

Annual Report for Accomplishments and Results FY-2005

UNIVERSITY OF GUAM
COOPERATIVE EXTENSION SERVICE

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I. Planned Programs

Executive Summary

The University of Guam Cooperative Extension Service remains the institutional leader in making the University of Guam and its Land Grant mission relevant. We engage the entire University Community through a multi-disciplinary approach to address the complex issues facing the people of Guam.

The University of Guam Cooperative Extension Service has significantly increased its partnership and collaboration with Government of Guam agencies such as Agriculture, Labor, Mental Health and Substance Abuse, Public Health, Bureau of Statistics and Plans and the Chamorro Land Trust Commission. The partnership has led to a stewardship that has increased the capacity of these agencies to respond to the needs of targeted audiences and clientele. Furthermore, the partnerships have increased and leveraged resources.

The University of Guam Cooperative Extension Service core programs include Agriculture and Natural Resources (ANR), with activities focused on small farm viability, agriculture for the next generation, niche markets, integrated pest management, invasive species, sustainable agriculture and soil and water conservation. Economic and Community Systems (ECS) conducts activities in emphasis areas that include community resource development, multi-cultural and diversity issues, disaster preparedness, and information technology. Family, 4H, Food and Nutrition and Education Program (EFNEP) core programs include, 4H and Youth Development, adding value to new and old agriculture products, food quality and food safety, and human nutrition.

Our effort this past year and for the next five years have focused on core priorities of educating individuals and families, supporting agriculture and environment and strengthening communities

National Goal One Extension efforts have focused on supporting agriculture and the environment by targeting our efforts on educating stakeholders on agriculture best management practices, seeking potential funding streams, and incentive programs and opportunities to support farmer endeavors. One facet of this effort has been finding and imposing disease insect control methods for crop and ornamental plants to reduce pesticides inputs when practiced by farmers at large to reduce effects on the environment. Another feature includes activities to investigate new and existing cultivars and crops for various uses and added value. For example, the use of purple sweet potatoes as a natural colorant holds promise for food manufacturers and consumers.

Educating individuals and families by providing preventive nutrition education, proper food handling and food safety education to reduce incidences of chronic diseases and foodborne illness has been the focus of our efforts for National Goal 2. In 2005, the Guam EFNEP has reached over 4,000 people in preventive nutrition education and food safety. In addition, program participants demonstrated increased awareness, knowledge and improved attitudes in nutrition education programs.

Strengthening communities by building capacity of local government entities to influence the context of responsive policy development have driven our activities in 2005 under National Goal 5. The key theme, Socio Economic Data Information for Community Resource Development

builds capacity for data collection and analysis for Government of Guam agencies to plan and direct policy for community economic development. As a result, three local government agencies now have a protocol for examining labor force conditions and trends to complement policy planning and economic development. Other areas of focus under this Goal addressed issues related to accessibility to health insurance, assessing demands for alcohol and drug treatment, and self-help initiatives to improve the well being of individuals and families. Efforts to expand our 4-H and Youth programming include our work with the U.S. Military that help youth create fellowships with peers who share similar stresses related to the deployment of their parents.

A factor that has played a part in our activities is the change in island demographics. Identifying population dynamics and trends are one of this year's efforts for UOG CES. Guam can expect a 16.7% population increase to 180,692 by 2010.¹ 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. Current data for Extension programming shows forty percent of the population is under 20 years old, twenty-three percent of the population lives in poverty, and is ethnically composed of 37% Chamorro, 27% Filipino, 7% Caucasian and 29% others. In addition to these figures, recent decisions by the U.S. military to move military bases from Japan to Guam will result in an estimated 40,000 military personnel and their dependents moving to Guam in the first two years of base relocation. The population dynamics will force us to begin expanding our clientele beyond the traditional Chamorro male over age 35²

The accomplishment report in the following section (II) are selected highlights of the University of Guam Cooperative Extension Service activities and outcomes for the 2005 reporting year.

¹ <http://www.pacificweb.org>

² 2006 University of Guam Cooperative Extension Interest Survey

II. Report of Accomplishments

National Goal 1: An Agricultural System that is Highly Competitive in the Global Economy

Executive Summary

Growers of fresh local produce faced severe competition from the U.S. mainland and Asia. More than 90 % of Guam's food supply continues to be imported from the U.S. West Coast and Asia. Imported produce has several advantages over locally grown produce. A few of these advantages include reliability of delivery, graded products, consistent maturity and quality of products. On the other hand, locally grown produce have benefits that imported food does not. For example, locally grown produce is often fresher with many of the cultivars and crops tailored to the ethnic tastes of Guam's populations. Our efforts this past year have focused on facilitating an increase in local agricultural products through a three-pronged strategy. First, researchers continue to investigate new cultivars and crops for various uses and added value. Given the predominance of tourism in our economy, a major added value is providing unique local produce clearly identified as island grown. Second, researchers are finding and imposing disease and insect control methods for crop and ornamental plants aimed at reducing pesticide inputs when practiced by farmers at large. Third, extension agents are targeting their efforts on educating stakeholders on agricultural best management practices, seeking potential funding streams, government incentive programs and opportunities to support their endeavors.

Key Theme: Small Farm Viability

Highlight (1) Alternative Housing for Livestock and Poultry for Guam and Micronesia

a. Brief Description:

A typical livestock and poultry house in Micronesia is made up of light materials of wood and galvanized iron sheets that are easily blown away by typhoons. With two to three typhoons occurring in the region each year, the damages sustained to animal and poultry housing has become too costly, affecting the production of eggs and the economic viability of producers. It is critical for producers to find alternative housing for livestock and poultry that is typhoon resistant.

Extension has identified poultry and livestock housing that is typhoon resistant by using metal container vans and/or inoperable buses. These massive, heavy metal structures can withstand typhoon winds when anchored securely to ground. In collaboration with the Guam Department of Agriculture, demonstrations on alternative poultry and livestock housing were conducted. Seventy people participated in a combination of site visits and housing alternatives workshops.

b. Impact / Accomplishments:

Over 15 people from the Commonwealth of the Northern Marianas attended a workshop and brought the same extension practices to their respective islands.

Students majoring in agriculture visited the demonstration site and had hands-on experience on poultry production increasing their awareness and knowledge on alternative housing options. This demonstration site is on-going and is now funded by local programs.

Fourteen local farmers purchased 15 heads of chicken each; the community benefited from the production of fresh eggs and fresh chickens. As a result, there is a high demand for these fresh poultry items.

Data from an exit survey of 70 participants showed an increase in awareness and understanding of alternative options for housing and operations. Publications on these practices are currently on review.

c. Source of Funding: Smith-Lever**d. Scope of Impact: Guam, Micronesia, Commonwealth of the Northern Mariana Islands****Key Theme: Adding Value to New and Old Agricultural Products****Highlight (1) Value of purple sweet potatoes (*Ipomoea batatas*)****a. Brief Description:**

Unique tropical and subtropical fruits and vegetables possess potential values as food ingredients for Guam to benefit food industries and consumers. The anthocyanin in local purple flesh sweet potatoes (*Ipomoea batatas*) is both a natural pigment and an antioxidant possessing health benefits. Studying the stability of anthocyanins in purple sweet potatoes to pH, heat and light may lead to a new application for purple sweet potatoes in the development of value added food products. Purple flesh sweet potatoes can be directly processed into value added products with natural color. As a result, natural sweet potato color ingredients can improve the color of some food products while providing an added health benefit.

b. Impact/Accomplishments:

Through research by extension food specialists, it was discovered that the anthocyanins and the color of purple sweet potatoes were stable during steaming and dehydration. The information allows researchers or food manufacturers to consider applying purple sweet potato powder or anthocyanin extract in food products in place of synthetic colorants.

c. Source of Federal Funds: Smith-Lever, Hatch**d. Scope of Impact: State Specific**

Highlight (2) Processing Tropical and Subtropical Food Products

a. Brief Description:

Various tropical and subtropical crops grow well in Guam's tropical environment. Food technology and processing information were provided to individuals who were especially interested in processing local agricultural products to food products. Over 500 students were taught that locally grown fresh produce (bananas, sour sop, mango, and watermelon) are easily processed into healthy and tasty smoothies, an item which is easily marketed to the large local tourism industry.

b. Impact/Accomplishment:

The food technology and food processing information increased participants' knowledge and options to develop and expand their enterprises. Local consumers increased their awareness of using local produce in simple processes to create value added products

c. Source of Funds: Smith-Lever

d. Scope of Impact: State Specific

Highlight (3) Tropical and Subtropical Fruit Food Product Development

a. Brief Description:

Ninety percent of foods consumed on Guam are imported from the U.S. mainland or from other Asian countries. Extension food specialists developed a special program to enhance training in general food and agricultural sciences. Five students majoring in agriculture were trained in food product development to use local tropical and subtropical fruits and vegetables to process health snacks for school children. The scholars used the dehydration technology to develop purple sweet potato chips, banana chips and breadfruit chips.

b. Impact/Accomplishment:

The five students in this special program gained knowledge and developed research ability in food product development. The scholars work was featured in local and regional print media. People on the Western Pacific islands increased their awareness and knowledge of processing tropical fruits and vegetables for healthy food snacks at home.

c. Source of Federal Funds: Smith-Lever

d. Scope of Impact: Multi-State Extension

Key Theme: Invasive Species**Highlight (1) Survey of Invasive Insects of Micronesia**

a. Brief description:

During 2005, 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. Multi-disciplinary collaborators are involved with GISAC. The Committee has established a website at <http://gisac.guam.net> as a repository for information on Guam's invasive species.

Also, during 2005, the University of Guam became part of the Western Plant Diagnostic Network (WPDN) (<https://www.wpdn.org>). In October, collaborators from the Guam Department of Agriculture, presented a WPDN-sponsored First Detector Training Workshop. Thirty-eight participants were certified as "First Detectors" on what to do when they suspect they have found a new invasive species on Guam. Invasive insect images can be downloaded from:

http://gisac.guam.net/index.php/Image:Chilades_pandava_adult.jpg

http://gisac.guam.net/images/0/05/Daphnis_nerii_adult.JPG

There have been no comprehensive insect surveys in Micronesia for many years. As a result, pest records do not accurately reflect the fauna, nor describe the animal/plant – arthropod relationship existing within Micronesia. Part of the reason for the relatively limited bio-control activities in the region is the lack of knowledge on which natural enemies would be best suited for release in the humid tropical islands of Micronesia. This project used a series of systematic evaluation of the invasive pests and surveys of possible bio-control agents. These surveys and tools provide estimations of the risk/benefit associated with the particular host – natural enemy. This data generated better use of the limited funds available for pest mitigation by targeting systems with the highest possibility for success. Arrangements are being made to provide project collaborators with access to the CABI Crop Protection Compendium. This tool will help improve pest identification skills within Micronesia.

b. Impact/Accomplishment:

Two new invasive insects were identified on Guam during 2005. Larvae of the oleander sphinx moth, *Daphnis nerii*, were found defoliating oleander, a common ornamental plant. Larvae of the cycad blue butterfly, *Chilades pandava*, were found feeding on Guam's endemic cycads which were already struggling to survive infestation by the Asian cycad scale, an invasive insect which had arrived just two months earlier.

A small lady beetle, *Rhyzobius lophanthae*, which preys on the Asian cycad scale was imported from Maui, mass-reared, released on wild cycads, and redistributed throughout Guam. These beetles have become very common in some areas and are starting to protect cycads from scale infestation.

c. Source of Funding: USDA CSREES Special Project TSTAR, Smith-Lever

d. Scope of Impact: Multi-State integrated research and extension GU ROP CNMI FSM RMI

Key Theme: Sustainability through Soil and Water Conservation**Highlight (1) Professional Development in Sustainable Agriculture**

a. Brief description:

The local sustainable agriculture Professional Development Program held workshops to promote the Western Region Sustainable Agriculture Research and Education (WSARE) multiple grant programs. Several workshops and focus groups were held to promote the Farmer Rancher Grant Program, Agriculture Professional + Agriculture Producer Grant Program, and the Professional Development Program. Efforts during this reporting period included conducting needs assessments of the agriculture and natural resource industries, providing seed money for projects relating to alternative agricultural practices, promoting the regional grant programs and providing support and follow up to existing grants. Another effort includes development and implementation of the first series of modules of “new curriculum” for limited resource lease-holders under the Chamorro Land Trust Commission agriculture lease program.

Over 150 school children, 8 teachers and staff from village mayors’ offices and other local agencies visited a small-scale agricultural entrepreneurial demonstration for youth. The demonstration included the construction of a chicken tractor and its use as a no-till gardening technique.

b. Impact/Accomplishment:

The impact of these workshops is demonstrated in the seven WSARE funded grants that Guam received in 2005. One impact of the focus group sessions was the establishment of partnerships among the University of Guam Cooperative Extension, the Guam Department of Agriculture and the Chamorro Land Trust Commission, which resulted in a \$512,000 Conservation Innovation Grant through the National Natural Resource Conservation Service competitive RFP.

One hundred fifty elementary aged children increased awareness of agriculture activities on the island. This generated interest among the public in setting up more demonstrations across the island next year and the development of an extension publication on “Chicken Tractors as a Gardening Tool.” The Guam Department of Agriculture has also adopted chicken tractors as weeding tools on their demonstration organic farm

b. Source of Funding: Smith-Lever 3(d); Western Regions Sustainable Agriculture Research and Education Program.

d. Scope of Impact: State Specific

Highlight (2) Water Quality Awareness and Education

a. Brief Description:

The water issues of Guam and other islands were elicited and reported last year. Two programs have been implemented to increase awareness of the importance of water quality, the effects of pollution and water conservation. The annual Island Wide Science Fair has a new “water quality” category with separate recognition and awards to students. The winners of this category received recognition in local media,

This past year a coastal water monitoring program was established and managed by volunteers from the local high schools, solicited through marine science teachers. Water testing kits were provided to 32 volunteer students and a protocol for monitoring and reporting results was established

b. Impact/Accomplishments:

This project generated increased numbers of youth focusing their science projects on water quality issues. Participants increased their critical thinking skills by providing solutions and creative ideas to water quality.

c. Source of Funding: Regional Water Quality, Smith-Lever

d. Scope of Impact: Multi-State Extension

Key Theme: Integrated Pest Management (IPM)

Highlight (1) IPM Diagnostic Center

a. Brief Description:

The key components that make up any IPM program include pest identification, efficacy of control practices (chemical, biological, and cultural) and environmental impact. In Guam, the focus of most of the IPM activities is in plant diagnostics and developing a Plant Diagnostic Education Center. The Center advises growers on all causes of poor plant health: plant diseases, insects, weeds, and environmental factors.

b. Impact/Accomplishment:

With the sharing of funds and job responsibilities, an operational plant diagnostic clinic, with its own half time extension associate is now in place. The clinic registers and monitors the majority of the plant diagnostic samples that are brought to the university. The clinic also helps in outreach by providing space and use of equipment for courses and workshops.

Source of Funds: Smith-Lever (3D)

Scope of Impact: Guam and Western Region

Highlight (2) Pesticide Safety Education Program (PSEP)

a. Brief Description:

The safe use of pesticides is paramount to the safety of agricultural workers, farmers, and the water resources of the Island. The PSEP teaches the safe application of all pesticides and recommends certification of successful participants to the Guam Environmental Protection Agency. Curriculum was developed and improved for several categories of certification under the USEPA regulations. This project continues to have high participation rates.

b. Impacts/Accomplishments:

Approximately 100 participants have completed the training in 5 areas of pesticide applicator certification. More than seventy percent of training participants passed the course. Monitoring of illegal use of pesticides has also been done and resulted in the removal of illegal pesticides from 1 commercial farm.

c. Source of Funding: Smith-Lever

d. Scope of Impact: State-Specific

National Goal 3: A Healthy, Well-Nourished Population

Executive Summary

Program activities this past year have focused on providing preventive nutrition education programs and food safety education to Guam communities. Guam's vital statistics continues to show high numbers of chronic diseases such as diabetes, cardiovascular disease and cancer as primary causes of deaths in Guam. Because of the rise in preventable disease related to diet, there is still great need for preventive nutrition education programs. The Guam EFNEP programs plays a unique role in helping youth and families make better lifestyle choices for healthier eating and staying fit.

Every year the Guam Department of Public Health reports at least 50 outbreaks and 150 cases of food-borne diseases. The frequency of food-borne illnesses on Guam is much higher than that in the United States mainland. The tropical climate and variety of ethnic foods increase the risk of food-borne illness. Lack of food safety knowledge and poor food handling practices are reasons for the high rate of food-borne disease on Guam.

Key Theme: Human Nutrition and Human Health

Highlight (1) EFNEP Programming

a. Brief Description:

Thirty-nine adult EFNEP client families attended the adult nutrition education workshops. Over three-fourths (87%) of the attendees successfully completed the program and participated in five contact sessions at 10 hours per client totaling 340 contact hours. Results from entry and exits sheets indicated that 59% of families' enrolled reported participation in

one or more food assistance program and the remaining 41% were encouraged to seek assistance as needed. Post-test results showed a 97% increase in consumption of more than 4 servings of fruits and a 74% increase in consumption of vegetables.

b. Impact/Accomplishments:

Results from the summary report of the number of practices improved within clusters of questions from the EFNEP Behavioral Food Check List given at entry and exit are as follows:

Food Resource Management Practices - Seventy eight percent of homemakers at exit showed improvement in one or more food resource management practices - planning meals ahead of time, comparing food prices, using grocery lists when shopping, and not depleting food stores before the end of the month. Eighty nine percent of homemakers showed, at exit, improvement in one or more nutrition practices in the areas of planning meals, making healthy food choices, preparing foods without adding salt, reading nutrition labels, and making sure their children eat within two hours of waking.

Food Safety Practices – Eighty one percent of participants showed improvement in one or more practices such as thawing and properly storing foods. Also at exit, **85%** of participants demonstrated acceptable food safety practices.

Nutrition Education – One thousand four hundred sixteen elementary school-aged children participated in the EFNEP nutrition education lessons ranging from one meeting session to five. Eighty two percent of 137 participating youths showed an increase in knowledge of the essentials of human nutrition indicated through a pre & post-test evaluation. Over 89 adult volunteers (teachers, aides and school nurses) assisted in the youth nutrition education workshops. To ensure continued reinforcement of making healthy food choice, volunteers served the EFNEP program by providing educational service, support service, and as a middle manager.

Two hundred and ninety-three indirect contacts were established during annual health fairs, program promotions, and one-time nutrition workshops.

c. Source of Funding: CSREES EFNEP, Smith-Lever

d. Scope of Impact: State Specific

Highlight (2) Healthy Living in the Pacific

a. Brief description:

The Healthy Living in the Pacific project used a community-based participatory approach to reduce disparity of chronic diseases prevalent among Pacific Island peoples. The project addressed these disparities by focusing on cultural and other values which influence lifestyle choices.

To increase student knowledge and improve attitudes in nutrition, diet, physical activity, and healthy lifestyle behaviors a locally designed placemat was introduced to Guam elementary public school students. The placemats contained the updated USDA “MyPyramid.gov” as well as the updated Dietary Guidelines for Americans. Placemats were distributed from June to August 2005.

b. Impact/accomplishment:

Through the project 217 elementary students and 21 teachers increased their knowledge and improved their attitudes about healthy eating and healthy food choices. In addition, skills and knowledge improved in alternative food choices of locally available food. Children applied dietary guidelines in meals and snacks increasing their fruit and vegetable consumption and fitness levels.

c. Source of Funding: NRI, Smith-Lever**d. Scope of Impact:** Western Pacific Region**Highlight (3) The Food Safety & EFNEP Workshop: An Update on Competitive Programs in Food Safety and the Expanded Food and Nutrition Education Program****Brief description:**

The University of Guam Cooperative Extension Service co-hosted a regional “Food Safety and EFNEP Workshop” for those working with extension EFNEP programs in food, nutrition and food safety. The workshop provided updates to participants on the latest EFNEP programs and food safety regulations, grants and reporting requirements.

b. Impact/Accomplishment:

Participants gained increased interaction and networking among the workshop participants and National Program Leaders. Participants increased awareness on competitive programs in food safety, tips on writing integrated food safety proposals, and integrated food safety projects. The project developed and established multi-disciplinary teams in nutrition and food safety focused on competitive grantsmanship to support their nutrition and food safety programs.

c. Source of Funding: Smith Lever and NIFSI/NRI (National Integrated Food Safety Initiative/National Research Initiative)**d. Scope of Impact:** Western Pacific Region**Key Theme: Food Quality and Food Safety****Highlight (1) Effect of Processing and Storage on the Biofunctional Quality of Noni****a. Brief Description:**

Noni (*Morinda citrifolia* L.) is a tropical and subtropical plant grown in the Pacific islands. Noni leaves and fruits have been used traditionally as a folk medicine to treat a broad range of diseases for over 200 years. Current processing and storage of noni products may affect biofunctional quality of noni products. The effect of various processing and storage methods on the free radical scavenging activity of noni was determined. Effects of processing and storage significantly decreased the free radical scavenging activity of noni products. Also, noni powder or fresh frozen noni juice can maintain the substantial antioxidant properties versus traditional fermented noni juice.

b. Impact/Accomplishment:

This research information provides instructions to noni manufacturers in the Pacific islands to improve quality of noni products and benefit noni consumers around the world.

c. Source of Funding: Smith-Lever**d. Scope of Impact: State and International Specific****Highlight (2) Consumer Food Safety Education****a. Brief Description:**

Over 100 adults and children attended six workshops on “Food Safety Principles and Food-borne Illness Prevention.” Also, hand washing handouts were distributed to more than 100 consumers at the Public Food Safety Education Fair sponsored by the Guam Food Safety Task Force. A brochure, developed by extension food specialist titled “Key Food Handling Behaviors to Prevent Food-borne Illness” was published and disseminated. To assess consumer’s food safety knowledge, attitude and food handling behaviors, over 400 self-administered surveys were conducted throughout the island based on the population distribution from the 2000 U.S. Census. Consumers were asked thirty-two behavioral and ten attitude questions in areas of personal hygiene, cross-contamination, proper cooking, time and temperature control and unsafe food source. One hundred and eighty collected surveys indicated that consumers were knowledgeable about personal hygiene and cross-contamination but lack knowledge in proper cooking, time and temperature control and unsafe food source. Consumer’s attitude in proper food handling habits was not consistent among participants.

b. Impact/Accomplishment:

Pre and post tests results in the consumer food safety workshops showed that consumer’s food safety knowledge increased by 20% in personal hygiene, 30% in temperature/time control, 10% in cross-contamination, and 40% in avoiding unsafe food sources. A hand washing presentation and dissemination of food safety brochures increased consumers’ awareness in improving food-handling practice to reduce the risk of food-borne illness on Guam. The information suggests that consumer food safety education on Guam should focus on time and temperature control, proper cooking and unsafe food source to improve consumer’s food handling attitude and behavior.

c. Source of Funding: Smith-Lever**d. Scope of Impact: State Specific**

Highlight (3) Unsafe Traditional Food “Kelaguen”

a. Brief Description:

More than 60% of food-borne illness on Guam occurred in private homes. Traditional food “Kelaguen” made from raw or partially cooked meat with lemon juice or lemon powder was associated with 10% of reported food-borne illnesses on Guam. Most Kelaguen was not served below 4°C at home. Testing of Kelaguen prepared by vendors and individuals indicated that the amount of lemon juice needed to meet or lower to a pH level of 4.2 was much lower than required. Vendors and individuals preparing Kelaguen must use the required amounts of lemon juice to lower Kelaguen pH to 4.2 to control pathogen growth. A combination of lemon powder and lemon juice is strongly recommended in Kelaguen preparation.

b. Impact/Accomplishment:

Results increased consumer’s awareness of problems in Kelaguen handling practices and the potential risk of food-borne illness associated with current Kelaguen recipes. There was an increase in local research in generating food safety information for consumers in the preparation and storage of Kelaguen. Consumers on Guam increased their awareness and knowledge on Kelaguen storage and preparation to control pathogen growth to reduce food-borne illness on Guam.

c. Source of Funding: Smith-Lever

d. Scope of Impact: State and Pacific Region Specific

National Goal 5: Enhanced Economic Opportunity and Quality of Life for Americans**Executive Summary**

Efforts this past year have focused on building capacity for data collection and analysis to government agencies for responsive policy development. This effort is predicated on the reality that policies are more responsive in a data supported environment. Guam residents face myriad social, economic, environmental and political challenges today. As a diverse community in both population and financial well being, Guam must be many things to many people with a limited amount of space and resources to support all. Some of the challenges faced by residents are due to the high cost of living, the limited amount of good paying jobs, and an undiversified economy. To respond to these challenges, many families now find both spouses working and away from home, at times working two jobs to make ends meet. The social implications of this situation have led to stress on families; putting youth and children at risk generating a need for the University of Guam Cooperative Extension to strengthen and enhance youth life skills to cope with the stress in their lives.

Key Theme: Community Development**Highlight (1) Socio-Economic Data Information for Community Resource Development**

a. Brief description

From March to September 2005, the Household Income and Expenditure Survey (HIES), assembled data on the financial well-being of Guam's population. Survey results taken from a stratified random sample of 1024 households, provided an assessment on the economic well-being of the population measured by the relationship of the average earned income to the household's ability to purchase staple commodities. The survey results also provided a description of characteristics related to employment, unemployment, ethnic composition, language use and other demographic characteristics. Government entities and agencies will now have the capacity to plan and direct policy toward community economic development. Three extension associates were trained in U.S. Census Bureau standards for data processing, editing, and data dissemination using the Census and Survey Processing System (CSPPro).

Additionally, a Current Labor Force Survey (CLFS) assessed the economic, employment and labor force conditions of the Island. The survey with a sample of 900 households focused on the results of the number of people underemployed and unemployed on Guam. Twenty-five enumerators were trained in U.S. Census Bureau Standards. Government agencies and entities will now have the capacity to plan and direct policy toward community economic development.

b. Impact/Accomplishment

Over 15 government administrators and staff were trained in CSPPro systems and have adopted the software package for data processing and analysis for use in reporting to Government of Guam administration and federally funded programs. As a result of this project survey results are now made available to economic planning entities. Three Government of Guam agencies have used data to increase applications for federal grants. Additionally, the Guam Department of Labor has now implemented a protocol for examining labor force conditions and trends to complement policy planning and economic development.

c. Source of Funding: U.S. Department of Interior, Guam Department of Labor, Smith Lever

d. Scope of Impact: Multi-State Extension

Highlight (2) Accessibility to Health Insurance

a. Brief Description:

Growth in health insurance costs outpaced inflation on wages while rising health care costs are pricing more consumers and employers out of coverage. Through collaboration with the Guam Department of Public Health, a "Program for the Uninsured Project" was initiated to assess the number of uninsured people on Guam. Over 31 stakeholders participated in seven focus group sessions that assessed the characteristics of insured and uninsured people in relation to minority groups, ethnicity, demographics and socio-economic status.

b. Impact/Accomplishment:

There was increased awareness and sensitivity on issues relating to insurance coverage, the consequences of living without health insurance, possible policy options, and the barriers faced by private-employers. Over 70 government and private business leaders and health insurance companies participated in a Guam Health Summit to address possible policy options in removing the barriers surrounding accessibility to health insurance and the needs of indigents. A final report and proceedings will be presented to public and private health community leaders, public legislators and other Government of Guam officials.

c. Source of Funding: U.S. Department of Public Health & Human Services, Health Resources and Services Administration (HRSA), State Planning Grant (SPG), Smith-Lever

d. Scope of Impact: Multi-State Extension

Highlight (3) Drug & Alcohol Needs Assessment Project**a. Brief description**

This project provided technical assistance services assisting the Drug and Alcohol Treatment Branch at Guam Department of Mental Health and Substance Abuse (DMHSA) and their cooperative inter-agency steering committee by preparing a series of five need assessment report documents as required by the Guam's Substance Abuse Prevention and Treatment (SAPT) Block Grant. The inter-agency steering committee consists of treatment program representatives from Sagan Na'homlo (Sanctuary, Inc.), Oasis Empowerment Center (Elim Pacific Ministries), Lighthouse Recovery Center (Salvation Army), Superior Court of Guam, Guam Department of Corrections, Guam Police Department, Guam Memorial Hospital, Guam Department of Youth Affairs, Guam Public School System, and private mental health practitioners.

Completed Report: *An Assessment of Need Demand for Alcohol and Substance Abuse Treatment on Guam*. Available data from Guam's surveillance survey systems and program records or annual reports of steering committee partners were compile to document the incidence and prevalence of drug and alcohol abuse and alcoholism in the Territory of Guam.

In process is the collecting of data for *An Assessment of Treatment Services and Program Resources for Alcohol and Substance Abuse on Guam*. Which is a detailed description on current substance abuse prevention and treatment activities on Guam. Program resources and service capacities are being assessed with data information including (but not limited to) numbers of professional and support staff, professional credentialing of staff, types and nature of program services offered, number and demographic profile of clients served annually, and data as determined by the steering committee.

b. Impact/Accomplishment:

Collaboration in assessment has resulted in: (a) increased needs of assessment work in surveillance and survey work, (b) identification of research needs, (c) identification of program needs, (d) increased awareness of alcohol and substance abuse treatment on Guam, (e) increase in the number of collaboration and cross planning within agencies and groups.

- c. Source of Funding: Federal funding through Local Department of Mental and Substance Abuse; Smith Lever
- d. Scope of Impact: Multi-State Extension

Highlight (4) PEACE Project

a. Brief description

The PEACE Project is a community based program designed to promote and facilitate self-help initiatives and programs at village territorial and regional levels through the production of research-based information, evaluations, educational materials, learning events, and resource collaboration that enhance the capacity of culturally diverse people to take action to improve the well being of individuals, families, the community and the environment. Activities included:

- Completed the process evaluation of the first year State Incentive Planning Grant that organized the Guam PEACE council: October 26, 2005 Report “Process Evaluation of Guam’s State Incentive Planning Grant” presented to PEACE Council.
- Conducted training for the PEACE Council and community level staff members. Conducted workshops with PEACE staff and training of District Mentors in: (1) Program Evaluation, (2) Logic Modeling for Effective Planning, (3) Conducting The Community Leaders Readiness Survey; and Power Point Presentation on National Cross-Site Evaluation to PEACE Council
- Collaborated with the community coalition to draft a Guam Strategic Plan for substance abuse prevention. Designed Draft Monthly Activity Report to collect evaluation data consistent with the National Cross-Site Evaluation, facilitated the production of the Guam SPF-SIG Theory Based Framework and Logic Model - Accepted by PEACE Council October 26th 2005

b. Impact/Accomplishment:

There was (a) an increased community collaboration across programming areas in youth and community programs at the grassroots level, (b) increased technical assistance and capacity building on strategic planning and needs assessments and evaluation, (c) adoption of the logic process model, (d) increased public awareness of community based programming and efforts.

- c. Source of Funding: Strategic Prevention Framework State Incentive Grant, Smith-Lever
- d. Scope of Impact: Multi-State Extension

Key Theme: Youth Development/4-H**Highlight (1) Military Kids(U.S. Army)**

a. Brief description:

In collaboration with Guard and Reserve Units, 4-H conducted one military training to increase knowledge and understanding of the essential elements of 4-H programming to employees from Child and Youth Services. With the assistance of 15 youth volunteers, 9 Hero Pack presentations and workshops were conducted on such topics as food and nutrition, photography and horticulture. Three additional Hero Pack activities were conducted focused on Hero Pack distribution to Guard and Reservist personnel returning to Guam from deployment. A total of 224 Hero Packs were distributed from the original 250 received by 4-H. From an informal assessment, the packs were well received and it appears to be an item that we can continue to provide our Guard and Reservist as they return to Guam from deployment.

b. Impact/Accomplishment:

Military Training: Nine people increased knowledge and awareness of establishing, supporting and maintaining clubs. Participants applied knowledge by adopting processes to establish 4-H clubs; a total of 12 clubs were established at the Anderson Air Force Base. Through 2 life-skills events, 80 youth increased their awareness and knowledge of science, astronomy, sustainable agriculture and physical education resources. From oral interviews with youth, there has been increased appreciation for the civilian community and Guam's culture and environment.

Hero Pack Events: Fifteen youth volunteers assisted in conducting 9 presentations in food and nutrition, photography, horticulture and Artful Crafts. One hundred and twenty children participated in these workshops, increasing their awareness and knowledge of the benefits of healthy food choices and good nutrition. Through these events, youth initiated and created friendships and connections with peers who share similar stresses related to the deployment of their parents.

Military Clubs: Through the establishment of 12 new clubs with 60 youth members, community support networks have increased providing opportunities for participants to engage in recreational, social and educational programs in the community. These community support networks have increased collaboration with schools and increased public education on the impact of deployment on the soldiers and their families. Over 402 youth are involved in activities spanning 9 clubs establishing and increasing social, recreational and educational interactions.

c. Source of Funding: CSREES Grant, Smith-Lever

d. Scope of Impact: Territory Specific

Highlight (2) 4-H Youth Development Programs Enhance Youth Life-skills on the Island of Guam

a. Brief description:

4-H Life Skill Workshop: One hundred and one workshops were conducted with a total 1,556 youth participating. Forty volunteers and collaborators assisted in conducting the workshops and trainings. 4H has facilitated establishing 5 new clubs in five schools with 522 new participants and 19 teachers/advisors/volunteers.

b. Impact/Accomplishment:

4-H Training Workshops: Through a review of youth workbooks, youth demonstrated increased life-skill capacity in the following areas: making healthy life style choices – 109; critical thinking - 430; sharing -256; communication – 256; leadership – 274; self-responsibility – 119; decision-making – 131; personal safety – 73; marketable skills -46. One thousand five hundred fifty-six youth and 500 parents participated in 4-H training and workshops.

4-H Club Activities: The 4-H club activities were primarily focused at one elementary school, three middle schools and one high school. Youth demonstrated increased skills and knowledge in horticulture, health and plant sciences. Through assessment of club activities, over 90% of participants increased their knowledge and skills in health and plant sciences. Through the Marine Mania Program, 98% of the participants increased their knowledge and skills in marine environmental issues such as mangrove protection, reef cleaning, beach cleaning, environmental awareness, ecology, math and history.

c. Source of Funding: Smith-Lever

d. Scope of Impact: State Territory Specific

III. Stakeholder Input Process

Results of consideration of Received Stakeholder Input

The University Community was engaged by the local military to explore programs which minimize the emotional strain of dependent families due to deployment of parent or spouse. Through a series of meetings and discussions it became apparent that there existed a pool of willing volunteers to participate in this endeavor. As a result, Hero Pack events were established and continue to grow

From January 2005 to March 2005, a weekly series of need assessment and priority setting meetings were held between Government of Guam agencies involved in the local agriculture industry. A collaborative partnership developed between the Chamorro Land Trust Commission (CLTC), Guam Department of Agriculture (DoAG) and UOG CES. A result of the three-way partnership was the development and funding of a \$512,000 conservation practices grant. Systems for sharing of local organizational extension and demonstration resources and personnel are being set in place for future years. Funding was secured to place University Extension personnel and programs in the DoAG and CLTC offices and funding was secured to support three shared demonstration farms.

Meetings with representatives of the aquaculture industry through the Guam Aquaculture Growers Association resulted in the prioritization of areas for development for expansion of the local aquaculture industry. Also, project was developed and funded to identify the best tilapia variety for commercial propagation on Guam. After this, the first year, four commercial farms adopted these varieties for production.

Efforts on National Goal 5 focused on input from seven government agencies for economic and health data for policy development and planning. As a result, several data collecting projects were completed. Government agencies now have the capacity to plan and direct policy toward economic and health development.

IV. Program Review Process

Significant Changes in the Program Review Processes:

There have been no significant changes in Guam's program review processes since our five-year plan of work.

V. Evaluation of the Success of Multi- and Joint Activities

The University of Guam participates in thirteen multi-state activities in FY 2005 (refer to the following grid). Outcomes of each activity can be found in item II. Report of Accomplishments:

Multi and Joint Activities Grid

TITLE OF ACTIVITY	FUNDING	IMPACT
Alternative Housing for Livestock and Poultry for Guam and Micronesia	Sustainable Agriculture and Research Education (SARE), Smith Lever	Guam, Micronesia, Commonwealth of the Northern Mariana Islands
Tropical and Subtropical Fruit Food Product Development	Smith Lever	Multi-State Extension
Survey of Invasive Insects of Micronesia	USDA CSREES Special Project TSTAR, Smith Lever	Multi-state integrated research and extension Guam and the Western Pacific
Effects of Processing and Storage of the Biofunctional Quality of Noni	Smith Lever	State and International Specific
Unsafe Traditional Food “Kelaguen”	Smith Lever	Western Pacific Region
Healthy Living in the Pacific	Smith Lever, Hatch	Guam and the Region
The Food Safety & EFNEP Workshop: An Update on Competitive Programs in Food Safety and the Expanded Food and Nutrition Education Program	Smith Lever and NIFSI/NRI (National Integrated Food Safety Initiative/National Research Initiative)	Western Pacific Region
Water Quality Awareness and Education	Smith Lever	Multi-State Extension
IPM Diagnostic Center	Smith Lever, Regional Water Quality	Guam and Western Region
Socio Economic Data Information for Community Resource Development	U.S. Department of Interior, Guam Department of Labor Smith Lever	Multi-State Extension
Program for the Uninsured Project	U.S. Department of Public Health & Human Services, Health Resources and Services Administration (HRSA) State Planning Grant (SPG), Smith Lever	Multi-State Extension
Drug & Alcohol Needs Assessment Project	Guam Department of Mental Health and Substance Abuse, Smith Lever	Multi-State Extension
PEACE Project	Strategic Prevention Framework and State Incentive Grant, Smith Liver	Multi-State Extension

The AREERA guidance asks that the following four questions be answered in evaluation of the University of Guam Cooperative Extension participation in Multi and Joint Activities.

Did the Planned Programs Address Critical Issues of Strategic Importance?

Our continuous stakeholder input (needs assessments, focus groups and advisory groups) and collaboration with multi-stakeholders insures garnering broad community input to identify, prioritize and respond to challenges articulated by the community.

Did the Planned Programs Address the Needs of Under-served Populations?

A critical issue to many of our partners is the decreasing financial resource base for program delivery. Several of our planned programs have addressed this issue by developing collaborative partnership where resources are shared among the partners. This leverages the partners' resources and capacity to deliver outreach programs. Many of our programs are aligned with the underserved or economically disadvantaged, or groups unable to access opportunities due to barriers. The population on Guam represents many ethnic minorities of which the majority includes Asian/Pacific Islanders. Beyond our programs our active roles on boards and committees insures that we take part in related programming that influences the underserved. Specific programs that cater underserved populations are EFNEP children and families at risk, 4H youth at risk, uninsured people and the U.S. Military.

Did the Planned Programs Describe the Expected Outcomes and Impacts?

Expected outcomes and impacts are illustrated through the Accomplishment Report. There are expected outcomes that will be reported in the University of Guam Cooperative Extension's 2006 Accomplishment Report.

Did the Planned Programs Result in Improved Program Effectiveness and/or Efficiency?

Yes, through increased collaboration with our local partners, University of Guam Cooperative Extension was able to leverage our outreach efforts and receive considerable feedback on the effectiveness of our programs. Our emphasis on continual cross programming, and organizational communication is achieved through regular review of plans, priority setting, and trend identification to set program priorities. The increased collaborations gave us more manpower for program delivery, as result we were able to reach a broader audience and had greater impact on the Island community.

VI. Appendix A. Annual Report FY 2005				
Allocation of Local and Smith-Lever 3c and 3d Funds within the Cooperative Extension Service				
	FTE%	Federal Funds	State Funds	Total
Administration				
Total FTE	3.0	121,113.00	76,137.00	197,250.00
Goal 1				
Total FTE	6.0	333,879.00	178,049.00	511,928.00
Goal 3				
Total FTE	4.0	165,153.00	110,102.00	275,255.00
Goal 5				
Total FTE	8.0	326,876.00	231,411.00	558,287.00
Total	21.0	947,021.00	595,699.00	1,542,720.00

Appendix B
University of Guam Cooperative Extension Service

Activity	Client Contacts																Total	Total	Total
	Local Indigenous Pop. (Chamorro)		Filipino		White		Micro		Asian		Black		Other		Total	Total			
GENDER	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	ALL		
GPRC Goal 1	1040	301	201	77	122	91	29	8	63	398	16	9	5	19	1471	884	2355		
GPRC Goal 3	237	398	77	75	14	10	30	42	52	106	31	8	4	17	445	656	1101		
GPRC Goal 5	71	84	2	9	30	19	2	1	5	5	4	2	8	0	122	120	242		
EFNEP	396	462	141	136	24	22	68	965	964	62	5	7	2	4	1600	1658	3258		
Pesticide Impact	56	7	18	4	18	0	14	0	7	1	0	0	1	0	114	12	126		
IPM	87	46	96	12	5	14	2	0	0	0	0	0	0	0	190	72	262		
Water Quality	28	17	6	2	11	5	3	0	4	1	1	0	0	0	53	25	78		
TOTAL	1915	1315	541	315	224	161	148	1016	1095	573	57	26	20	40	3995	3427	7422		
PERCENTAGE TOTALS	26%	18%	7%	4%	3%	2%	2%	14%	15%	8%	1%	0%	0%	1%	54%	46%	100.00%		