

2012 University of Puerto Rico Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

This accomplishment report covers the period from October 1, 2011 to September 30, 2012. During this fiscal year, the Puerto Rico Agricultural Extension Service (PRAES) used 166.3 FTEs, a reduction of 3.1 FTEs of the 169.4 planned for FY 2012 -2016. However, if we compare this amount to 2011-2015 (167.8 FTEs), the reduction is of only 1.5 FTEs. This difference in FTEs is due to the new recruitment of personnel to fill the positions that retired necessary to carry out PRAES' mission.

The goals in the PRAES 2012 POW were met due to short courses trainings, on-site demonstrations, farm visits, the use of mass media, and communications technology, such as the internet, which was used for distance training and web pages. To cover the different subject matter in areas in which PRAES lacked personnel (due to retirement), we worked jointly with Puerto Rico Agriculture Experiment Station personnel and College of Agricultural Sciences faculty, which dedicated a percentage of their staff time to work with PRAES.

PRAES signed multiple agreements and/or made collaborative efforts throughout the island during fiscal year 2011-2012. Public entities; non-profit organizations; public and private universities in and outside of Puerto Rico; local, state, and federal organizations; community organizations; radio and television stations; and the press participated with PRAES to achieve various goals ranging from agriculture to family and community concerns.

Also, PRAES visibility due to its participation in various forums on sustainable agriculture and agricultural fairs held throughout the island, in which the agricultural agents and home economists present written educational material and have exhibits and media presentations about PRAES and the College of Agricultural Sciences and the programs to its clientele and the general public, has contributed to a renewed and increased interest in establishing vegetable gardens at homes, schools and communities.

Extension maintained close relations with government agencies, decision makers, research scientists, and the clientele helping them to gain insight on what has happened and what is likely to happen during the next years. The staff of the local Extension offices continued relations with key leaders such as: mayors, senators, representatives, directors, officials of organizations, and business people interested in/or related to Extension's agenda. They invited these stakeholders to participate in Extension activities and in the Stakeholder Input Process meetings and meetings of the

The collaborators from the public sector are the Departments of Agriculture, Education, Health, Consumer Affairs, Labor and Human Resources, Transportation, Drug Abuse Prevention, and other government agencies (The Police Department, the Water and Sewer Authority, the Electric Energy Service, Natural Resources, and the Youth Affairs State office). Also, we coordinate with the USDA agencies such as Farm Service, Natural Resources Conservation Service, Rural Development, Food & Nutrition Service, Food Safety and Inspection Service, APHIS - PPQ, EPA, and Forest Service. From the private sector, people from banks, cooperatives, and industry (agricultural, pharmaceutical, textiles, etc.), as well as religious, civic, and social leaders from different organizations, participated in the assessment process determining local needs, offering their collaboration, and involving their organizations in the search of solutions to problems.

PLANNED PROGRAMS:

During FY 2012 we had 11 planned programs. These are: 1) Plant Systems; 2) Animal Systems; 3) Management of Rangeland and Forestry Resources/Soil, Water, and Air; 4) Climate Change; 5)

Sustainable Energy; 6) Global Food Security and Hunger; 7) Family Well-being; 8) Food Safety; 9) Childhood Obesity; 10) Strengthening Youth Life Skills, Leadership and their Community; and 11) Community Resources Development by Means of Fostering Sustainable Communities.

The planned programs in the Agriculture, Marketing and Natural Resources program area had a total amount of 73.75 expended FTEs; in Family and Consumer Sciences a total of 34.00 expended FTEs; Four-H and Youth Development a total of 33.08 FTEs; and Community Resource Development a total of 25.50 FTEs for a global sum of 166.33 FTEs.

The Plant Systems and Animal Systems planned programs continued focusing their efforts in strengthening the Food Security emphasis area. To avoid duplicity when informing their indicators the agents included this emphasis area under the planned program of their main enterprise.

A total of nine publications were published, in Spanish, during 2012.

In some cases we have indicators that seem to be static over time, this responds to the fact that we have a dynamic clientele which is incorporated or renewed annually.

1. Strengthening Youth Life Skills, Leadership and their Community

This planned program has the highest percentage (19.89%) of the total 166.33 FTEs accounted for during FY 2012; a slight increase of 1.59% compared to 2011 (18.30% of a total of 167.81 FTEs). This was mainly due to the recruitment of new personnel and change in priorities. The actual amount of FTEs expended for this planned program during 2012 was 33.08.

All children and youth experience some degree of risk as they progress from birth to adulthood, but an increasing amount of children are at a substantially higher risk for negative outcomes, especially when poorly equipped with the necessary skills to avoid them. These children and youth do not have the advantages that promote an optimum, healthy development of body, mind, and spirit and many do not have opportunities to experience positive stimulation for growth or nurturing support from their family, friends and community.

Youth Development is a mayor emphasis area of the Puerto Rico 4-H and Youth Development Program for its long-range educational program. It is designed to provide youth with positive opportunities to learn and interact with peers and adults, provide leadership development, and focus on the enhancement of life skills to prevent negative high risk conduct through research-based educational programs focusing on healthy lifestyles; science, engineering and technology; citizenship and leadership. Different activities and methods such as: camps, competitions, meetings, demonstrations, and workshops were used, especially, the development of projects as a strategic learning tool. In-service learning experiences were promoted to give youngsters the opportunity to reflect on and take action concerning issues that impact them. Through the project the youngsters acquire and developed life skills in order to identify the most important issues, within a real world situation, through critical thinking, generate emotional consequences, which challenge values and ideas, and support social, emotional and cognitive learning and development.

Puerto Rico faces a crisis in the production of agricultural products due to several factors. The stability of our agricultural security could be put at risk because of natural phenomena such as earthquakes, extensive flooding and droughts, and hurricanes. Young people should be made aware of this situation to help increase food security.

To achieve this goal the Four-H program prepared educational activities in collaboration with the Puerto Rico Department of Agriculture's International Fund for Agricultural Development (IFAD). These included agricultural competitions (Selection of Laying Hens, Fruit (Citric), Appraisal of Milking Cows, Starchy Crops, and Coffee) and ecological family vegetable gardens.

One thousand five hundred and twenty-nine (1,529) young people were trained in various agricultural competitions, 1,848 completed the family vegetable garden courses. Sixty-nine per cent (69%) of the young people trained showed improved skills in decision making, planning and organization, and establishing goals.

Another 4,584 children/youth participated in life skills and subject matter educational programs and 1,956 demonstrated improved managing skills (decision making, problem solving, planning, organization and service learning, according to the Targeting Life Skills Model).

During the Annual State Conference celebrated in June of 2012, the 4hers participating answered a retrospective questionnaire to determine changes in the following life skills: decision making, communication, problem solving, goal setting, and teamwork.

The results showed a significant increase ($P < 0.5$) in all of these life skills after having been members of the 4-H club for an average of 3.8 years. These results showed that participation in 4-H clubs contributes significantly to the development of critical life skills for positive youth development in our youngsters.

A curricular guide on 4-H project development (plants and animals) was published (in Spanish) during 2012: "Guía Curricular de Proyectos 4-H".

2. Plant System

The total expended FTEs in the Plant Systems planned program was increased from 26.62 FTEs in 2011 to 27.12 for FY 2012.

The Plant System planned program focuses on the delivery of timely and relevant information and sound agronomic production principles in order to accelerate the adoption of production practices by farmers, increase profitability, and reduce economic and environmental risks. The main goal is to help farmers increase and improve their production through the use of good agricultural practices (GAP) and the adoption of IPM systems that protect the environment, conserve the natural resources, and contribute to the competitiveness and sustainability of Puerto Rico's agriculture. The farmers receive the necessary education and technical assistance through economic, marketing and policy to strengthen their abilities as managers and entrepreneurs.

In addition Plant System promotes a diverse educational program to farmers and other agricultural entrepreneurs so they can improve product quality, increase production and competitiveness through the use of the most effective management system practices, integrated pest management options, irrigation systems, better practices in drainage and soil conservation, and tools and skills in economics, marketing and policies.

A total of 9,936 persons were trained in integrated crop management: 2,031 in coffee, 2,114 in plantain, 1,291 in starchy crops, 2,718 in vegetables, 882 in tropical fruit, and 900 in citrus. Of the total persons trained, 1,779 increased production and 5,095 adopted one or more recommended practices for integrated crop management.

Due to problems faced by producers associated with poor product quality and deficient crop cultivation practices, along with the presence of diseases and pests, required the intervention of PRAES agricultural agents and specialists to orient the farmers on better management practices.

As a result, of this intervention through on-site visits, orientation, and educational material, 2,281 growers adopted one or more recommended practices, 25% improved the quality their product before harvest, 14% increased production, 64% reduced the use of pesticides and 51% adopted one or more IPM practices.

The gross agricultural income for FY 2010-2011 was \$789,795 million (Preliminary data Puerto Rico Department of Agriculture), a decrease of \$32,044 million for FY 2009-2010. The crop value also shows a decrease of \$63.95 million (from \$325.81 million in FY 2009-210 to \$261.86 million in FY 2010-2011). As economic conditions worsen, many people in Puerto Rico are turning to vegetable gardening to supplement their family's diet. Extension's outreach objectives emphasize vegetable gardening through the use of the new Vegetable Gardening curriculum that integrates production of vegetables and herbs, food security, compost preparation, climate change, nutrition and IPM. An Extension agent will be in charge of establishing cooperative alliances with other agencies in Puerto Rico to have more impact and reduce duplication of efforts on educating the population about the needs of vegetable gardens to have food security.

Extension agents and other agricultural educators train homeowners and other people interested in home gardening production and IPM. Educational resources are developed to help homeowners to prepare a sustainable home garden assisted by Extension personnel. The Vegetable Gardening Festival, held annually at the UPR Research Station facilities in the Municipality of Gurabo since 1997, and a Demonstration Vegetable Garden in the Agricultural Experimental Station at Rio Piedras, serve as tools to

educate people about the importance of producing our own food and to disseminate information to the public.

Three publications related to Plant Systems were published (in Spanish) during 2012: "Identificación y Manejo del Picudo Negro y Nematodos en Plátanos y Guineos" (Identification and Management of Black Weevil and Nematodes in Plantains and Bananas), "Amarillamiento de los Cítricos" (Citrus Greening), and "Huerto Familiar: Una alternativa para la producción de hortalizas, legumbres y plantas aromáticas en el hogar" (Family Gardens: An alternative for the production of vegetables, legumes, and aromatic plants in the home).

3. Family Well-being

The Family Well-being planned program includes Families and Children, Consumer Education, and Individual and Family Resources, plus Human Health and Well-being. The actual amount of FTs expended for Family Well-being planned program during 2012 were 19.45, a decrease of 1.45 from 20.9 FTEs in 2011.

The Family Well-being planned program targets individuals, families at risk, children, youth, elderly people, young parents, stepfamilies, grandparents raising grandchildren, and employees of the public and private sectors and institutions. Its goal is to develop educational programs to empower families to nurture, support, and guide members throughout their lives, and improve the quality of life and well-being for individuals, the elderly and others.

To reach this goal, the Family and Consumer Science specialist developed courses, workshops, curricula, radio and TV programs, information centers, informative bulletins and trainings, which cover areas such as: successful parenting, character values, family strengths, aging aspects, healthy life styles, resources management and consumerism education.

Through the establishment of coalitions and collaborative agreements with other public and government agencies, community fiat base, and other institutions, consumer behavior influences decision-making, budgeting, debt reduction, credit wise, savings, and promoting healthy life styles and health services.

Scientific studies show that the first years of a child's life are very significant. Statistics from Puerto Rico's Department of Children and Family (2010) reported 32,490 cases of maltreatment.

Although we lack updated statistics to compare data, family violence and child maltreatment and abuse in Puerto Rico show an ascending tendency (PR Census 2010).

The Family Life and Children Development specialist developed an educational campaign at the state level concerning child abuse and maltreatment. Fifty-two (52) extension agents implemented and developed the campaign "National Month of Child Maltreatment Prevention". They disseminated information and offered orientation to the general public, benefiting 17,571 persons through different strategies and methodologies such as: mass media, workshops, information centers, and others. In addition, through short courses, 88% of the participants reported improved parenting skills.

Two curricular guides were published (in Spanish) during 2012: "Guía Curricular: Padres sobre Ruedas" (Fathers on Wheels), focusing on the male parent for at risk populations; and "Mirada de Mujer" (A Glance at the Woman), designed for women with low self-esteem.

As studies reveal that the life expectancy of individuals is longer, the elderly population has become a critical social issue.

To deal with these issues which affect family stability, the PRAES specialist offered training in parenting related areas and aging aspects. Extension agents were offered a diversity of short courses to respond to and attend the aging population. The courses were geared to increase participants' knowledge of the aging process and develop life skills to face depression and loneliness.

Of 1,796 persons trained in parenting, 1,585 improved parenting skills. One thousand and one (1,101) persons (84% of 1,313 trained in aging aspects), gained knowledge and changed attitudes toward the aging process and developed life skills to face depression and loneliness.

During 2012, two specialists: the health specialist and the family consumerism specialist, retired. This affected the development of new material and the number of persons participating in these areas as compared to 2011 with 2009 and 1,426 persons trained in parenting and aging aspects,

respectively. Consumer Education courses were the most affected.

No evaluation was conducted during FY 2012. An evaluation is planned for FY 2014 through the methodology of focus groups to determine the skills and practices adopted after the educational intervention.

4. Management of Rangeland and Forestry Resources/Soil, Water, and Air

For FY 2012 the amount of FTEs expended for Management of Rangeland and Forestry Resources/Soil, Water, and Air were 5.21 compared to 12.3 for FY 2011. This decrease is due to changes made for FY 2011 in our plan of work where we took indicators dealing with climate matters from the Management of Rangeland and Forestry Resources/Soil, Water, and Air planned program to create the separate planned program Climate Change.

This planned program is devoted to promoting education to farmers and people related with agriculture about conservation practices for the protection of our forests, trees, and watersheds; promote appropriate fertilization practices, conserve water, and mitigate emissions of particles from agriculture to the air.

Although we were spared a direct hit, tropical hurricanes passing close to Puerto Rico brought strong winds and heavy rainfall with strong and extensive flooding, causing severe damage to our agriculture. These losses affected our local economy, decreasing the income of farmers and families involved in this important sector of the Puerto Rican economy. Also, changes in regulations and public policy caused farmers to change their priorities or postpone their projects; the decrease of economic incentives for farmers and non-government entities impacted decision making that require large capital investments.

The use of our land for agricultural purposes or urban development has contributed to the alarming extent of deforestation in Puerto Rico, increasing the erosion and sedimentation of our bodies of water.

This caused great concern in farmers and citizens that realized that something had to be done to control the loss of soil and amount of flooding which causes great losses to our agriculture, economy and the community.

Through joint efforts between AES and local and federal agencies, workshops, guides, training, and technical assistance were offered to promote and develop projects for the conservation of our natural resources and reforestation. Community groups, schools, and farmers participated in these activities where they were encouraged to implement the knowledge acquired and recommended practices for management of our natural resources and forests.

As a result, 46 reforestation projects were established and 200 persons were impacted and adopted one or more practices on natural resources and forest conservation after training. Practices that promote the use of environment-friendly agricultural technologies such as organic fertilizers and alternative pest control techniques were some of the practice adopted.

The absence of green areas in cities and communities has led to an increase in temperatures in the communities and cities, and a reduction of passive areas for the enjoyment of people and wildlife.

As a result, concerned community members organized to develop urban reforestation projects to improve the quality of life and the urban environment. The Agricultural Extension Service (AES) developed educational workshops to raise awareness, train members and community leaders on the importance and benefits of urban reforestation and green areas in urban areas. Members of the community, volunteers, and schools participated in the workshops.

Eleven (11) reforestation projects were established as a result of the involvement of community members, community groups, and schools throughout the island. Two hundred and fifty (250) leaders, community members, and students participated in the reforestation projects. Leaders and community volunteers planted trees, shrubs, and cover plants in uncultivated areas and parks.

These projects have been instrumental in bringing together the community members in projects that contribute to improving the quality of life of citizens, the environment and the wildlife in our cities and communities.

On the other hand, there is great concern among farmers on the potentially negative impacts of agriculture and their farming practices on soil, air, and water. The number of farmers complying with environmental regulations also needed to increase.

AES, local and federal environmental agencies developed educational programs to increase the number of farmers complying with the environmental regulations and developed workshops and assistance and guidance programs for farmers and communities to raise awareness and adopt measures that will contribute to reduce the deterioration of soil, water and air resources. Workshops, demonstrations of methods, field days and other educational activities were offered to promote the use of best management practices (BMP's) and to minimize the negative impact of agriculture on soil, air and water.

Groups of citizens were organized to carry out programs and educational projects in schools, homes and the community to adopt BMP's recommended. Practices as simple as maintaining vegetative cover on the ground helps to avoid erosion, sedimentation of our bodies of water and air pollution.

Twenty-three per cent (23%) of the farmers trained comply with soil, air, and water regulations; and their use of BMP's has helped to minimize the negative impact of agriculture on the environment.

Four hundred and twenty-seven (427) persons adopted one or more practices on soil, water, and air. The adoption of these practices has helped improve the environment by reducing erosion and improving the soil structure and the quality of air by carbon fixation and a lower CO₂ emission to the environment, reducing runoff and contamination of surface water, greater water retention capacity and reduced risk of flooding. This represents a reduction in costs and an increase in production for the farmers.

Also, concerned about the high costs of inorganic fertilizers and loss of productivity farmers are using BMP's to decrease costs, reducing the use of inorganic fertilizers to protect and conserve soils. AES and Natural Conservation Resources Service (NCRS) through educational workshops and demonstrations of method have been promoting the adoption of these practices.

Crop rotation and cross-slope farming were some of the practices demonstrated to decrease the high cost of inorganic fertilizers, and pesticides were used to conserve and protect the soil.

Two hundred and forty-seven (247) farmers trained in soil conservation practices adopted one or more practices to control soil erosion and improve fertility, and the application of animal manure to reduce the use of inorganic fertilizers and, over time improve soil quality.

5. Animal Systems

During 2012 the Animal Systems planned program expended a total of 19.37 FTEs a reduction of 5.5 FTEs from the 13.87 FTES expended during 2011. This is partly the result of the creation of the Sustainable Energy planned program, where we took indicators relating to Engineering Biosystems from the Plant Systems and Animal Systems planned program. The retirement of personnel also contributed to this reduction.

In Puerto Rico, animal production represents a significant component of the agricultural income (47.8%). The sectors that contributed the most, in order of economic relevance, were dairy cattle, poultry, beef cattle, pigs, fish and other aquacultures, rabbits, bees, goats and sheep. Livestock production has been negatively impacted by challenges such as low reproductive performance, heat stress, poor nutritional management, elevated costs of high energy foods, a decline in the demand for dairy products, as well as current changes in global trends. In order to accommodate to these challenges, a combination of approaches and new directions were needed. Extension implemented diverse outcome activities to support adoption of new practices as a means of adapting to local and global issues. Together with the Agricultural Experiment Station and Faculty Professionals, PRAES seeks solutions to address these challenges ensure that the industry remains profitable and sustainable, while addressing environmental and economic concerns.

Dairy farming continues to be the main agricultural enterprise in Puerto Rico. Enhancing prevention and disease control at farm the level as a means to increase animal health, production and quality are the main goals of this enterprise. The following is an example of how PRAES is working with these farmers:

A dairy farmer was visited due to issues with milk quality.

To solve the problem, multiple visits were made to evaluate the milking process, feeding management, and culling criteria. After evaluating all the management practices, the farmer and milkers were trained about the recommended practices in each of the components mentioned above. In addition, collaboration with the milk quality program of the Dairy Industry and a private dairy quality laboratory was established to analyze all cows' milk in order to ID the causative pathogen.

Daily milk yields increased from 950 to 1,200 L/day, a daily gain of \$212.50 (\$0.85/L), with the implementation of the recommended practices. Milk was not discarded during the following year, resulting in an income of \$3,230.00, compared to the previous year. Also, the dairy farmer reported a dramatic decrease in drug costs associated with treating mastitic cows and more time available to take care of other issues on the farm.

In Output #1 and Outcome #4 the number of trainings and farmers trained in recommended meat production practices was reduced due to the drastic rise in the price of concentrate, which took out of business several beef cattle and rabbit producers, among others.

During 2012 "Factores Asociados con Alteraciones en la Crioscopia de la Leche Bovina" (Factors Associated with Bovine Milk Cryoscopy Alterations) was published in Spanish.

6. Community Resources Development by Means of Fostering Sustainable Communities

The amount of expended FTEs in the Community Resources Development by Means of Fostering Sustainable Communities planned program was 25.50 (15.33%) of the total 166.33 expended for 2012. This is a reduction of 0.71%, compared to 2011, with 16.04% (26.92 FTEs).

The Community Resources Development Program (CRD) of the Puerto Rico Agricultural Extension Service (PRAES) continued focusing on Community Economic Development and Self-management program to help address Puerto Rico's most pressing social issues.

During 2012 Puerto Rico continued experiencing a negative economic growth. This is the seventh year in a row with an average negative growth per year of over 4%. Puerto Rico's CRD continues working hard in training and developing community entrepreneurs to create new markets and expand the existing.

The Community Entrepreneurial Tool Box has been in place for five years, and the number of participants putting in place the recommended practices stabilizing at 250 plus persons per year.

Of the participants trained in community-based business, 68% applied one or more of the recommended practices in the process of developing a community-based business. "The Community Entrepreneurial Tool Box" has been in place for nearly five years. We have stabilized the number of participants trained in entrepreneurial and business creation skills with those implementing the skills and practices learned in a 6/10 ratio. Among the most significant skills put in place are: the formulation of a market needs assessment, marketing plan, break-even point analysis and financial plans, among others.

In addition, the "Community Entrepreneurial Toolbox" continues offering our stakeholders (who benefit from short courses and training opportunities in Agriculture and Family Sciences) the opportunity to use the acquired skills and knowledge to promote economic activity and market their skills. Therefore, opening a new business and community based economic production activities that result in new sources of income and jobs creation.

Stakeholders have been widely trained on the "Community Entrepreneurial Toolbox" workshop series together with other marketable skills in the areas of artisanship, craftsmanship, tailoring, children and elderly services, and agricultural production. In 2012, there has been a noticeable growth in the emergence of community economic initiatives for the Management and Operation of Community Water System facilities.

The number of community-based businesses being established has stabilized at a rate of 40 plus businesses per year. CRD's strategy of providing entrepreneurial training to those stakeholders who benefit from PRAES' other courses, which provide marketable skills in family science and agriculture, has resulted effective. Most of these 46 community-based and micro-businesses being created are in areas of agricultural production, food confection, and services closely related to the Agriculture and Family Science curricula. Management of Community Water System facilities is a welcome addition of the economic ventures reported. It has resulted in the creation of 149 new jobs and provided additional income to 376 participants.

Five (5) Focus Groups were held in five municipalities of Puerto Rico with the purpose of evaluating changes in knowledge and adoption of practices after participating in the short course "Community Entrepreneurial Tool Box".

The Focus Groups' findings point toward the great utility and value that the "Community Entrepreneurial Tool Box" training series has had to emerging community economic initiatives and local

entrepreneurs. However, according to the participants, a more in depth mentoring by Extension field personnel and the need to increase the amount of trained people are essential to have a real impact in Puerto Rico stricken economy.

A publication about community emergency management plans was published (in Spanish) during 2012: "Desarrollo de Planes de Manejo de Emergencias Comunitario"

7. Food Safety

During 2012, the Food Safety planned program expended 6.72 FTEs a reduction of from 7.4 FTEs during 2011.

The goal of the Food Safety planned program is "To improve food safety through the control, reduction or elimination of contamination risks". This component consists of two main areas: education for consumers and education for food managers.

PRAES has the following curriculums on Food Safety: (A) For consumers: The "Families be Food Safe" campaign, which contains 12 lessons divided in three units in which home economists can select lessons according to their audience; (B) For persons in charge of food establishments: The Food Safety Certificate course, and (C) For university personnel and professionals from other government agencies and organizations: Train-the-trainers.

During 2009-2012, CDC reported 1527 outbreaks caused by foodborne illnesses. Twenty one percent (21%) of these outbreaks were caused by food consumed in private homes. After a food is contaminated, further mishandling, such as undercooking or leaving food exposed to dangerous temperatures can promote microbial growth. For consumers to adopt proper food handling practices we depend on education through mass media and short courses like the ones offered by PRAES.

Eight hundred and sixty-three(863) participants completed Food safety course for consumers at the household level, which consisted of at least 4 lessons; 83% of the participants adopted at least one safe food handling practice. The practices adopted were: 65% cleaned and sanitized food surfaces, 76% washed their hands frequently, 61% separated food to avoid cross contamination, and 29 used a food thermometer to check cooking temperatures.

Restaurants in which there is a Food Manager (FM) certified in Food safety are less likely to Critical violations for personnel, food source or handling, in facility or equipment requirements, ware-washing and other operations (Cates, SC, et. al, 2009). Sung-Hee, P., Tong-Kyung, K, and Hye-Ja, C., (2010) found that establishments with trained employees showed improvement on the inspection score.

According to the PR Department of Health there are 39,919 Food Establishments registered. The Health Inspectors verify that food managers are measuring and recording temperatures of potentially hazardous foods using a calibrated food thermometer. They also evaluate any food handling practices that may put the food's safety and the public's health at risk.

Our home economists offered a 13-lesson food safety course covering all the knowledge areas and FM responsibilities as required by the Food Code of 2009.

The Food Safety course was offered to 3,605 FM throughout the island by two home economists working 100% FTE's in EFNEP and 10 home economists working 20% FTE's each). The course was offered in both English and Spanish to attend the needs of our clientele. Of the 3605 participants that completed the Food Safety Course, 3272 (91%) approved the test.

Eighty-four per cent (84%) of the participants adopted three or more food handling practices, as follow: 65% prepared a plan for the control of PHF temperatures, 79% washed their hands every time they changed tasks, 69% used separate cutting boards, 57% used a food thermometer to measure PHF temperature, 66% used disposable gloves when handling ready to eat food, 78% cleaned and sanitized utensils and equipment properly, 66% thawed food properly, 61% kept h time and hot food at 135°F or above during holding.

8. Climate Change

The total expended FTEs in the Climate Change planned program for 2012 was 5.22 a reduction of 3.23 FTEs from 8.45 during 2011.

Agriculture is the second water user in Puerto Rico. The availability, as well as the quality of water, are paramount to obtain good yields. Sound agricultural practices, which protect the environment and are in harmony with the environment, are a priority.

Besides workshops, demonstrations, presentations and other educational methods, PRAES agricultural agents developed good working relationships with state government agencies. Such is the case of the Department of Natural Resources and Environment (DNRE), which has a forestation program to provide farmers with seedlings to protect the watersheds. The agricultural agents work closely with DNRE selecting and providing education to interested farmers. They also work closely with the USDA-NRCS on the implementation of practices like contour grass strips using vetiver grass, and have been actively working on pesticides application and solid waste management.

Three hundred and two (302) farmers are implementing recommended practices such as: composting, contour ditches and farming; runoff management, followed by recommended distances from water bodies when applying pesticides.

Most of our soils are clay and great part of our farming is conducted in the central mountain area where soil erosion is a big concern; therefore, affecting farm production and soil health since most of the organic matter is already lost.

For many years, both Extension agents and USDA-NRCS personnel have joined efforts to work with the farmers to help them understand the benefits of soil conservation and soil erosion control. Much effort has been dedicated to educate farmers and rural communities on brush fires and their effects on our environment, one of which is an increase in soil erosion.

Extension agents report that in recent years they have observed an increase in the number of farmers participating in EQIP, and that the farmers are more aware that by implementing the recommended soil erosion measures, they don't require as much fertilizers as before, with 247 adopting/implementing soil erosion control measures.

Maintaining water quality requires complying with regulatory agencies, such as the State Environmental Quality Board (SEQB), which regulates solid waste management in farms, as well as Soil Erosion and Sedimentation Control regulations. A high phosphorus value in the water has been reported, as well as evidence of nitrogen, which could come from fertilizer applications, animal feeding or waste.

The PRAES Engineering unit assists farmers in developing a waste management plan to be submitted to SEQB. Prior to this, they inform the farmer and offer training to the local Extension agent to follow-up with the proposed plan compliance.

Ninety-three (93) persons comply with environmental soil erosion and water requirements. Several farmers have improved their animal structures and are properly applying fertilizers.

9. Sustainable Energy

The Sustainable Energy planned program expended 5.79 FTEs for 2012, an increase of 0.69 from 5.1 FTEs in 2011.

The high costs in the production of electricity in Puerto Rico during the past year, caused a decrease in the profits of the agricultural business, a decrease in labor, and the closure of several industries. As a result, the Government of Puerto Rico created public policy so that public agencies and educational institutions work together to find a way to lower energy costs or become more efficient in the use its use to help keep these businesses in operation and keep jobs.

Settled agreements between various government agencies like the Puerto Rico Department of Agriculture, the Natural Resources and Conservation Service, municipalities, private industry, and the University of Puerto Rico to promote the use of energy-efficient equipment in cowsheds and coffee processing facilities.

Thirty-four (34) collaborations were established between government agencies and the University of Puerto Rico across the island to promote the use of energy-efficient equipment.

The dairy industry is the most important agricultural industry in Puerto Rico. In recent years, it has been affected mainly by the continued increase in feed costs(affected by production energy costs and the change in purpose from sowing grains for food to planting energy crops). The milk collection process in cowsheds depends on high energy consumption equipment or is inefficient (ie. cooling and heating,

vacuum pumps and transfer systems and lighting among others). During 2012, the average Kwh in Puerto Rico was around \$0.28, which is 2.5 times higher than the USA average (except Hawaii) \$0.11 / kwh. This has forced several farmers to reduce labor, others to operate without profit and in the worst cases close operations.

A training program for agricultural agents and home economists was established to disseminate the educational message about efficient use of electricity to the owners of agricultural enterprises and households. The program included training on energy efficiency, solar and wind energy, and the use of waste from animals in confinement for the production of biogas and electricity using methane.

As a result, several dairy farm owners in Puerto Rico established variable speed drives in the vacuum line and heat recovery systems in milk cooling tanks to achieve a reduction of approximately 12.5% in the use of energy. This translates into savings of \$270,000 annually in the electrical bill.

As sustainable energy is a new initiative, during 2012 an intensive training program was established aimed at PRAES staff and personnel from other government agencies. In 2013 we will be conducting surveys to assess the results of this training program.

10. Global Food Security and Hunger

The Global Food Security and Hunger planned program expended a total of 11.04 FTEs during 2012. This represents an increase of 3.52 FTEs from 7.52 in 2011.

In 2012, there was no public policy established regarding this initiative in Puerto Rico. The Agricultural Extension Service began to convey the message about the initiative and government officials began to produce related legislation and guidelines.

PRAES helps farmers, agro entrepreneurs, and the public in general to understand the threats to our food security and to identify strategies to attend these threats. We coordinate the exchange of information between the government, academy, and private sectors to define and adopt strategies. To accomplish this goal Extension has been using different strategies such as curriculum development, collaboration with the public and private sectors, and the dissemination of information.

Small and medium local farmers have to deal with strong competition with local farmers and imports to market their agricultural products.

To help farmers sell their products, collaboration was established with the Puerto Rico Department of Agriculture and supermarkets chains and food distributors at the local level.

One hundred farmers sold their products directly to distributors such as Sam's Club, Wal-Mart, Econo Supermarket, among others, as a result of 29 agreements between local farmers and the distributors.

11. Childhood Obesity

During 2012 the Childhood Obesity planned program expended 7.83 FTES compared to the 8 FTEs for 2011. Since 2011 we experienced a shortage of personnel, especially in the area of nutrition with the retirement of the Nutrition specialist; due to a lack of funds we worked without a replacement until August 2012.

Efforts to reduce childhood obesity risks focused on nutrition education to children and their caregivers based on the predetermined needs on the adoption of healthy eating practices. Participants verbalized specific needs, such as lack of knowledge of the benefit of healthy foods on overall health, the selection and preparation of healthy foods, and the inability to make healthy choices with a tight budget.

Other issues presented were the lack of knowledge on the importance of eating breakfast and making healthy snacks to prevent obesity.

To improve knowledge that leads to healthy eating actions, the nutrition education program included the following activities in: Healthy cooking lessons, which included tours to supermarkets to make a healthy shopping list, ideas for a healthy breakfast "on the go", lessons on reading food labels to make healthy choices, health benefits of consuming the food groups from MyPlate, and increasing awareness on the Dietary Guidelines for Americans 2010, recommendations on lowering saturated fats, and increasing the consumption of fruit and vegetables to reduce obesity risks. Community outreach was accomplished through education activities in community centers, information centers in malls, and brochures and lessons

in schools, among others.

More than half of the participants (65%) successfully reduced their obesity risk levels by increasing the consumption of healthy foods such as: fruit, vegetables, and low fat milk; following healthy eating patterns (having breakfast and healthy snacks choices); and reducing the consumption of foods high in fats and added sugars. The most significant improvement was in the increased consumption of fruit by 52% of the participants. Other improvements were the incorporation of vegetables in their diets (44% of the participants) and change to low fat or non-fat milk (47%). Success in healthy eating practices was achieved by consuming breakfast (65%) and adding healthy snacks (58%) to their meal patterns.

Sedentary lifestyles are associated with an increased risk for obesity. Environmental factors such as places in which walking around the neighborhood is unsafe, longer time spent in front of the TV or video games, and cuts in PA classes play a major role in weight gain.

The nutrition education program integrated the physical activity component to their lessons, focusing on community engagement in walks, dance lessons (i.e. zumba dance), and outdoor sports and activities (i.e. basketball, track)

There was a significant improvement in the level of physical activity in 75% of participants after being oriented on the importance of reducing sedentary lifestyles.

Short courses on nutrition and physical activity were offered through direct contact in schools, churches, and government agencies, including the Department of Family.

Despite the difficulties in establishing daily physical activity programs in schools and in the community, the benefits of these efforts are emerging with 37% of the participants meeting expectations.

During 2012 we completed an evaluation to determine changes in knowledge and adoption of practices after participating in a nutrition education program designed to encourage 4-H youth (188 youngsters ages 12 to 18) to eat a nutritious diet and increase their physical activity to prevent obesity.

Findings of this study revealed the following results:

- Results showed significant increase in knowledge, increased frequency of consumption from pre to post-test for vegetables, fruit, 100% fruit juice, and milk, and decreased frequency of consumption from non-nutritious foods.

- There was a slight increase in the number of participants that engaged in 60 minutes or more of physical activity daily, after participating in the program.

This impact evaluation study suggests that nutrition education in Extension can promote changes in dietary behaviors that can persist two months after the study and can contribute to decrease prevalence of obesity.

EVALUATION OF MULTI JOINT ACTIVITIES

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

Critical issues of strategic importance continue to be addressed through the five national initiatives and have been integrated across the four base programs. In addition, the Local Advisory Committees are a major mechanism to identify local needs of our stakeholders in the municipalities. These needs are addressed locally in the plan of work of every municipality. Therefore, issues identified in agriculture, family, youth, and communities are addressed through each base program.

The Merit Review process, conducted for each base program, also provides an additional perspective to the needs of our stakeholders, as diverse agencies and groups working with similar audiences contribute to the identification of these needs.

In the area of agriculture, commodity meetings provide a more specific identification of critical issues. Meetings are conducted for every commodity with ample participation of farmers, Extension agents and researchers from the Agricultural Experiment Station. Extension specialists become major contacts between PRAES and the Experimental Station. During these meetings, critical issues are discussed and strategies are defined to address these issues.

The development of renewable energy projects in different farms was a major issue during this fiscal

year. These projects are developed in collaboration with local government offices and the Department of Energy.

Family and Consumer Sciences (FCS) addressed the critical issue of childhood obesity through the Childhood Obesity planned program.

Other critical issues identified continue to be child maltreatment and economic issues. To address these, the FCS program, through its Family Well-being planned program, developed educational campaigns at the state level to prevent child maltreatment and individuals, families, and communities received management and financial training to and make better use of their income and make wiser decisions and better use of their resources.

The Four-H program addressed the critical issues of the national initiatives, including childhood obesity, food security, food safety, and climate change. Collaboration with the Department of Education and private organizations has allowed the development of several school vegetable gardens to teach and demonstrate on-site the importance of food and agriculture for a healthy diet, local food security, and the promotion of physical activity.

State major initiatives emphasize consumer education and value characters. Every subject matter emphasizes all of these topics, as well as the development of life skills through a diversity of educational methodologies including short courses, contests, camps and field trips, among others.

Through a collaborative project between PRAES and ASSMCA, Four-H continues attending the major critical issue prevention of alcohol and drug consumption among youngsters.

The Community Resources Development base program (CRD) focused on addressing two critical issues at the community level: unemployment and the economic crisis. Most of its educational efforts were aimed at teaching about the development of family and community microenterprises. As a result of these efforts, during FY 2012, 46 community microenterprises were established. This resulted in the creation of 149 new jobs and an increase in income for 376 persons.

As is the Local Advisory Committees, the Merit Review process has become an important source of identification of community needs, as well as to solutions or strategies for addressing those issues. Collaboration with Rural Development has resulted in an important strategy for communities to address several of these issues; however, more emphasis should be place in the training of Extensionists to develop a more intensive follow-up with the communities in the devolvement of community projects and proposals, including APPs.

2) How will the planned programs address the needs of under-served and under-represented population of the states?

The Family and Consumer Sciences planned programs' priority target groups include low-income families, adolescent mothers, elderly people, at risk populations, women heads of households, and individuals with physical, social and economic disadvantages. Specific curriculum was developed to address the increasing elderly population (Revaluing the Adult Population), families (Parenting with Character Values), women heads of households (Addressing Difficult Times), and low-income families (Promotion of Healthy lifestyles).

In the agricultural sector, the project "Small Farmer Outreach Training and Technical Assistance Program" continues to target small farmers, and the Women in Agriculture Initiative addresses under-represented women farmers. PRAES also promoted the development of associations and cooperatives among groups of small farmers. In addition, collaborative agreements with the PR Department of Agriculture are aimed at offering technical assistance and counseling to under-represented small farmers through the UCAR Project (Unity of Quality and High Yield).

In the Four-H program, emphasis has continued to integrate kids with special needs to the diverse educational contests offered by the Youth and 4-H planned program, as well as to special projects that promote physical activity and sports. Extension agents continue collaborating with the Department of Education's "Independent Life Project" where agents offer health related educational courses to this population. The Military Kids project was implemented in various municipalities during FY 2012.

In CRD program's educational efforts target low-income communities.

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

Every planned program at PRAES described the expected outcome and impacts through outcome indicators reported in the Electronic Reporting System that collects data throughout the state. Impacts are collected through local and state success stories and reported in the section Impact Statements of the Annual Report.

The most of the planned programs reported at least one impact statement which focused on outcomes or changes in action and conditions. The Family and Consumer Sciences planned program focused on changes in knowledge and skills acquisition and the Food Safety planned program on the adoption of recommended practices. The Youth Development planned program presented an increase in life skills for youth participating in the 4-H clubs that will equip them with the necessary skills to avoid risky behaviors. The Community Development planned program had an increase in outcome measures such as the number of community-based businesses established that demonstrate progress towards achieving a long-term impact of improving the communities' economy and well-being in these times of economic crisis.

The outcomes of the agriculture planned programs focused on changes in action showing increases in adoption of recommended practices and improvement in the quality of the products that resulted in increased production.

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

PRAES' planned programs continued to improve their efficiency through collaborative multi-institutional efforts with major agencies and institutions that work with similar audiences such as the PR Department of Agriculture, Farm Service, Rural Development, NRCS, Commodity Farmers' Association, and the Departments of the Family and Education. Specifically, PRAES united efforts with the Agricultural Experimental Station where Extension agents and researchers worked together in the organization of commodity meetings in which critical issues were discussed with farmers and other audience related to agriculture. Various projects to address these issues are taking place in collaboration with the AES.

PRAES continued to develop new educational material according to the farmers' needs, organized fairs and mass media communication to promote the planned programs' activities including an electronic web page. Periodic progress evaluations are conducted to evaluate how programs are accomplishing their objectives and impacts.

During FY 2012, CRD conducted five focus groups to evaluate impacts and to identify areas for improvement in the Community Resource Development planned program.

Planned programs will continue to be effective by increasing changes in knowledge, skills, practices, and conditions in our participants, families, and communities; as they are focused on the most critical needs of our people. There will be continuous actualization and improvement of our educational material in order to address these critical needs. Planned program outcomes were designed to promote changes in action and continuous effort are given to progress towards changes in condition. Special emphasis has been placed in the five planned programs that address the national initiatives.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	169.4	0.0	0.0	0.0
Actual	166.3	0.0	0.0	0.0

II. Merit Review Process

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

- Internal University Panel
- External University Panel

2. Brief Explanation

The Merit Review process was conducted through four committees which represent each of the four major program areas: Agriculture, Marketing and Natural Resources; Family and Consumer Sciences; Four-H and Youth Development; and Community Resource Development. Each committee is composed of Internal University and External Non-University Panel. They met twice during the year. In the first meeting Extension staff presented the Preliminary Plan of Work for the upcoming year and members of the committee were asked to present their views and recommendations related to the POW. The program area leaders, together with other Extension staff, then defined the educational strategies to address the recommendations offered by the committee members. These were then incorporated in the final POW as needed. During the second committee meeting an oral and written report was presented by the program area leader in which were identified how the committee recommendations were addressed and the Annual Report of Accomplishments was presented to the committee.

III. Stakeholder Input

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

- Targeted invitation to traditional stakeholder individuals

Brief explanation.

At the local level, the Local Advisory Committees' major task is to collect input from our local stakeholders. The committees are composed of at least two beneficiaries from each of the base program areas (Agriculture, Marketing and Natural Resources; Family and Consumer Sciences; Four-H and Youth Development; and Community Resource Development) and a minimum of two representatives from local agencies that work with similar audiences as Extension. To encourage their participation, potential members are introduced (through letters) to the importance of the process and the importance of their contribution to improve Extension educational programs.

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

1. Method to identify individuals and groups

- Use Advisory Committees

Brief explanation.

The members of these committees were selected by the Extension agents from among their target audience, based on their experience and participation in the Extension programs and were invited by letter to join the committee.

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

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder individuals

Brief explanation.

The process to collect the stakeholder input took place through meetings. The committees met twice during the year to discuss critical issues locally, as well as to identify emerging issues that could be addressed by Extension. Each local committee identified priority issues in each of the four programs areas.

3. A statement of how the input will be considered

- To Identify Emerging Issues
- Redirect Extension Programs
- In the Action Plans
- To Set Priorities

Brief explanation.

Input collected from stakeholders at the Local Advisory Committees was reported to the state level. This data was evaluated by state program leaders in order to identify emerging issues that should be included in the state plan of work or redirect programs when needed. Issues identified by farmers and other agricultural representatives that required or suggested a research agenda, were referred to the Agricultural Experiment Station. At the local level, municipalities set priorities for their local plan of work according to the stakeholders' input.

Brief Explanation of what you learned from your Stakeholders

One of the main issues identified by our stakeholders during fiscal year 2012 was home gardens. There is no doubt that the participants are gaining awareness about food security and how it can be improved at the household level through the establishment of home vegetable gardens. In addition, home gardening will contribute to alleviate the economic burden and as it helps fight the obesity epidemic. To help in the training and information dissemination process a new curricular guide for home gardening was developed which integrates all of these issues which are also those of the new NIFA initiatives.

The second issue most mentioned by our stakeholders was healthy lifestyles including both physical and mental health. Our stakeholders also expressed their preoccupation with the two major issues that affect our population: obesity and lack of values. They understand that the nutrition curriculum should be strengthened to emphasize nutrition education that promotes healthy food habits to decrease obesity, particularly childhood obesity. They are also aware of the continuous media coverage of cases of maltreatment against women and children, and identified the importance of continuing our short courses in strengthening family relations and values among adults and youth. At the household level, they identified the need for training about family finance management and preparation of a family budget to deal with the economic crisis.

Another issue of concern to our stakeholders is the importance of addressing the needs of our increasing elderly population. This issue continues to be a priority in the Family and Consumer Sciences program area with a recent curricular guide that addresses this need with a multidisciplinary approach.

In the agricultural sector, the stakeholders expressed that management and production are the main areas that need to be strengthened to continue improving our agriculture.

In the Community Resources Development program area the three main issues most frequently mentioned were: leadership development, community empowerment, and community economic development. These issues are addressed in the Community Resource Development by Means of Fostering Sustainable Communities planned program.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
6329018	0	0	0

2. Totalled Actual dollars from Planned Programs Inputs				
Extension			Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	6329018	0	0	0
Actual Matching	3164510	0	0	0
Actual All Other	0	0	0	0
Total Actual Expended	9493528	0	0	0

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

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Strengthening Youth Life Skills, Leadership and their Community
2	Plant System
3	Management of Rangeland and Forestry Resources/Soil, Water, and Air
4	Family Well-being
5	Food Safety
6	Animal Systems
7	Community Resources Development by Means of Fostering Sustainable Communities
8	Climate Change
9	Sustainable Energy
10	Global Food Security and Hunger
11	Childhood Obesity

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Strengthening Youth Life Skills, Leadership and their Community

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
806	Youth Development	100%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	37.0	0.0	0.0	0.0
Actual Paid Professional	33.1	0.0	0.0	0.0
Actual Volunteer	22.9	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1258726	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
629363	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conferences or workshops training in life skills, leadership, and community services.
- Camping and outdoor activities.

- Curriculum developed in life skills, leadership and community service.
- Participate in mass communication to promote 4-H as a positive organization for youth.
- Projects where youth and adults volunteers can develop skills that will enable them to make a positive contribution to society.
- Competitive activities/events.
- Non-competitive activities/events.

2. Brief description of the target audience

Youth and 4-H members, Extension professionals (agricultural agents and specialists, home economists), professional government personnel, volunteers, and community residents.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	5618	0	39184	7144

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	1	0	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of children/ youth who participated in life skills and subject matter educational programs designed to teach basic life skills.

2012 University of Puerto Rico Extension Annual Report of Accomplishments and Results

Year	Actual
2012	4584

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of children/youth who demonstrated improved managing skills (decision making, problem solving, planning, organization and service learning, according to the Targeting Life Skills Model).
2	Number of children/youth who demonstrated improved relating skills (communication).
3	Number of children/youth who assumed demonstrated improved giving and working skills (leadership, community service volunteering, teamwork).
4	Number of children/youth who demonstrated improved being and living skills (self-esteem and healthy lifestyle choices).

Outcome #1

1. Outcome Measures

Number of children/youth who demonstrated improved managing skills (decision making, problem solving, planning, organization and service learning, according to the Targeting Life Skills Model).

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1956

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Puerto Rico faces a crisis in the production of agricultural products due to various factors. The stability of agricultural security in Puerto Rico could be put at risk due to natural phenomena such as earthquakes and hurricanes. Young people should be made aware of this situation to help increase food security.

What has been done

The Four-H Program established educational activities in collaboration with the Puerto Rico Department of Agriculture's International Fund for Agricultural Development (IFAD) as a strategy to guarantee food security for Puerto Ricans. These included agricultural competitions (Selection of Laying Hens, Fruit (Citric), Appraisal of Milking Cows, Starchy Crops, and Coffee) and ecological family vegetable gardens.

Results

One thousand five hundred and twenty-nine (1,529) young people were trained in various agricultural competitions, 1,848 completed the family vegetable garden courses. Sixty-nine per cent (69%) of the young people trained showed improved skills in decision making, planning and organization, and establishing goals.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #2

1. Outcome Measures

Number of children/youth who demonstrated improved relating skills (communication).

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2584

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #3

1. Outcome Measures

Number of children/youth who assumed demonstrated improved giving and working skills (leadership, community service volunteering, teamwork).

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2815

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #4

1. Outcome Measures

Number of children/youth who demonstrated improved being and living skills (self-esteem and healthy lifestyle choices).

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1633

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Other (Personnel retirement)

Brief Explanation

During fiscal year 2012 the Strengthening Youth Life Skills, Leadership and their Community planned program expended 33 FTEs, a reduction of 4 FTEs of the 37 planned for POW 2012 due to reduction in the budget assigned to government agencies and changes in public policy due to the decline in the economy, This affected the amount of people working in the programs, as the personnel that retired were not immediately replaced.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

This planned program is designed to promote life skills throughout the diverse educational methodologies addressing technical topics in areas ranging from agriculture to social values. To evaluate how the 4-H Program has promoted changes in life skills among its member, a retrospective questionnaire was administered to 66 4Hers attending the Annual State Conference. These 4Hers (ages 14 to 18) had an average of 3.8 years as club members; therefore, have had the experience and the opportunity to benefit from the different 4-H educational activities including: short courses, field trips, state conferences, contests and camps, among others.

During the Annual State Conference celebrated in June 2012, the 4-Hers answered a retrospective questionnaire to determine changes in the following life skills: decision making, communication, problem solving, goal setting, and teamwork. Changes in life skills, pre and post, are presented in the following data:

Tests	decision making	communication	problem solving	goal setting	teamwork
PRE	3.20	3.24	3.30	3.35	
3.55					
POST	4.10	3.95	4.25	4.29	
4.16					

[Scale: 5 = always, 4 = almost always, 3 = sometimes, 2 = almost never, 1 = never]

The results showed a significant increase ($P < 0.05$) in all of these life skills after having been members of the 4-H club for an average of 3.8 years. These results showed that participation in 4-H clubs contribute significantly to the development of critical life skills for positive youth development in our youngsters.

Key Items of Evaluation

A retrospective questionnaire was administered to 66 4Hers attending the Annual State Conference during June 2012 to evaluate changes in the following life skills: decision making, communication, problem solving, goal setting and teamwork. The results showed a significant increase ($P < 0.5$) in all of these life skills after having been members of the 4-H club for an average of 3.8 years. These results showed that participation in 4-H clubs contributes significantly to the development of critical life skills for positive youth development in our youngsters.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Plant System

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
204	Plant Product Quality and Utility (Preharvest)	9%			
205	Plant Management Systems	8%			
211	Insects, Mites, and Other Arthropods Affecting Plants	12%			
212	Pathogens and Nematodes Affecting Plants	9%			
216	Integrated Pest Management Systems	13%			
401	Structures, Facilities, and General Purpose Farm Supplies	7%			
402	Engineering Systems and Equipment	5%			
403	Waste Disposal, Recycling, and Reuse	7%			
405	Drainage and Irrigation Systems and Facilities	8%			
601	Economics of Agricultural Production and Farm Management	5%			
602	Business Management, Finance, and Taxation	5%			
604	Marketing and Distribution Practices	7%			
610	Domestic Policy Analysis	5%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	23.5	0.0	0.0	0.0
Actual Paid Professional	27.1	0.0	0.0	0.0
Actual Volunteer	5.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1031942	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
515971	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Technical production training meetings.
- Capacity building workshops
- Demonstration of methods
- Meetings, visits and guidance to farmers
- Collaboration with state, local and federal government agencies.
- Use of mass media to disseminate information.
- Preparation of technical plans (IPM, irrigation systems, cultivation practices)
- Prepare curricula and other educational materials

2. Brief description of the target audience

Farmers, government professionals, county agents, agricultural entrepreneurs, pesticide applicators, homeowners, landscapers, and professionals from the private sector.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	47768	39809	829	1307

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	3	0	3

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of producers trained in integrated coffee management.

Year	Actual
2012	2031

Output #2

Output Measure

- Number of producers trained in banana and plantain management.

Year	Actual
2012	2114

Output #3

Output Measure

- Number of producers trained in integrated starchy crops management.

Year	Actual
2012	1291

Output #4

Output Measure

- Number of producers trained in integrated vegetable management.

Year	Actual
2012	2718

Output #5

Output Measure

- Number of producers trained in integrated tropical fruits management.

Year	Actual
2012	882

Output #6

Output Measure

- Number of producers trained in integrated citrus management.

Year	Actual
2012	900

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of producers that adopted one or more recommended practices for integrated coffee management.
2	Number of producers that increased production and quality of coffee.
3	Number of producers that adopted one or more recommended practices for integrated plantain and banana management.
4	Number of proudcers that increased production and quality of plaintain and bananas
5	Number of producers that adopted one or more recommended practices for starchy crops management.
6	Number of producers that increased production and quality of starchy crops.
7	Number of producers that adopted one or more recommended practices for vegetable management.
8	Number of producers that increased production of vegetable crops.
9	Number of producers that adopted one or more practices for intgegrated tropical fruit management.
10	Number of producers that increased production and quality of tropical fruit crops.
11	Number of producers that adopted one or more practices for integrated citrus management.
12	Number of producers that increased production and quality of citrus.

Outcome #1

1. Outcome Measures

Number of producers that adopted one or more recommended practices for integrated coffee management.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	690

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
216	Integrated Pest Management Systems
403	Waste Disposal, Recycling, and Reuse

Outcome #2

1. Outcome Measures

Number of producers that increased production and quality of coffee.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	322

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #3

1. Outcome Measures

Number of producers that adopted one or more recommended practices for integrated plantain and banana management.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems

Outcome #4

1. Outcome Measures

Number of producers that increased production and quality of plaintain and bananas

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #5

1. Outcome Measures

Number of producers that adopted one or more recommended practices for starchy crops management.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	445

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems
405	Drainage and Irrigation Systems and Facilities

Outcome #6

1. Outcome Measures

Number of producers that increased production and quality of starchy crops.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	339

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #7

1. Outcome Measures

Number of producers that adopted one or more recommended practices for vegetable management.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2281

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Vegetable producers in Puerto Rico have been facing problems associated with poor product quality and deficient crop cultivation practices. The presence of diseases and pests required the intervention of PRAES agricultural agents and specialists to orient the farmers on better management practices.

What has been done

PRAES agents offered training, on-site visits and orientation, and educational material to farmers to better qualify them to apply best management practices to solve the problems on their farms and increase the marketing of their products.

Results

Two thousand two hundred and eighty-one (2,281) growers adopted one or more recommended practices after completing a course in integrated vegetable management (IVM). Of these 573 (25%) improved the quality of their product (before harvest) and 313 (14%) increased production. Also, 1,467 (64%) of the growers reduced pesticide use in their farms and 1,156 (51%) adopted one or more IPM practices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants

Outcome #8

1. Outcome Measures

Number of producers that increased production of vegetable crops.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	313

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
604	Marketing and Distribution Practices

Outcome #9

1. Outcome Measures

Number of producers that adopted one or more practices for integrated tropical fruit management.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	350

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems
405	Drainage and Irrigation Systems and Facilities

Outcome #10

1. Outcome Measures

Number of producers that increased production and quality of tropical fruit crops.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	105

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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205	Plant Management Systems
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
604	Marketing and Distribution Practices

Outcome #11

1. Outcome Measures

Number of producers that adopted one or more practices for integrated citrus management.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	331

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems
405	Drainage and Irrigation Systems and Facilities

Outcome #12

1. Outcome Measures

Number of producers that increased production and quality of citrus.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
604	Marketing and Distribution Practices

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Crop production was affected by key pests. In coffee, the coffee berry borer affected coffee growers reducing production and quality. In plantain, the black sigatoka disease continues as the most important problem affecting production. Citrus greening, a new disease in citrus crops in Puerto Rico, is spreading throughout the Island. Citrus producers had a reduction in production and increased fertilization costs and management of the psyllid vector of the disease.

Although we had no major hurricane passing through Puerto Rico, during the 2012, the rainy season had a negative impact on production. In areas where there was an increase in outcomes PRAES worked jointly with Puerto Rico Agriculture Experiment Station researchers to convey the importance and benefits of applying better management practices and IPM.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

In our 2012 POW we planned evaluation studies, before and after, case studies and a survey. We expect to have the final results for our 2013 Annual Report.,

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Management of Rangeland and Forestry Resources/Soil, Water, and Air

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	5%			
102	Soil, Plant, Water, Nutrient Relationships	20%			
121	Management of Range Resources	25%			
122	Management and Control of Forest and Range Fires	5%			
123	Management and Sustainability of Forest Resources	15%			
124	Urban Forestry	20%			
133	Pollution Prevention and Mitigation	5%			
141	Air Resource Protection and Management	5%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	6.0	0.0	0.0	0.0
Actual Paid Professional	5.2	0.0	0.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
198246	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
99123	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- * Collaborate with government agencies (DNRA, USDA-NRCS and others).
- * Collaborate with our partners in the University of Puerto Rico and other educational institutions.
- * Conduct workshops, short courses and trainings on practices, laws, and regulations related to range management, urban forestry, soil, water, and air.
- * On-site farm visits and field trips to demonstration projects.
- * Offer advice when clientele visit the office.
- * Participate in radio programs.

2. Brief description of the target audience

Farmers (includes small family farms, large scale farm business operations), farm workers, government professionals, Extension professionals, community residents and youth 13-18 years old.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	4500	4000	500	0

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of farmers trained in range management.
Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Number of people that participated in workshops, conferences or meetings on urban forestry.

Year	Actual
2012	216

Output #3

Output Measure

- Number of persons trained on forest and rangeland fire prevention.
Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Number of persons trained on pollution prevention and mitigation of natural resources.
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Number of people trained on natural resources and forest conservation.

Year	Actual
2012	63

Output #6

Output Measure

- Number of trainings offered on soil, water, and air.

Year	Actual
2012	48

Output #7

Output Measure

- Number of farmers trained on agricultural practices for air and water quality.

Year	Actual
2012	198

Output #8

Output Measure

- Number of people trained on environmental regulations for soil, air, and water quality.

Year	Actual
2012	1991

Output #9

Output Measure

- Number of farmers trained on soil fertility.
Not reporting on this Output for this Annual Report

Output #10

Output Measure

- Number of farmers trained on soil conservation practices

Year	Actual
2012	247

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of farmers that improved their pastures.
2	Number of persons that adopted one or more practices on natural resources and forest conservation.
3	Number of reforestation projects established.
4	Numbers of persons that adopted one or more practices on fire prevention in forests and rangelands.
5	Number of farmers that adopted the recommended range management practices.
6	Number of acres in improved pastures.
7	Number of persons that adopted practices for pollution prevention and mitigation of natural resources.
8	Number of farmers that comply with the soil, air, and water regulations.
9	Number of farmers that adopted the fertilization practices.
10	Number of farmers that adopted one or more soil conservation practices.
11	Number of people that adopted one or more practices on soil, water, and air.

Outcome #1

1. Outcome Measures

Number of farmers that improved their pastures.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Number of persons that adopted one or more practices on natural resources and forest conservation.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The use of our land for agricultural purposes or urban development has contributed to the alarming extent of deforestation in Puerto Rico, increasing the erosion and sedimentation of our bodies of water. This caused great concern in farmers and citizens that realized that something had to be done to control the loss of soil and amount of flooding which causes great losses to our agriculture, economy and the community.

What has been done

Through joint efforts between AES and local and federal agencies, workshops, guides, training, and technical assistance were offered to promote and develop projects for the conservation of our natural resources and reforestation. Community groups, schools, and farmers participated in these activities where they were encouraged to implement the knowledge acquired and recommended practices for management of our natural resources and forests.

Results

Forty-six (46) reforestation projects were established, 200 persons trained were impacted and adopted one or more practices on natural resources and forest conservation. Practices that promote the use of environment-friendly agricultural technologies such as organic fertilizers and

alternative pest control techniques were some of the practice adopted.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
124	Urban Forestry

Outcome #3

1. Outcome Measures

Number of reforestation projects established.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	11

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The absence of green areas in cities and communities has led to an increase in temperatures in the communities and cities, and a reduction of passive areas for the enjoyment of people and wildlife.

What has been done

As a result, concerned community members organized to develop urban reforestation projects to improve the quality of life and the urban environment. The Agricultural Extension Service (AES) developed educational workshops to raise awareness, train members and community leaders on the importance and benefits of urban reforestation and green areas in urban areas. Members of the community, volunteers, and schools participated in the workshops.

Results

Eleven (11) reforestation projects were established as a result of the involvement of community members, community groups, and schools throughout the island. Two hundred and fifty (250) leaders, community members, and students participated in the reforestation projects. Leaders and community volunteers planted trees, shrubs, and cover plants in uncultivated areas and parks. These projects have been instrumental in bringing together community members in projects that contribute to improving the quality of life of citizens, the environment and the wildlife

in our cities and communities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
124	Urban Forestry

Outcome #4

1. Outcome Measures

Numbers of persons that adopted one or more practices on fire prevention in forests and rangelands.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
122	Management and Control of Forest and Range Fires

Outcome #5

1. Outcome Measures

Number of farmers that adopted the recommended range management practices.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Number of acres in improved pastures.

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Number of persons that adopted practices for pollution prevention and mitigation of natural resources.

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Number of farmers that comply with the soil, air, and water regulations.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	459

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There is great concern among farmers on the potentially negative impacts of agriculture and their farming practices on soil, air, and water. The number of farmers complying with environmental regulations also needed to increase.

What has been done

AES, local and federal environmental agencies developed educational programs to increase the number of farmers complying with the environmental regulations. Workshops, demonstrations of methods, field days and other educational activities were offered to promote the use of best management practices (BMP's) and to minimize the negative impact of agriculture on soil, air and water.

Results

Twenty-three per cent (23%) of the farmers trained comply with soil, air, and water regulations; and their use of BMP's has helped to minimize the negative impact of agriculture on the environment.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
141	Air Resource Protection and Management

Outcome #9

1. Outcome Measures

Number of farmers that adopted the fertilization practices.

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

Number of farmers that adopted one or more soil conservation practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	247

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The intensive cultivation of our lands causes erosion, loss of fertility of soils, intensive use of pesticides and inorganic fertilizers to increase the productivity of soils. Concerned about the high costs of inorganic fertilizers and loss of productivity farmers are using BMP's to decrease costs, reducing the use of inorganic fertilizers to protect and conserve soils. AES and Natural Conservation Resources Service (NCRS) through educational workshops and demonstrations of method have been promoting the adoption of these practices.

What has been done

Workshop and method demonstration were used to show the effectiveness of soil conservation practices. Crop rotation and cross-slope farming were some of the practices demonstrated to decrease the high cost of inorganic fertilizers, and pesticides were used to conserve and protect the soil.

Results

Two hundred and forty-seven (247) farmers trained in soil conservation practices adopted one or more practices to control soil erosion and improve fertility, and the application of animal manure to reduce the use of inorganic fertilizers and, over time improve soil quality.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships

Outcome #11

1. Outcome Measures

Number of people that adopted one or more practices on soil, water, and air.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	427

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There is great concern in the community and among farmers of the deterioration and contamination of soil, air and water and the negative impact of agriculture on soil, air and water.

What has been done

The Agricultural Extension Service (AES) and federal environmental agencies developed workshops and assistance and guidance programs for farmers and communities to raise awareness and adopt measures that will contribute to reduce the deterioration of soil, water and air resources. Groups of citizens were organized to carry out programs and educational projects in schools, homes and the community to adopt these practices. Practices as simple as maintaining vegetative cover on the ground helps to avoid erosion, sedimentation of our bodies of water and air pollution.

Results

Four hundred and twenty-seven (427) persons adopted one or more practices on soil, water, and air. The adoption of these practices has helped improve the environment by reducing erosion and improving the soil structure and the quality of air by carbon fixation and a lower CO2 emission to the environment, reducing runoff and contamination of surface water, greater water retention capacity and reduced risk of flooding. This represents a reduction in costs and an increase in production for the farmers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
141	Air Resource Protection and Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Other (Availability of econo. incentives)

Brief Explanation

Although we were spared a direct hit, tropical hurricanes passing close to Puerto Rico brought strong winds and heavy rainfall with strong and extensive flooding, causing severe damage to our agriculture. These losses affected our local economy, decreasing the income of farmers and families involved in this important sector of the Puerto Rican economy. Also, changes in regulations and public policy caused farmers to change their priorities or postpone their projects; the decrease of economic incentives for farmers and non-government entities impacted decision making that require large capital investments.

Any change in priorities set by the administration have an effect on program outcomes.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Family Well-being

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
607	Consumer Economics	10%			
724	Healthy Lifestyle	20%			
801	Individual and Family Resource Management	30%			
802	Human Development and Family Well-Being	40%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	17.0	0.0	0.0	0.0
Actual Paid Professional	19.4	0.0	0.0	0.0
Actual Volunteer	26.7	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
740091	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
370046	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Participate in radio/TV Programs
- Educational Campaigns
- Curriculum and educational materials development.
- Training-the-trainers
- Workshops
- Establishment of collaborations
- Consulting
- Exhibits (Billboards in malls and public places with informative brochures and other educational material).

2. Brief description of the target audience

Extension agents, home economists, PRAES specialists, professionals from other agencies, parents, families, children, youth, elder people, volunteers, new couples, and the general public.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	31880	10778	6260	884

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	2	0	2

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of persons trained in parenting and related areas.

Year	Actual
2012	1796

Output #2

Output Measure

- Number of persons trained in aging aspects.

Year	Actual
2012	1313

Output #3

Output Measure

- Number of persons that completed the Consumer Education course.

Year	Actual
2012	372

Output #4

Output Measure

- Number of persons that completed individual and family resource management course.

Year	Actual
2012	228

Output #5

Output Measure

- Number of persons that completed non-formal health education and health promotion programs.

Year	Actual
2012	1653

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of persons that reported improved parenting skills.
2	Number of persons that gained knowledge in aging aspects.
3	Number of consumers that adopted the practice of preparing their individual family budget.
4	Number of persons that reduced their risk levels upon the completion of one or more recommended lifestyles.
5	Number of consumers that adopted savings practices through goods and services selection process (Consumer Education course)

Outcome #1

1. Outcome Measures

Number of persons that reported improved parenting skills.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1585

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Scientific studies show that the first years of a child's life are very significant. Statistics from Puerto Rico's Department of Children and Family (2010) reported 32,490 cases of maltreatment. Although we lack updated statistics to compare data, family violence and child maltreatment and abuse in Puerto Rico show an ascending tendency (PR Census 2010).

What has been done

The Family Life and Children Development specialist developed an educational campaign at the state level concerning child abuse and maltreatment. Fifty-two (52) extension agents implemented and developed the campaign "National Month of Child Maltreatment Prevention".

Results

They disseminated information and offered orientation to the general public, benefiting 17,571 persons through different strategies and methodologies such as: mass media, workshops, information centers, and others. In addition, through short courses, 88% of the participants reported improved parenting skills.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Number of persons that gained knowledge in aging aspects.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1101

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

As studies reveal that the life expectancy of individuals is longer, the elderly population has become a critical social issue.

What has been done

Extension agents were offered a diversity of short courses to respond to and attend the aging population. The courses were geared to increase participants' knowledge of the aging process and develop life skills to face depression and loneliness.

Results

Of the 1,313 persons oriented on aging aspects, 84% gained knowledge and changed attitudes toward the aging process to improve their quality of life and life expectancy.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Number of consumers that adopted the practice of preparing their individual family budget.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	319

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #4

1. Outcome Measures

Number of persons that reduced their risk levels upon the completion of one or more recommended lifestyles.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1151

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle

Outcome #5

1. Outcome Measures

Number of consumers that adopted savings practices through goods and services selection process (Consumer Education course)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	83

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
607	Consumer Economics

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Other (Retirement of FCS program personnel)

Brief Explanation

Two specialists, the health specialist and the family consumerism specialist retired affecting the development of new material and, hence, the number of persons participating in these areas.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

No evaluation was conducted during this fiscal year. An evaluation is planned for fiscal year 2014 through the methodology of focus groups to determine the skills and practices adopted after the educational intervention.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Food Safety

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	100%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	8.8	0.0	0.0	0.0
Actual Paid Professional	6.7	0.0	0.0	0.0
Actual Volunteer	1.9	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
255703	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
127851	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Updated all curriculums: Consumers and Food Managers in order to update and include recommendations for adult learning techniques.
- Worked in collaboration with the communication media.
- Continued working in partnership with other agencies to develop educational programs.
- Offered "Families Be Food Safe".
- Exhibitions, information centers, radio shows, among others.
- Offered Food Safety Course to Food Establishment managers.
PRAES and personnel of other agencies

• Trainings: Emphasized on institutions that serve At-Risk Population in the Food Code regulations, Hazard Analysis and Critical Control Points, Food Defense, and others.

2. Brief description of the target audience

- Extension professionals and other professionals
- Parents and persons that plans/buys/prepares food for the family
- Consumers with an emphasis on At risk Population
- Persons in Charge of Retail Food Establishments
- Persons in charge of Elderly Homes

3. How was eXtension used?

eXtension was not used in this program. PRAES updated curriculums and prepared material so that Food Science Professionals could offer Food safety training

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	12908	4471	876	0

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

Patent Applications Submitted

Year: 2012
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	1	0	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of consumers completing one Food Safety educational curriculum for consumers.

Year	Actual
2012	863

Output #2

Output Measure

- Number persons in charge of food establishments completing Food Safety Course.

Year	Actual
2012	3605

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of consumers that adopted one or more food handling practices.
2	Number of participants that approved the certification exam.
3	Number of participants that adopted three or more of eight selected food handling practices recommended by the Food Code.

Outcome #1

1. Outcome Measures

Number of consumers that adopted one or more food handling practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	715

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

During 2009-2012, CDC reported 1527 outbreaks caused by foodborne illnesses. Twenty one percent (21%) of these outbreaks were caused by food consumed in private homes. After a food is contaminated, further mishandling, such as undercooking or leaving food exposed to dangerous temperatures can promote microbial growth. For consumers to adopt proper food handling practices we depend on education through mass media and short courses like the ones offered by PRAES.

What has been done

We adapted the "Families Be Food Safe" campaign to our cultural needs. Lessons were prepared in which participants learned and talked about topics such as: Foodborne illness, proper handwashing procedure, how to shop for safe food, how to prepare and serve safe food, and what should I do with leftovers. We also updated "Protect your baby" curriculum, which includes 5 lessons: Food safety for mommies to be, Why is my baby/toddler susceptible?, Safe handling of breast milk, safe handling of baby formulas, and safe handling of baby food.

Results

Eight hundred and sixty-three(863) participants completed Food safety course which consisted of at least 4 lessons; 83% of the participants adopted at least one safe food handling practice. The practices adopted were: 65% cleaned and sanitized food surfaces, 76% washed their hands frequently, 61% separated food to avoid cross contamination, and 29 used a food thermometer to check cooking temperatures.

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and

Naturally Occurring Toxins

Outcome #2

1. Outcome Measures

Number of participants that approved the certification exam.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3272

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Restaurants in which there is a Food Manager (FM) certified in Food safety are less likely to Critical violations for personnel, food source or handling, in facility or equipment requirements, ware-washing and other operations (Cates, SC, et. al, 2009). Sung-Hee, P., Tong-Kyung, K, and Hye-Ja, C., (2010) found that establishments with trained employees showed improvement on the inspection score.

What has been done

The Food Safety course was offered to 3,605 FM throughout the island by two home economists working 100% FTE's in EFNEP and 10 home economists working 20% FTE's each). The course was offered in both English and Spanish to attend the needs of our clientele.

Results

Of the 3605 participants that completed the Food Safety Course, 3272 (91%) approved the test.

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #3

1. Outcome Measures

Number of participants that adopted three or more of eight selected food handling practices recommended by the Food Code.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3015

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

According to the PR Department of Health there are 39,919 Food Establishments registered. The Health Inspectors verify that food managers are measuring and recording temperatures of potentially hazardous foods using a calibrated food thermometer. They also evaluate any food handling practices that may put the food's safety and the public's health at risk.

What has been done

Our home economists offered a 13-lesson food safety course covering all the knowledge areas and FM responsibilities as required by the Food Code of 2009.

Results

Eighty-four per cent (84%) of the participants adopted three or more food handling practices, as follow: 65% prepared a plan for the control of PHF temperatures, 79% washed their hands every time they changed tasks, 69% used separate cutting boards, 57% used a food thermometer to measure PHF temperature, 66% used disposable gloves when handling ready to eat food, 78% cleaned and sanitized utensils and equipment properly, 66% thawed food properly, 61% kept h time and hot food at 135°F or above during holding.

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Government Regulations
- Competing Public priorities

Brief Explanation

The past year (2012) was election year. As part of the regulations during this period, government employees could not receive any type of training that could convey a job promotion. Being the Food safety course directed to FM, it could have been taken by political candidates, there, many government agencies with Food service decided to postpone the trainings till after the elections.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The purpose of the evaluation was to measure knowledge gained by persons in charge of food establishments after completing the Food Safety Course. This result is presented in Outcome #2 which shows that 91% approved the food safety certification exam.

Key Items of Evaluation

Participants gained knowledge after participating in the Food Safety Course, where 91% approved the certification exam.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Animal Systems

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals	10%			
302	Nutrient Utilization in Animals	10%			
303	Genetic Improvement of Animals	4%			
305	Animal Physiological Processes	4%			
306	Environmental Stress in Animals	5%			
307	Animal Management Systems	15%			
308	Improved Animal Products (Before Harvest)	9%			
311	Animal Diseases	14%			
315	Animal Welfare/Well-Being and Protection	12%			
401	Structures, Facilities, and General Purpose Farm Supplies	6%			
402	Engineering Systems and Equipment	6%			
405	Drainage and Irrigation Systems and Facilities	5%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	21.5	0.0	0.0	0.0
Actual Paid Professional	19.4	0.0	0.0	0.0
Actual Volunteer	3.7	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
737047	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
368524	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conduct seminars, meetings, trainings and workshops
 - Farm visits
 - Educational material (publications, newsletters, CDs)
 - Offer counseling and orientation
 - Work in collaboration with the communications media
 - Write and submit extension and research proposals
 - Establish collaborations with government agencies (Environmental Quality Board; State Departments of Health, Agriculture, Environmental and Natural Resources, and Education; Puerto Rico Aqueducts and Sewage Authority; USEPA; USDA; NRCS; and others)
 - Establish collaborations with our partners in the University of Puerto Rico and other educational institutions

2. Brief description of the target audience

Farmers, agricultural entrepreneurs, PRAES professionals, government personnel, community leaders, and professionals from the private sector.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	11567	137	577	14255

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

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	1	0	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of farmers trained in recommended meat production practices.

Year	Actual
2012	558

Output #2

Output Measure

- Number of farmers trained in animal protection practices.

Year	Actual
2012	773

Output #3

Output Measure

- Number of farmers trained in milk quality recommended practices.

Year	Actual
2012	217

Output #4

Output Measure

- Number of farmers trained in precommended practices in waste management systems and drainage or irrigation systems.

Year	Actual
2012	475

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of farmers that adopted a bio-security program.
2	Number of farmers that adopted practices in animal welfare and protection.
3	Number of farmers that improved milk quality after adopting the recommended practices.
4	Number of farmers that increased animal production after adopting the recommended record keeping, disease control and prevention, and feed utilization practices.
5	Number of farmers that adopted the recommended practices in relocalization of structures, dimensions of structures, and the construction code.
6	Number of farmers that adopted practices to improve their drainage or irrigation facilities.

Outcome #1

1. Outcome Measures

Number of farmers that adopted a bio-security program.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	77

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Number of farmers that adopted practices in animal welfare and protection.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	257

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Number of farmers that improved milk quality after adopting the recommended practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	138

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A dairy farmer was visited due to issues with milk quality. Each year, milk was discarded (at least 4 times) for exceeding the somatic cell count limit (i.e., 750,000 cells/ml) and bacteria count (>100,000 cfu/ml).

What has been done

To solve the problem, we made multiple visits to evaluate the milking process, feeding management, and culling criteria. After evaluating all of the management practices, the farmer and milkers were trained on the recommended practices in each of the components mentioned above. In addition, collaboration with the milk quality program of the Dairy Industry and a private dairy quality laboratory was established to analyze all cows' milk in order to ID the causative pathogen.

Results

The implementation of these recommendations resulted in an increase in daily milk yields (from 950 to 1,200 L/day), a daily gain of \$212.50 (\$0.85/L). During the following year, milk was not discarded; in this represented an income of \$3,230.00, compared to the previous year. Also, the dairy farmer reported a dramatic decrease in drug costs associated with treating mastitic cows and more time available to take care of other issues in the farm.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)

Outcome #4

1. Outcome Measures

Number of farmers that increased animal production after adopting the recommended record keeping, disease control and prevention, and feed utilization practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	162

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
305	Animal Physiological Processes
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)

Outcome #5

1. Outcome Measures

Number of farmers that adopted the recommended practices in relocalization of structures, dimensions of structures, and the construction code.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	63

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
401	Structures, Facilities, and General Purpose Farm Supplies

Outcome #6

1. Outcome Measures

Number of farmers that adopted practices to improve their drainage or irrigation facilities.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	28

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
405	Drainage and Irrigation Systems and Facilities

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy

Brief Explanation

Output #1 and Outcome #4

The number of trainings and farmers trained in recommended meat production practices was reduced due to the drastic rise in the price of concentrate, which took out of business several beef cattle and rabbit producers, among others.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Community Resources Development by Means of Fostering Sustainable Communities

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
608	Community Resource Planning and Development	50%			
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	40%			
805	Community Institutions, Health, and Social Services	10%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	30.0	0.0	0.0	0.0
Actual Paid Professional	25.5	0.0	0.0	0.0
Actual Volunteer	37.5	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
970300	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
485150	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Community assemblies, gatherings, and other meetings to establish rapport and explore needs and aspirations
- Conference/training in areas of social investment, marketing, market study and analysis, self-employment opportunities identification, community-based business and empowerment
- Participative Action Research strategies such as "reading the streets", participant observation, ethnographies, life histories, focal groups, informal interviews, and reflexive diaries
- Use of "tool box" material that empowered community participants to take advantage of the endless amount of possibilities for community oriented economic initiatives
- Develop educational material such as curriculum and modules
- Establishment of community coalitions with volunteer organizations, community services organizations, institutions, and other agencies
- Seminars with community services institutions that offer assistance in case of disaster or emergency, including volunteer organizations, non-profit groups and government agencies.

2. Brief description of the target audience

Community participants (i.e., individuals and families), community leaders, extension professionals, and other professionals.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	10487	7665	529	0

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	1	0	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of persons trained in community-based business.

Year	Actual
2012	388

Output #2

Output Measure

- Number of leaders trained on community organization and empowerment (at least four workshops).

Year	Actual
2012	506

Output #3

Output Measure

- Number of leaers trained on emergency and disaster situations (at least four workshops).

Year	Actual
2012	405

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of persons applying the recommended practices in the process of developing a community-based business.
2	Number of community-based businesses established.
3	Number of community projects established to benefit the community.
4	Number of leaders participating actively in the design and implementation of community projects.
5	Number of communities that developed an emergency and safety plan.

Outcome #1

1. Outcome Measures

Number of persons applying the recommended practices in the process of developing a community-based business.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	266

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Puerto Rico continues experiencing a negative economic growth. This is the seventh year in a row with an average negative growth per year of over 4%. Puerto Rico's CRD continues working hard in training and developing community entrepreneurs to create new markets and expand the existing.

What has been done

The Community Entrepreneurial Tool Box has been in place for five years, and the number of participants putting in place the recommended practices stabilizing at 250 plus persons per year.

Results

In 2012, 68% of the participants trained in community-based business applied one or more of the recommended practices in the process of developing a community-based business. "The Community Entrepreneurial Tool Box" has been in place for nearly five years. We have stabilized the number of participants trained in entrepreneurial and business creation skills with those implementing the skills and practices learned in a 6/10 ratio. Among the most significant skills put in place are: the formulation of a market needs assessment, marketing plan, break-even point analysis and financial plans, among others.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #2

1. Outcome Measures

Number of community-based businesses established.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	46

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The "Community Entrepreneurial Toolbox" continues offering our stakeholders (who benefit from short courses and training opportunities in Agriculture and Family Sciences) the opportunity to use the acquired skills and knowledge to promote economic activity and market their skills. Therefore, opening a new business and community based economic production activities that result in new sources of income and jobs creation.

What has been done

Stakeholders have been widely trained on the "Community Entrepreneurial Toolbox" workshop series together with other marketable skills in the areas of artisanship, craftsmanship, tailoring, children and elderly services, and agricultural production. In 2012, there has been a noticeable growth in the emergence of community economic initiatives for the Management and Operation of Community Water System facilities.

Results

The number of community-based businesses being established has stabilized at a rate of 40 plus businesses per year. CRD's strategy of providing entrepreneurial training to those stakeholders who benefit from PRAES' other courses, which provide marketable skills in family science and agriculture, has resulted effective. Most of these 46 community-based and micro-businesses being created are in areas of agricultural production, food confection, and services closely related to the Agriculture and Family Science curricula. Management of Community Water System facilities is a welcome addition of the economic ventures reported. It has resulted in the creation of 149 new jobs and provided additional income to 376 participants.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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Outcome #3

1. Outcome Measures

Number of community projects established to benefit the community.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	44

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
805	Community Institutions, Health, and Social Services

Outcome #4

1. Outcome Measures

Number of leaders participating actively in the design and implementation of community projects.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	480

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #5

1. Outcome Measures

Number of communities that developed an emergency and safety plan.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	23

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
805	Community Institutions, Health, and Social Services

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Competing Public priorities

Brief Explanation

Economy & Public Policy Changes: Puerto Rico is experiencing its seventh year in a row with a negative economic growth. The exiting government (still in power during 2012) radically changed its employment promotion strategy from providing "seed" grants to emerging small scale entrepreneurial initiatives to that of offering tax breaks and other economic incentives to mega stores that would employ displaced worker from the government sphere. Contrary to most U.S. jurisdictions, election year in Puerto Rico implies the total standstill of local government in many instances, as well as discontinuation of ongoing government initiatives once a new government results elected. The transition period usually results in a stand still condition that can last several months. This had a negative impact in our community entrepreneurial initiative by limiting even more the scarce human and economic resources available to emerging community entrepreneurs.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Five (5) Focus Groups were held in five municipalities in Puerto Rico. The counties were selected by the Federal Contact person in the Community Rural Development (CRD) area. The participants had completed the "Community Entrepreneurial Tool Box" short course.

The purpose of the focus groups was to evaluate changes in knowledge and adoption of practices after participating in the course. Forty five (45) people participated; the great majority were female (40) and 34 of the participants were 50 years old and older. The Focus Group sessions took place in the municipalities of: 1. Hormigueros (West Coast), 2. Hatillo and 3. Vega Baja (North Coast), 4. Luquillo (East Coast), and 5. Orocovis (Central Mountain).

In the area of knowledge and skills, most participants were able to mention specific skills geared to the establishment of a business and how a business plan has had a positive impact in their initiatives. In their own words:

"I was able to consider aspects I did not know before, such as the competition and how to visualize potential clientele and how to assess them".

"Our vision grew. I was able to learn how we can impact other markets."

"Personally, I was not able to apply the knowledge myself, but my husband did in establishing a school for Martial Arts. Additionally, I was able to pass on the information, beyond my husband, to other established enterprises in their pursuit to stay in business, since lately I have seen many enterprises going out of business because of a lack of information contained in the training sponsored by Extension."

"I learned how to set a fair price for the product. The price is related to the target clientele. If the price is too cheap, besides the potential loss, many people think the product is of low quality level."

"The training helped me in establishing a business plan. The concept of community enterprise is very good, since it is more sustainable, provides a sense of community, provides a good quality product, and people save in gasoline."

"Many enterprises are going out of business because they were unable to respond to the changing needs of society. Therefore, the business plan and the strategic planning concepts I learned in the training are essential to remain competitive."

"I have used the knowledge to generate an income my family. My own family benefited from the project. For example, my son in law created a soccer club in his community, as a hobby, since he already retired."

"I learned what it takes to establish a business. Extension offers a better training for free than other organizations that charge for participating. Besides, Extension provides, better than anyone else, the concept of community business."

"The training gave me the skills necessary for interacting with people and selling the products. Thanks to the training offered by Extension, I was able to expand my business."

Despite obtaining a positive evaluation on the skill and knowledge components of the "Community Entrepreneurial Tool Box" series, participants found a need to, both increase the amount of people trained and expand mentoring time by Extension personnel in order to have a significant effect Island wide. Participants pointed out that: "It is important to engage Community Development newcomer... Since Extension cannot do everything by itself, and obviously, it is not able to be everything for all people, there is a need for collaboration with other agencies with the mission of community development, specifically in the area of developing local business initiatives. Additionally, Extension agents and their community leaders must be trained in the area so they can (along with the subject matter specialists) address local needs in the area of Community Development."

"More support is needed after the training. Despite the fact that the content of training was excellent (and the trainer was too) there is little support after the workshop, when people are in the process of designing a strategic plan or business plan, getting the permits, incorporating the business, meeting the requirements, and dealing with the heavy load of paperwork."

"Extension should be present (at least once a month) in each regional area to help community groups meet the requirements for establishing a community enterprise."

"Local extension staff and leaders should be prepared to train people on a regular basis, since new clientele is constantly being incorporated. Besides, unemployment is a big issue island wide and the solution rests in community empowerment."

The Focus Groups' findings points toward the great utility and value that the "Community Entrepreneurial Tool Box" training series has had to emerging community economic

initiatives and local entrepreneurs. However, according to the participants, a more in depth mentoring by Extension field personnel and the need to increase the amount of trained people are essential to have a real impact in Puerto Rico's stricken economy.

Key Items of Evaluation

Five (5) Focus Groups were held in five municipalities of Puerto Rico with the purpose of evaluating changes in knowledge and adoption of practices after participating in the short course "Community Entrepreneurial Tool Box".

The Focus Groups' findings point toward the great utility and value that the "Community Entrepreneurial Tool Box" training series has had to emerging community economic initiatives and local entrepreneurs. However, according to the participants, a more in depth mentoring by Extension field personnel and the need to increase the amount of trained people are essential to have a real impact in Puerto Rico stricken economy.

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Climate Change

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
104	Protect Soil from Harmful Effects of Natural Elements	25%			
111	Conservation and Efficient Use of Water	25%			
112	Watershed Protection and Management	25%			
125	Agroforestry	25%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	4.0	0.0	0.0	0.0
Actual Paid Professional	5.2	0.0	0.0	0.0
Actual Volunteer	2.6	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
198626	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
99313	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Capacity building workshops
- Technical training meetings
- Mass media use to disseminate information
- Collaboration with local government agencies
 - Stage 1 (2010-2011) Curricular Guide was prepared
 - Stage 2 (2011-2012) Personnel training using lessons and information in the curricular guide (train-the-trainer)

2. Brief description of the target audience

Farmers, communities, government professionals, county Extension personnel, agronomists

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1631	413	47	7

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of people who received capacity development (workshops, seminars, conferences) on climate change.

Year	Actual
2012	154

Output #2

Output Measure

- Number of people who received capacity development (workshops, seminars, conferences) on water quality, watershed protection, and maintenance.

Year	Actual
2012	432

Output #3

Output Measure

- Number of people who received capacity development (workshops, seminars, conferences) on water collection, storage and re-use for agricultural purposes.

Year	Actual
2012	0

Output #4

Output Measure

- Number of people who received capacity development in agroforestry, soil erosion, and storm water runoff control.

Year	Actual
2012	620

Output #5

Output Measure

- Number of people who received capacity development on soil erosion and water environmental regulations.

Year	Actual
2012	381

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of people who adopted recommended practices for the adoption or mitigation of climate change in their farms.
2	Number of people who established watershed protection practices.
3	Number of people who adopted practices to improve water collection, storage, and reuse efficiency.
4	Number of people who adopted agroforestry practices.
5	Number of people who adopted/implemented soil erosion control measures.
6	Number of people who comply with environmental soil erosion and water requirements.

Outcome #1

1. Outcome Measures

Number of people who adopted recommended practices for the adoption or mitigation of climate change in their farms.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Number of people who established watershed protection practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	302

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Agriculture is the second water user in Puerto Rico. The availability, as well as the quality of water, are paramount to obtain good yields. Sound agricultural practices, which protect the environment and are in harmony with the environment, are a priority.

What has been done

Besides workshops, demonstrations, presentations and other educational methods, PRAES agricultural agents developed good working relationships with state government agencies. Such is the case of the Department of Natural Resources and Environment (DNRE), which has a forestation program to provide farmers with seedlings to protect the watersheds. The agricultural agents work closely with DNRE selecting and providing education to interested farmers. They also work closely with the USDA-NRCS on the implementation of practices like contour grass strips using vetiver grass, and have been actively working on pesticides application and solid waste management.

Results

Three hundred and two (302) farmers are implementing recommended practices such as: composting, contour ditches and farming; runoff management, followed by recommended

distances from water bodies when applying pesticides.

4. Associated Knowledge Areas

KA Code	Knowledge Area
104	Protect Soil from Harmful Effects of Natural Elements
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
125	Agroforestry

Outcome #3

1. Outcome Measures

Number of people who adopted practices to improve water collection, storage, and reuse efficiency.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Number of people who adopted agroforestry practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	179

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
104	Protect Soil from Harmful Effects of Natural Elements
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
125	Agroforestry

Outcome #5

1. Outcome Measures

Number of people who adopted/implemented soil erosion control measures.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	247

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Most of our soils are clay and great part of our farming is conducted in the central mountain area where soil erosion is a big concern; therefore, affecting farm production and soil health since most of the organic matter is already lost.

What has been done

Through many years, both Extension agents and USDA-NRCS personnel have joined efforts to work with the farmers to help them understand the benefits of soil conservation and soil erosion control. Much effort has been dedicated to educate farmers and rural communities on brush fires and their effects on our environment, one of which is an increase in soil erosion.

Results

Extension agents report that in recent years they have observed an increase in the number of farmers participating in EQIP, and that farmers are more aware that by implementing the recommended soil erosion measures, they don't require as much fertilizers as before, with 247 adopting/implementing soil erosion control measures.

4. Associated Knowledge Areas

KA Code	Knowledge Area
104	Protect Soil from Harmful Effects of Natural Elements
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
125	Agroforestry

Outcome #6

1. Outcome Measures

Number of people who comply with environmental soil erosion and water requirements.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	93

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Maintaining water quality, requires complying with regulatory agencies, such as the State Environmental Quality Board (SEQB), which regulates solid waste management in farms, as well as Soil Erosion and Sedimentation Control regulations. A high phosphorus value in the water has been reported, as well as evidence of nitrogen, which could come from fertilizer applications, animal feeding or waste.

What has been done

The PRAES Engineering unit assists farmers in developing a waste management plan to be submitted to SEQB. Prior to this, they inform the farmer and offer training to the local Extension agent to follow-up with the proposed plan compliance.

Results

Results: (10 To 12 Lines Max)

Ninety-three (93) persons comply with environmental soil erosion and water requirements. Several farmers have improved their animal structures and are properly applying fertilizers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
104	Protect Soil from Harmful Effects of Natural Elements
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
125	Agroforestry

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Government Regulations
- Competing Public priorities

Brief Explanation

Most of the farms on the Island are small scale operations. They often struggle to continue in operation, and it is becoming increasingly troublesome to comply with government regulations since they often require investment in structures and other sorts of equipment.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

We are in the third stage, training farmers. Our evaluation results should be developed by 2015, as stated in our 2012 Plan of Work.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Sustainable Energy

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
401	Structures, Facilities, and General Purpose Farm Supplies	15%			
402	Engineering Systems and Equipment	10%			
403	Waste Disposal, Recycling, and Reuse	65%			
405	Drainage and Irrigation Systems and Facilities	10%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	5.0	0.0	0.0	0.0
Actual Paid Professional	5.8	0.0	0.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
220315	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
110158	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Included in our workshops and meetings aspects of sustainable energy with emphasis on structures, waste management and irrigation equipment, and energy conservation.

- Established collaborations with government agencies (Puerto Rico Electric Power Authority; Environmental Quality Board; Departments of Agriculture, Environmental and Natural Resources, and Education; Puerto Rico Aqueducts and Sewage Authority; USEPA; USDA; NRCS; and others) and with our partners in the University of Puerto Rico and other educational institutions.

- Designed and made plans that include and promote energy sustainability and efficiency in structures, waste management systems and irrigation systems (new facilities or improvement to existing facilities).

2. Brief description of the target audience

Extension professionals, government personnel (professional), professionals from the private sector, and farmers.

3. How was eXtension used?

We recommended eXtension to clients as an excellent source of information.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	11423	1202	0	0

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of workshops and meetings offered which include aspects of energy sustainability and efficiency.

Year	Actual
2012	46

Output #2

Output Measure

- Number of collaborators from government agencies, partners in the University of Puerto Rico, and other educational institutions.

Year	Actual
2012	40

Output #3

Output Measure

- Number of designs and plans that include and promote energy sustainability and efficiency in structures, waste management systems, and irrigation systems (new facilities or improvement to existing facilities).

Year	Actual
2012	45

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of clients that participated in workshops and meetings offered, which include aspects of energy sustainability and efficiency.
2	Number of government agencies and partners in the University of Puerto Rico and other educational institutions that collaborate in projects that promote energy sustainability and efficiency.
3	Number of clients that adopted designs and plans that include and promote energy sustainability and efficiency in structures, waste management systems, and irrigation systems (new facilities or improvement to existing facilities).

Outcome #1

1. Outcome Measures

Number of clients that participated in workshops and meetings offered, which include aspects of energy sustainability and efficiency.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1611

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
401	Structures, Facilities, and General Purpose Farm Supplies
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities

Outcome #2

1. Outcome Measures

Number of government agencies and partners in the University of Puerto Rico and other educational institutions that collaborate in projects that promote energy sustainability and efficiency.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	34

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The high costs in the production of electricity in Puerto Rico during the past year, caused a decrease in the profits of the agricultural business, a decrease in labor, and the closure of several industries. As a result, the Government of Puerto Rico created public policy so that public agencies and educational institutions work together to find a way to lower energy costs or become more efficient in the use its use to help keep these businesses in operation and keep jobs.

What has been done

Settled agreements between various government agencies like the Puerto Rico Department of Agriculture, the Natural Resources and Conservation Service, municipalities, private industry, and the University of Puerto Rico to promote the use of energy-efficient equipment in cowsheds and coffee processing facilities.

Results

Results: (10 To 12 Lines Max)

Thirty-four (34) collaborations were established between government agencies and the University of Puerto Rico across the island to promote the use of energy-efficient equipment.

4. Associated Knowledge Areas

KA Code	Knowledge Area
401	Structures, Facilities, and General Purpose Farm Supplies
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities

Outcome #3

1. Outcome Measures

Number of clients that adopted designs and plans that include and promote energy sustainability and efficiency in structures, waste management systems, and irrigation systems (new facilities or improvement to existing facilities).

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	45

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The dairy industry is the most important agricultural industry in Puerto Rico. In recent years, it has been affected mainly by the continued increase in feed costs (affected by production energy costs and the change in purpose from sowing grains for food to planting energy crops).

The milk collection process in cowsheds depends on high energy consumption equipment or is inefficient (ie. cooling and heating, vacuum pumps and transfer systems and lighting among others). During 2012, the average Kwh in Puerto Rico was around \$0.28, which is 2.5 times higher than the USA average (except Hawaii) \$0.11 / kwh. This has forced several farmers to reduce labor, others to operate without profit and in the worst cases close operations.

What has been done

A training program for agricultural agents and home economists was established to disseminate the educational message about efficient use of electricity to the owners of agricultural enterprises and households. The program included training on energy efficiency, solar and wind energy, and the use of waste from animals in confinement for the production of biogas and electricity using methane.

Results

As a result, several dairy farm owners in Puerto Rico established variable speed drives in the vacuum line and heat recovery systems in milk cooling tanks to achieve a reduction of approximately 12.5% in the use of energy. This translates into savings of \$270,000 annually in the electrical bill.

4. Associated Knowledge Areas

KA Code	Knowledge Area
401	Structures, Facilities, and General Purpose Farm Supplies
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Public Policy changes
- Competing Programmatic Challenges
- Other (Availability economic incentives)

Brief Explanation

Due to high production costs, compared to other States in the nation, energy is one of the priorities of stakeholders in Puerto Rico. We were impacted adversely by the global economic downturn. The effects were observed during the past years, when we are in a declining economy with a low creation rate of well-paid jobs and a high unemployment rate. Consequently the public in general does not feel economically secure. It was not until 2012, that we saw the economy gradually begin to recover.

However, in part due to the recession, and on the other hand, to competition and the availability of financial incentives, stakeholders were shy or did not dare to invest their money in sustainable technology. Also, high transportation costs, which are added to the costs of equipment, from the US to Puerto Rico make the installation of green technology poorly viable. We understand that, until the Government makes changes in public policy to facilitate the use of this technology and offers greater incentives for their purchase and installation, we will not see a very strong growth in this sector. However, we have managed that our clientele save in energy costs by making small changes like changing light fixtures, using energy-efficient equipment or changing their behavior and using less energy while operating them.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

As sustainable energy is a new initiative, during 2012 an intensive training program was established aimed at PRAES staff and personnel from other government agencies. In 2013 we will be conducting surveys to assess the results of this training program.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Global Food Security and Hunger

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
131	Alternative Uses of Land	5%			
205	Plant Management Systems	15%			
307	Animal Management Systems	15%			
501	New and Improved Food Processing Technologies	10%			
603	Market Economics	20%			
606	International Trade and Development	5%			
610	Domestic Policy Analysis	10%			
704	Nutrition and Hunger in the Population	20%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	6.0	0.0	0.0	0.0
Actual Paid Professional	11.0	0.0	0.0	0.0
Actual Volunteer	5.2	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
420083	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
210041	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- * Prepare Curriculum and educational material
- * Capacity building workshops
- * Technical training meeting
- * Establish collaboration between the government, the private sector and the academia
- * Mass media use to disseminate information

2. Brief description of the target audience

County Extension professionals, farmers, agro entrepreneurs, government professionals, housewives

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1927	3604	50	0

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	1	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of agricultural enterprises feasibility studies

Year	Actual
2012	221

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of individuals that increased their knowledge about international trade and development.
2	Number of public policy issues related with national food security that were reviewed or proposed.
3	Number of marketing agreements established between local farmers and distributors or other components of the food supply chain.
4	Percentage increased in agricultural production.
5	Number of farmers that established sustainable agricultural systems.
6	Number of fallow "cuerdas"(acres) sowed or prepared for animal production.
7	Number of farmers that adopted one or more recommended post harvest practices.
8	Number of consumers that adopted the food basket as a guide for food security at the household level.
9	Number of home gardens established.

Outcome #1

1. Outcome Measures

Number of individuals that increased their knowledge about international trade and development.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1258

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
606	International Trade and Development

Outcome #2

1. Outcome Measures

Number of public policy issues related with national food security that were reviewed or proposed.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	28

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
610	Domestic Policy Analysis

Outcome #3

1. Outcome Measures

Number of marketing agreements established between local farmers and distributors or other components of the food supply chain.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	29

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Small and medium local farmers have to deal with strong competition with local farmers and imports to market their agricultural products.

What has been done

To help farmers sell their products, collaboration was established with the Puerto Rico Department of Agriculture and supermarket chains and food distributors at the local level.

Results

One hundred farmers sold their products directly to distributors such as Sam's Club, Wal-Mart, and Econo Supermarket, among others, as a result of 29 agreements between local farmers and the distributors.

4. Associated Knowledge Areas

KA Code	Knowledge Area
603	Market Economics

Outcome #4

1. Outcome Measures

Percentage increased in agricultural production.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Number of farmers that established sustainable agricultural systems.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	215

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
307	Animal Management Systems

Outcome #6

1. Outcome Measures

Number of fallow "cuerdas"(acres) sowed or prepared for animal production.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	364

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #7

1. Outcome Measures

Number of farmers that adopted one or more recommended post harvest practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	271

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies

Outcome #8

1. Outcome Measures

Number of consumers that adopted the food basket as a guide for food security at the household level.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	347

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
704	Nutrition and Hunger in the Population

Outcome #9

1. Outcome Measures

Number of home gardens established.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	907

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
704	Nutrition and Hunger in the Population

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Public Policy changes
- Competing Public priorities

Brief Explanation

In 2012, there was no public policy established regarding this initiative in Puerto Rico. The Agricultural Extension Service began to convey the message about the initiative and government officials began to produce related legislation and guidelines.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

There was no fiscal assessment about this initiative for 2012.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 11

1. Name of the Planned Program

Childhood Obesity

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
703	Nutrition Education and Behavior	50%			
704	Nutrition and Hunger in the Population	20%			
724	Healthy Lifestyle	30%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	10.6	0.0	0.0	0.0
Actual Paid Professional	7.8	0.0	0.0	0.0
Actual Volunteer	5.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
297939	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
148970	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Offered courses on nutrition and physical activity for children/youth and their parents or caregivers.
- Promoted breastfeeding during first 12 months of babies' life to prevent overweight and illness (help to enforce breastfeeding public policy, Bill 239).
- Developed joint action at community level to promote and implement physical activity programs and nutrition education for parents and kids.
- Promoted reduction of added sugars and saturated fats in compliance with the Dietary Guidelines for Americans 2010

2. Brief description of the target audience

Puerto Rican children/youngsters, caregivers, and their families.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	7177	2710	4101	131

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of persons that completed non-formal nutrition and physical activity education.

Year	Actual
2012	3139

Output #2

Output Measure

- Number of persons that completed non-formal harvest course and physical activity education.

Year	Actual
2012	311

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of persons that reduced their risk levels for obesity prevalence.
2	Number of persons that increased their physical activity level.
3	Number of persons that practice physical activity daily.
4	Number of persons that are harvesting and consuming nutritious foods from their own home or community garden.

Outcome #1

1. Outcome Measures

Number of persons that reduced their risk levels for obesity prevalence.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2027

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Efforts to reduce childhood obesity risks focused on nutrition education to children and their caregivers based on the predetermined needs on the adoption of healthy eating practices. Participants verbalized specific needs, such as lack of knowledge of the benefit of healthy foods on overall health, the selection and preparation of healthy foods, and the inability to make healthy choices with a tight budget. Other issues presented were the lack of knowledge on the importance of eating breakfast and making healthy snacks to prevent obesity.

What has been done

To improve knowledge that leads to healthy eating actions, the nutrition education program included the following activities in: Healthy cooking lessons, which included tours to supermarkets to make a healthy shopping list, ideas for a healthy breakfast "on the go", lessons on reading food labels to make healthy choices, health benefits of consuming the food groups from MyPlate, and increasing awareness on the Dietary Guidelines for Americans 2010, recommendations on lowering saturated fats, and increasing the consumption of fruit and vegetables to reduce obesity risks. Community outreach was accomplished through education activities in community centers, information centers in malls, and brochures and lessons in schools, among others.

Results

More than half of the participants (65%) successfully reduced their obesity risk levels by increasing the consumption of healthy foods such as: fruit, vegetables, and low fat milk; following healthy eating patterns (having breakfast and healthy snacks choices); and reducing the consumption of foods high in fats and added sugars. The most significant improvement was in the increased consumption of fruit by 52% of the participants. Other improvements were the incorporation of vegetables in their diets (44% of the participants) and change to low fat or non-fat milk (47%). Success in healthy eating practices was achieved by consuming breakfast (65%) and

adding healthy snacks (58%) to their meal patterns.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Number of persons that increased their physical activity level.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2377

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Sedentary lifestyles are associated with an increased risk for obesity. Environmental factors such as places in which walking around the neighborhood is unsafe, longer time spent in front of the TV or video games, and cuts in PA classes play a major role in weight gain.

What has been done

The nutrition education program integrated the physical activity component to their lessons, focusing on community engagement in walks, dance lessons (i.e. zumba dance), and outdoor sports and activities (i.e. basketball , track)

Results

There was a significant improvement in the level of physical activity in 75% of participants after being oriented on the importance of reducing sedentary lifestyles.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

724 Healthy Lifestyle

Outcome #3

1. Outcome Measures

Number of persons that practice physical activity daily.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1172

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There was a significant improvement in the level of physical activity in 75% of participants after being oriented on the importance of reducing sedentary lifestyles.

What has been done

Short courses on nutrition and physical activity were offered through direct contact in schools, churches, and government agencies, including the Department of Family.

Results

Despite the difficulties in establishing daily physical activity programs in schools and in the community, the benefits of these efforts are emerging with 37% of the participants meeting expectations.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

Number of persons that are harvesting and consuming nutritious foods from their own home or community garden.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	316

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
704	Nutrition and Hunger in the Population

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Competing Programmatic Challenges

Brief Explanation

Since 2011 we have experienced a shortage of personnel, especially in the area of nutrition. The Nutrition specialist retired and due to a lack of funds we worked without a replacement until August 2012.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The purpose of the evaluation was to determine changes in knowledge and adoption of practices after participating in a nutrition education program designed to encourage 4-H youth to eat a nutritious diet and increase their physical activity to prevent obesity. One hundred and eighty-eight (188) youngsters between the ages 12 to 18 completed a pre and post-test as part of this evaluation study. A post-post-test was administered after two months to determine maintenance of practices.

The questionnaire included questions about knowledge of healthy eating and the frequency of food consumption and physical activity. Frequency of food consumption was measured on a five-point scale (5=always and 1=never).

Findings of this study revealed the following results:

- There was a significant increase in knowledge from pre to post-test (from 2.81 to 4.11 of a maximum of 8).
- Specific knowledge about food groups in My Plate increased from 7% of participants with correct answers to 38%. Knowledge was retained in a quarter of the participants (26%) after a two months post-post-test.
- Approximately one quarter of participants increased frequency of consumption from pre to post-test for vegetables (27%), fruit (26%), 100% fruit juice (24%), and milk (22%).
- Food groups that increased significantly were vegetables (0.49 to 0.62 cups) and milk (1.31 to 1.47 cups). Increased consumption was maintained after two months. However, only 9% consumed the recommended minimum amount of two to three cups of vegetables and 17% consumed three or more cups of milk.
- Fruit and fruit juice did not show a significant increase after the program.
- Approximately one third of the participants showed decreased frequency of consumption of sodas and other sweetened beverages (34%), cakes and pastries (35%), and fried turnovers (26%) from pre to post-test. This pattern was maintained after two months.
- Statistics from the Youth Risk Behavior Surveillance of the Center for Disease Control and Prevention (2009) showed

that only one third of adolescents engaged in 60 minutes of physical activity daily. Similarly, only 35% of the participants at pre-test engaged in 60 minutes or more of physical activity daily. At the end of the program there was an increase to 39% of participants and two months after the program to 43%.

- Among other positive changes reported by the participants at the end of the program were: weight loss (15% of participants), feeling healthier (40%), feeling good about myself (35%), and tried a new food (21%).

This impact evaluation study suggests that nutrition education in Extension can promote changes in dietary behavior that can persist two months after and can contribute to decrease obesity prevalence. However, data also show that we are still far from adopting the recommended servings to eat a nutritious diet that can promote healthy weight.

The study also provides us a formative evaluation for a new curricular guide that emphasizes critical aspects of dietary behavior such as recommended serving sizes, food labels, healthy food choices, the importance of eating fruit and vegetables, recommendations of dietary guidelines (reduction of sodium, refined sugars and physical activity, saturated and trans fats), increasing physical activity, and the importance of water consumption.

We should reevaluate the number of lessons needed to effectively motivate changes in behavior. A future study would be needed to collect data after six months after the study for evidence of stronger permanent changes.

Key Items of Evaluation

- The purpose of the evaluation was to determine changes in knowledge and adoption of practices after participating in a nutrition education program designed to encourage 4-H youth to eat a nutritious diet and increase physical activity to prevent obesity. One hundred and eighty-eight (188) youngsters between the ages of 12 and 18 completed a pre and post-test as part of this evaluation study. A post-post test was administered after two months to determine maintenance of practices.

- Results showed significant increase in knowledge, increased frequency of consumption from pre to post-test for vegetables, fruit, 100% fruit juice, and milk, and decreased frequency of consumption from non-nutritious foods.

- There was a slight increase in the number of participants that engaged in 60 minutes or more of physical activity daily, after participating in the program.

This impact evaluation study suggests that nutrition education in Extension can promote changes in dietary behaviors that can persist two months after the study and can contribute to decrease prevalence of obesity.