Effects of Natural Elements	15%			
111	Conservation and Efficient Use of Water	20%			
112	Watershed Protection and Management	15%			
123	Management and Sustainability of Forest Resources	5%			
133	Pollution Prevention and Mitigation	10%			
135	Aquatic and Terrestrial Wildlife	5%			
216	Integrated Pest Management Systems	5%			
403	Waste Disposal, Recycling, and Reuse	15%			
605	Natural Resource and Environmental Economics	10%			
	<b>Total</b>	100%			

### V(C). Planned Program (Situation and Scope)

#### 1. Situation and priorities

Several funded programs in water quality and environmental education have found that the community has major concerns regarding drinking water quality and pollution of its surrounding recreational waters, among others. Additional concerns surrounding Guam's only landfill have spurred a sense of mistrust in the local government regarding environmental issues. The need for outreach programs on traditional and innovative conservation and production practices is heightened by a recent surge in construction. New housing starts with the associated urban yard activities and water use and the military build up places additional pressure on the environment.

The response from the community and our partners in this project, have identified three issues/needs where technological innovation is needed to develop conservation practices that effectively address several environmental concerns unique to tropical islands. These topics are: 1) Water quality for human consumption, and the associated need for conservation. 2) A focus on recycling (composting, mulching of green wastes for ex.). 3) Soil erosion and the direct loss of our soil resources and the secondary damage to island beaches and reefs. Through a couple of grants, funding has been secured to develop and demonstrate innovative practices to address one of the above environmental concerns. Supporting best management conservation practices will also be implemented and included in the educational programs of the project. The innovative practices to be developed, tested and promoted include: 1) Water catchments to include: Garden ponds, for homeowners to receive water from run off in developed areas, and associated water conservation education for the home and yard. 2) Planting

for shade and wind protection to reduce use of electrical energy.3) Composting to reduce organic waste to the landfill and build our soil resources,mulch to conserve water use in home gardens,increase organic matter content in soils through nitrogen fixing hedgerows in urban settings. 3) Use of tanks and pools culturing fish in areas with lower water pressure, to increase availability of water from these pools for irrigation and given their high nitrogen content possibly reduce commercial fertilizer use . 4) Use of soil and water conservation practices and recycling in the home and yard. These demonstrations will be linked to the development of an Environmental Stewardship curriculum that will include a core component on water and its true value to the environment and the community.

A series of satellite workshops will be held utilizing the staff and communication resources of the PEACESAT network across the Pacific Land grants.These workshops will be targeted at training trainers in the curriculum developed under this effort.The primary target will be Extension, K-12 Education and Island Department of Agriculture professionals.The primary goal will be to provide them with curriculum tools and knowledge in how to utilize these materials for their island populations.

**2. Scope of the Program**

- Multistate Extension
- In-State Extension

**V(D). Planned Program (Assumptions and Goals)**

**1. Assumptions made for the Program**

Outreach efforts of agencies supporting environmental protection and sustainability will be strengthened through common goal setting, sharing of resources and collaboration in outreach efforts. People learn best through hands-on learning, observation of successful demonstration projects. Many people rely on television, radio, and the internet for information on many topics. Many standard soil and water conservation practices practiced by the agriculture community should be utilized in urban settings.Many policy makers are ill prepared to address environmental issues. Educational programs are assumed to be able to make a significant positive impact on this issue.

Many of the issues arising from human impact on the environment also are present in many of the American affiliated Pacific islands.Curriculum developed for Guam is often appropriate for these islands with minimum modification.The PEACESAT network has the human and physical resources to enable Guam Cooperative Extension Specialists to hold distance education workshops on the curriculum developed in this program.

**2. Ultimate goal(s) of this Program**

1. Common citizens will contribute to the overall sustainable economic development by gaining respect and awareness for the environment. 2. Schools will introduce at least a portion of an environmental curriculum to their students though out of class field trips and after school 4-H programs.4. Partner agencies will extend Cooperative Extensions outreach by adopting and training island citizens using Extension developed curriculum.5. Partnering with PEACESAT and coordinating with the other Pacific Land Grant Extension professionals in a train the trainer effort will enable island natural resource professionals to learn and utilize the curriculum tools developed in this POW to address natural resource concerns of their islands more effectively.

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

**1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.8	0.0	0.0	0.0
2011	0.8	0.0	0.0	0.0
2012	0.8	0.0	0.0	0.0
2013	0.8	0.0	0.0	0.0
2014	0.8	0.0	0.0	0.0

**V(F). Planned Program (Activity)**

**1. Activity for the Program**

The primary effort will be to develop and enhance the program's curriculum for middle and high school age groups. These same curricula can be used in workshops for other groups. As new modules of the curricula are developed a train-the-trainer workshops will be held in order to build the capacity in this area. These trainers will include project staff, teachers, and staff from government and NGO's and mayor's offices. Outputs of this outreach collaboration each year will include; conducting workshopseach demonstration sites. Additionallyworkshops will be held for the general public comprising the newly developed curriculum. A series of outreach publications on the demonstrated conservation or other environment saving practices will be developed. Several Mini grants to demonstrate conservation or other environmental practices will be awarded each year to schools. Each year several planning meetings between the cooperating agencies will be held to identify priorities in order to jointly apply for grant funding to address these priorities. Funded grants are a planned output of this POW.

A series of train the trainer distance education workshops will be held for the Pacific Island land grant staff, and agriculture and education professional on these island. These workshops will focus on utilizing and adapting the curriculum developed under this POW. These workshops will be facilitated by the PEACESAT network.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Other 1 (mini-grants)</li> <li>● Workshop</li> <li>● Demonstrations</li> <li>● Education Class</li> <li>● Other 2 (Distance Education Workshops)</li> </ul>	<ul style="list-style-type: none"> <li>● Web sites</li> <li>● Newsletters</li> <li>● Other 1 (newspaper articles)</li> <li>● Other 2 (Radio shows)</li> <li>● TV Media Programs</li> <li>● Public Service Announcement</li> </ul>

**3. Description of targeted audience**

School aged children in all grades are more eager to learn about the environment if done in a way to elicit interest areas. Schools on Guam are open to after school education activities for their youth. With over 30 schools in Guam, the participation can be significant and the amount of education and information presented can carry forward in their lives to preserve the environment for future generations. The adult audience comprises senior citizen particularly in the major run senior centers which are ideal locations for demonstrations or displays. Others will receive information through major island fairs or events or through newsletters.

Target audience of the distance education workshops will be Extension, Department of agriculture, and Education professionals in the island with US Land grant institutes (CNMI, FSM, Marshall Islands, Palau and American Samoa).

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

**1. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	40	1000	30	150
2011	40	1000	30	150
2012	40	1000	30	150
2013	40	1000	30	150
2014	40	1000	30	30

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

**Expected Patent Applications**

**2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0**

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

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

**1. Output Target**

- Number of Extension articles

**2010 :2                      2011 :2                      2012 :2                      2013 :2                      2014 :2**

- Number of workshops

**2010 :4                      2011 :4                      2012 :4                      2013 :4                      2014 :4**

- Number of Extension Fact Sheets

**2010 :1                      2011 :1                      2012 :1                      2013 :1                      2014 :1**

- Number of requests for research results and new technology and information

**2010 :2                      2011 :2                      2012 :2                      2013 :2                      2014 :2**

- Number of one to one intervention

**2010 :6                      2011 :10                      2012 :12                      2013 :15                      2014 :15**

- Number of newspaper or popular articles

**2010 :2                      2011 :2                      2012 :2                      2013 :2                      2014 :2**

- Number of Distance Education Workshops for the Pacific Islands.

**2010 :4                      2011 :4                      2012 :4                      2013 :4                      2014 :4**

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Number of participants gaining awareness of environmental issues
2	Number of Government professionals trained in environmental issues and possible solutions and practical applications.
3	Number of schools to introduce an environmental curriculum to their students either as class supplement or through after school 4-H activities or field trips.
4	Number of trainers trained in the use of new curriculum modules
5	Number of train the trainer participants utilizing curriculum in trainings (both on Guam and in the Pacific Islands).

**Outcome #1**

**1. Outcome Target**

Number of participants gaining awareness of environmental issues

**2. Outcome Type :** Change in Knowledge Outcome Measure

<b>2010</b> 200	<b>2011</b> : 300	<b>2012</b> : 300	<b>2013</b> 300	<b>2014</b> :300
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**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 605 - Natural Resource and Environmental Economics

**Outcome #2**

**1. Outcome Target**

Number of Government professionals trained in environmental issues and possible solutions and practical applications.

**2. Outcome Type :** Change in Knowledge Outcome Measure

<b>2010</b> 5	<b>2011</b> : 5	<b>2012</b> : 5	<b>2013</b> 5	<b>2014</b> :5
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**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 135 - Aquatic and Terrestrial Wildlife
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 605 - Natural Resource and Environmental Economics

**Outcome #3**

**1. Outcome Target**

Number of schools to introduce an environmental curriculum to their students either as class supplement or through after school 4-H activities or field trips.

**2. Outcome Type :** Change in Action Outcome Measure

**2010 :** 4                      **2011 :** 5                      **2012 :** 5                      **2013 :** 5                      **2014 :** 5

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 135 - Aquatic and Terrestrial Wildlife
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 605 - Natural Resource and Environmental Economics

**Outcome #4**

**1. Outcome Target**

Number of trainers trained in the use of new curriculum modules

**2. Outcome Type :** Change in Action Outcome Measure

**2010 :** 5                      **2011 :** 10                      **2012 :** 10                      **2013 :** 10                      **2014 :** 10

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 135 - Aquatic and Terrestrial Wildlife
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 605 - Natural Resource and Environmental Economics

**Outcome #5**

**1. Outcome Target**

Number of train the trainer participants utilizing curriculum in trainings (both on Guam and in the Pacific Islands).



**2. Outcome Type :** Change in Knowledge Outcome Measure

2010 :6

2011 :8

2012 :10

2013 :12

2014 :12

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 135 - Aquatic and Terrestrial Wildlife
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 605 - Natural Resource and Environmental Economics

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

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

**Description**

In many of our field level projects there frequent (every 5-7 year) occurrence of super typhoons impacts long term demonstrations and projects. The possibility of these typhoons must be accounted for in planning of activities of the demonstrations. Funding priorities change part of this POWs objective is to monitor these changes and develop collaborative multi agency strategies to adapt and take best advantage of these changes.

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

- Retrospective (post program)
- During (during program)
- After Only (post program)

**Description**

The evaluation of this POW will be based on surveys of practices and attitudes towards the environment.Students involved or present at events, will be surveyedto gauge their change in knowldege. Evaluation studies will consist of surveys of workshop participants. Surveys will be taken during workshop and other training sessions. Selected participants will receive follow-up calls, andvisits. Post evaluations of perceptions of each educational activity. Follow up visits and phone calls to participants to determine level of adoption of demonstrated or recommended practice.

**2. Data Collection Methods**

- Observation
- Structured
- Other (focus groups)
- On-Site
- Telephone
- Tests

**Description**

Data collection will primarily be in the form of attendees and survey results. Additional data collection may include the number of environmental related news articles, environmental issues addressed by NGO's and other groups and also with survey data. After educational activity follow up visits (field observations) and phone calls (survey telephone) will be used to identify adopted practices. For some activities in session and post tests will be used to identify knowledge gained. Structured interviews will be used to identify partner agencies' staff perceptions of improved knowledge and application. Focus will be used to document perceptions of key partner agency staff of the program impact on clients.