

# 2007 University of Puerto Rico Extension Plan of Work

## Brief Summary about Plan of Work

This plan of work of the Puerto Rico Agriculture Extension Service (PRAES), University of Puerto Rico Land Grant College at Mayagüez, covers the fiscal years 2007-2011. This plan has a total of 198.2 FTE's for each of the years covered in this period.

The College of Agricultural Sciences (CAS) continued working on the Strategic Plan implementing the mission and vision, analyzing values, searching external and internal environment, establishing strategic direction objectives and Plan of Action.

Extension has 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 establishes 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 invite these stakeholders to participate in Extension activities and in the Stakeholder Input Process meetings and other meetings of the Community Resources Development Committee. The collaborators from the public sector are personnel from 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, Forest Services, and the Youth Affairs State office). 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, participate in the assessment process determining local needs, offering their collaboration, and involving their organizations in the search of solutions to problems. Extension specialists and administrators also maintain good relations with key leaders at the state level.

New coalitions were developed during the past year and new ones are expected to be established.

All the personnel was trained by the Planning and Evaluation Office to prepare their plans of work based on clientele needs, supported by up-to-date statistical data and outlook reports and pursuant to federal and state government public policies.

### PLANNED PROGRAMS:

#### 1) AGRICULTURE, MARKETING AND NATURAL RESOURCES

The livestock enterprises in Puerto Rico are dairy, beef cattle, swine, poultry (broiler & laying hens), fish, shrimp, rabbits, goats, and sheep. Together, they represent approximately 48% the island's total gross agricultural income, (Statistics, Puerto Rico Department of Agriculture for FY 2004-2005). During the past four decades milk production has been the most important enterprise, but the stability of the industry is challenged by several factors. Current trends of the industry show a steady decline in the number of farms as the average herd size has increased correspondingly. At the same time, the number of acres dedicated to forage production at the average dairy has been significantly reduced. Over the past ten years, the total number of acres dedicated to forage production declined by more than 12%. Faced with insufficient land for feed production, farmers are relying increasingly on imported ingredients to feed their lactating cows. The increase in confinement or semi-confinement of dairy cows in the tropics and the need for comprehensive nutrient management at the farm level to increase efficiency and reduce the threat of soil and water contamination, implies new management measures. This is a major reason for the increasing confinement or semi confinement of dairy cows in the tropics and for the need for comprehensive nutrient management at the farm level to increase efficiency and reduce the threat of soil and water contamination. The steady reduction in fresh milk consumption observed during the past years has exacerbated the economic stability of the milk industry because this is the product that generates the highest income to the farmer.

On the other hand, only 23% of all the meat consumed in Puerto Rico is produced locally. This emphasizes the potential to increase the share of the market. Low efficiency and quality of production at farm level and limited diversification of products to satisfy the needs of consumers are common problems encountered by meat producers. These problems are caused by limited control of imported products, high costs of production per unit of product, especially land and feed. Such problems need to be addressed in order to compete with imported products.

The local animal production system could become non sustainable in the long run faced with the realities of high levels of nutrient excretion, limited amount of land for forage production, and concentrated manure disposition. Eventually, if unattended, such a system can lead to the pollution of streams, estuaries, and groundwater resources. Therefore, it is critical for the long-term sustainability of the system to reduce surplus nutrient excretion and to increase recycling of nutrients on the farm by increasing the efficiency of animal production.

A cost-effective agriculture requires efficient engineering practices. The majority of the farms in Puerto Rico have structures that form part of their infrastructure. Biological systems compose most of the waste management, recycling, and reuse operations in farms with animals in confinement. The Engineering and Biosystems program seeks to improve existing structures and to provide farmers with model plans that comply with permits requirements. Through this program, PRAES helps farmers with animals in confinement to prepare waste management systems that meet state and federal requirements. In the area of irrigation and drainage, most of our efforts are geared toward the effective operation and maintenance of the equipment and water conservation.

Crop production is the second most important economic area of Puerto Rico's agriculture. In 2004-2005 the value of crop

production was \$305,768,000, an increase of \$14 million compared to 2003-2004. The crop commodities include fruit (mango, avocado, pineapple, oranges, papaya, Spanish lime, Rambutan, other citrus and fruit), vegetable crops (tomatoes, peppers, sweet peppers, onions, pumpkin, aromatic herbs, and others), starchy crops (yams, tanager, cassava, and others), ornamentals (flowering plants, cut flowers, interior and exterior foliage plants, and landscaping), coffee, bananas, and plantains. Most of the farms are small or medium sized and owner operated. Their main crop production problems are product quality and the poor use of adequate crop cultivation practices. An economically profitable and progressive agriculture requires efficient plant management and good pre- and post-harvesting management practices of products to obtain excellent quality and better utilities.

New technological practices and product quality innovations are essential for farmers to survive in the new global agriculture with GAP. The farmers should be educated to change production practices from craft production practices to more effective ones. Such efforts will help them to achieve higher production, better crop varieties, extend the harvest season, value-added, and improve quality to increase their profits.

The Crop Production program will make the Plant Product Quality and Utility and Plant Management Systems important key issues to the farmer's education program.

PRAES uses the Plant Protection program to manage, enhance, and implement integrated pest management (IPM) techniques. Its objectives are broad and may change in scope from year to year depending on the pest incidence. It includes all horticulture and agronomic plants of economic importance to Puerto Rico. Our plant protection educational programs promote the adoption of the best management practices to develop IPM systems that protect the environment, conserve the natural resources, and contribute to the competitiveness, profitability, and sustainability of Puerto Rico's agriculture. The objective is to develop integrated approaches to crop protection, minimizing the impact of pesticides on the environment. The Plant Protection program facilitates the coordination of work that includes diverse disciplines, organizations, and job functions (extension, teaching, research). It is the central point of contact for inquiries about integrated pest management, pesticide applicator training, and pesticide impact that enhances the visibility of the University of Puerto Rico-Mayaguez Campus' protection program.

Puerto Rico's high population density demands new infrastructure to satisfy its needs. This has resulted in a reduction of land available for agriculture; this squandering and urban development threatens our natural resources.

According to the 2002 Census of Agriculture 690,687 acres were dedicated to agricultural uses. Of these, 178,663 were improved pastures, 109,597 were nature pastures, and 64,963 abandoned pastures. Range and pasture production require better and more efficient use of our lands and farm animal production requires extensive, as well as intensive pasture lands for dairy and livestock production. Our main industries dairy and beef cattle as well as other emerging agricultural enterprises, such as horseback riding and "paso fino" horses, depend directly and indirectly on hay and range lands for grazing. Seventy-eight percent (78%) of livestock farmers depend on hay to feed their animals. The agricultural net income for hay and silage during 2004-2005 was \$8.9 million.

The Soil, Water, and Air program intends to train our farmers on the appropriate management of our soil, water, and air resources in order to increase yields and prevent contamination. This is necessary since we are losing available land suitable for agriculture, have a high rate of erosion, low soil fertility, and problems with salinity. Also, our watersheds are being sedimented, water for irrigation is scarce and expensive, and agriculture produces small particles and odors which affect the people and the efficiency of the enterprises. The regulatory agencies are enforcing laws to reduce environmental impact and which farmers have to comply with to receive the required farm operations permits.

Although the Aqueduct & Sewer Agency provides most of the water that we consume, 300 communities are still operating their own drinking water systems. These systems extract the water from rivers, streams or groundwater. We need to develop a program that will encourage farmers to adopt practices to reduce the effect of residual fertilizers and conserve the quality of the water. PRAES will offer technical assistance, conduct follow-ups to the producers, and visit the farms to ensure that the recommended practices are being implemented and working properly. The relation soil-plant-water-air will be analyzed to maintain a balance. Also, educational material will be prepared to deliver the information to the farmers and collaborative efforts with other agencies will strengthen the education.

## 2) FAMILY AND CONSUMER SCIENCES:

The family structure in Puerto Rico has changed with important implications for children. The issues that most concern policy makers and the public are the increasing number of single-parent families over the past three decades, and the increase in family violence, which affects the well-being of our families and their members. It is important to develop educational programs to empower families to nurture, support, and guide their members throughout their lives and motivate them to improve their quality of life and well-being. To reach this goal, the family life specialist develops programs facilitating strategic planning, workshops, curriculum, and trainings in successful parenting, character traits, values, family strengths, aging aspects, and life skills for families, children, youth, and elderly people. A special family project will be continued to help develop skills to change behaviors and adopt practices to strengthen family relations and values.

PRAES will continue working in different partnerships with health and human services agencies to focus on collaborative

efforts on the development of programs aimed at promotion of health and prevention of disease. We will promote healthy lifestyles for people in both rural and urban areas, also addressing high risk factors through the prevention and early detection of diseases, prevention of injuries and disabilities, and appropriate use of the health care system (promoting the development of self-care skills). Once the diverse need of the general public are recognized, we will concentrate our efforts to train professionals, community leaders, and the public on decision-making related to health practices, including the importance of physical activity to prevent conditions related to the leading causes of death. We will develop a special project, Promoting Healthy Lifestyles, targeted at adult clients to educate and empower individuals and families to adopt healthy behaviors and lifestyles. A curriculum guide "Prevention of Injury Using Safety", targeted to the adult population, was developed to prepare individuals and families to take the correct steps in case of an emergency and to encourage them to incorporate safety habits in their lives.

We will also continue working in the Healthy Indoor Air for America's Homes project, which prepares individuals with skills to help them identify interior air contaminants, their sources, their effects on human health, and their mitigation. Youngsters will demonstrate the knowledge and skills acquired in this project through Indoor Air Quality 4-H competitions.

The basic issue in the area of nutrition education and behavior is developing a healthy, well-nourished population within the income constraints of each participant. This issue relates to personal satisfaction in one's life, the reduction of the incidence of chronic diseases, and moderating the trends of increased obesity in the population. Current efforts to reduce the incidence of overweight and obesity are based on medical models developed over 50 years ago, and are aimed at weight control rather than health. The adequate health status issue based on nutritious food, adequate physical activity, and accepting one's body as beautiful, not health status based on a specific BMI; concerns individuals, households, communities, and society at large.

In Puerto Rico we do have no statistics concerning the presence of an adequate food supply in households to last the entire month. Studies conducted by the Puerto Rico Department of the Family show that the funds provided by NAP are not sufficient to buy nutritious food for the whole month. In working with low-income populations, it is evident that there is a problem with availability of foods in socially acceptable ways. Households with children in school have fewer problems because the children are able to have one to two meals at school; however, those with small children at home, or which consist of adults or older children who are not in school, may be at high risk for food insecurity.

CDC statistics for Puerto Rico, 1996 (earliest date for which the statistics are available), indicate that the prevalence for overweight was 37.2 (34.6-39.8) with a prevalence of obesity of 16.8 (14.8-18.8). The analogous numbers for 2002 are: overweight 39.2 (37.6-41.5, and obesity 22.0 (20.4-23.5). Persons 18 to 34 have a lower prevalence of overweight and obesity than persons 35 and older. The prevalence of overweight is greater in males than in females, but the prevalence of obesity is similar.

Studies indicate that between 80% and almost 100% of people who lose weight regain it. An informal survey of PRAES county personnel indicates that between 90 and 95% of the people failed to maintain weight loss after two to five years. However, recent work shows that the non-diet approach (Health at Every Size) results in long term improved health in adults although it was not associated with weight loss. Food related factors associated with overweight and obesity include: skipping breakfast, larger portion sizes, larger total amount of food served, high-fat-high-sugar diets, increased snacks, increased fruit juice consumption coupled with lower milk consumption, doing something else while eating, parent-child interactions while the child is eating, eating at fast food establishments, and increased choice in the marketplace. Participation in physical activity was identified as an important factor in 1955, and was recently confirmed in the WIN the Rockies program.

To deal with these problems related to overweight and obesity we have developed the program Healthy: No matter what my size or income, which is based on the idea that a healthy body feels good and looks good, no matter what its size. The basic attitude to be developed is: "I inherited a unique, complex, and attractive body. I will make sure it is as healthy as possible."

There is a safe food supply for Puerto Rico and the USA, thanks to a coordinated system of inspection that watches the entrance, the production and the distribution of foods. Foodborne illnesses are a great public health problem. According to CDC estimates, annually there are 76 millions cases, 325,000 hospitalizations, and 5,000 deaths. The number of cases for the four big foodborne illnesses (Puerto Rico Department of Health), were as follow: 1,044 cases of Salmonellosis, 207 of Hepatitis A, 12 of Shigellosis, and 1 of E. Coli 0157:H7 for 2001 and 798 cases of Salmonellosis, 102 of Hepatitis A, 33 of Shigellosis, and 3 of E. Coli 0157:H7 for 2003. The outbreaks of Salmonellosis and Hepatitis A were reduced in 24% and 51%, respectively, while the cases of Shigellosis increased in 60% and E. coli 0157:H7 is minimal.

Research among Americans ([fsis.usda.gov/OA/rePRAESrch](http://fsis.usda.gov/OA/rePRAESrch)) reveals that consumers are more knowledgeable about food safety, but may have erroneous ideas of which practices are effective to reduce risks and have attitudes that support it. The majority of the consumers are not carrying out the practices, although they wrote in a questionnaire that they were.

PRAES will continue developing and revising educational programs to support the "Fight BAC!" campaign. The Food Safety focal group concluded that educational priorities should emphasize on: 1) The basic four-steps to prevent foodborne illnesses. 2) Food handling outside the home: adequate time/temperature. 3) Food storage time. 4) Food allergies.

About 80% of foodborne disease outbreaks are associated with meals served in commercial and institutional food services. Some factors that contribute to this increase are: 1) Increase in the number of susceptible persons. 2) Consumers

spend more money on meals outside the home. 3) Food employees are not trained and haven't been supervised by well-trained managers. 4) Preparation of foods in supermarkets. 5) More surveillance and detection by Federal and State agencies.

During the past decade Federal and State agencies developed new laws and regulations bringing to the mass media problems that always existed and hadn't been given the importance that they have on public health. PRAES' priority is to offer the Food Safety Certification Course (FSCC) to persons in charge of food establishments. Promote in the participants' increased knowledge about the Food Code regulations and the application of the recommended food handling practices to control, reduce or eliminate the risks associated to food-borne illnesses.

The professional personnel in charge of establishing and/or supervising the application of regulations and procedures in institutions that prepare and/or serve food to high risk clientele, are required to manage the food safety bases of the HACCP principles. PRAES' priority is to continue offering formal education to professionals that work in teaching or enforcing compliance of the regulations established.

Food processing plants in PR must operate with the HACCP plan, GMP & SSOP. PRAES will continue offering educational support and technical assistance to this personnel.

There are 3,808,610 people living in Puerto Rico (2000 US Population Census); an absolute increase of approximately 1.1 million people over the past 30 years. Families with both parents present comprise 68% of all families on the Island. Of this type of families, 31.4% lives under the poverty level (income is less than \$10,000 per year). On the other hand, the total number of families whose head of household is a woman (no man present) is 268,476, of which 49.8% earn less than \$10,000/year. According to the Financial Institutions Commission of the Commonwealth of Puerto Rico, credit card debt for 2005 (financial institutions) was \$1.69 billion. The Bankruptcy Bulletin informed a total of 13,170 individual bankruptcy cases submitted at the U.S. District Court of Puerto Rico by 2005. By year 2002, the number of divorced couples increased by 14,578. Many behavioral and psychological studies coincide that economic pressure is one of the main causes of divorce.

Financial problems can cause negative impacts on individuals, families, and employers. Today, families are dealing in a complicated and aggressive world, where global marketing exposes them to irrational decision-making, conspicuous consumption, and faster economic resource exhaustion without adequate consumer education to help them consume in a rational way. The advertising and marketing industry aggressively seeks to create perceived needs and desires of young people, individual, families, and the general public (Kraack and Pelletier, 1998). Anderson (2004) found in a study that low-income audiences, which are susceptible to lending predatory practices, didn't like to prepare their own budget. Irrational decision-making, the inflationary process and the lack of appropriate money management skills, constrains the consumers' income and spending patterns, forcing them to borrow. Consequently, consumers have a bad credit record. In addition, young individuals and couples lack good role models in financial matters and many employees are struggling with financial woes that threaten job productivity (Garman, 2005).

This social panoramic view shows the increasing need to help consumers and households to deal effectively in a complicated economy, through financial literacy and market understanding, giving them the appropriate tools for a better decision-making process. Financial education offered through PRAES' programs could help individuals to deal proactively with the following areas: marketing problems, resource management expenses tracking, budgeting, savings, investment, debt reduction, and wise credit card use.

### 3) FOUR-H AND YOUTH DEVELOPMENT:

The primary audience of the 4-H and Youth Development program are children and youngsters between 5 to 19 years old. Due to the difference of age and diversity, their characteristics may vary according to their stage of development.

In the FY 2003-2004 Stakeholders Input process the youngsters selected the use of alcohol and drugs, sexuality, and criminality as the areas of most concern to them. According to statistics of the Department of Education (Area of Planning and Education Development, Statistics Division), during 2001-2002 there were a total of 1,872 school desertions at the intermediate and high school levels of an enrollment of 211,523 youngsters (approximately 1% of school deserters in relation to the total student population); and studies indicate a close relationship between school desertion and juvenile delinquency. One of these studies, by Dora Nevarez-Muniz, is entitled Crime in Puerto Rico. The Administration for Mental Health and Addiction Control Services (ASSMCA, 2004) revealed that 56.9% of about 24,000 students at the elementary, intermediate, and high school levels from public and private schools drink alcohol; and the Alliance for a Puerto Rico without Drugs (2002-2004) indicated that alcohol was the substance mostly used among youngsters of the public school system. Some 55.9% of the adolescents reported having drunk alcohol at least once in their life time. Other problems are offences made by these minors against society (Puerto Rico's Assistant Police Superintendent for Citizen Services of the Statistics Division, 2004) with a total 933 cases for the entire island. Of these, 716 cases were drug related. Also a total of 5,168 minors were intervened by the police (Puerto Rico Police Statistics Division, 2003). These offences were related to violence and not to sexual crimes as it was thought before. Another serious problem that may lead to school desertion is pregnancy among adolescents. Sources from the Department of Education indicate that during 2001-2002 there were 244 pregnant students at the intermediate level and 1,037 at the high school level; and statistics from the Department of Health (2003) reveal that births from adolescent mothers

constitute 17.7% of all births in Puerto Rico. These data confirm the concerns of the youngsters consulted in the Stakeholder Input Process (2003-2004).

In the FY 2004-2005 Stakeholders' Input process the selected youngsters chose the curricular areas that most interest them. These were: arts (65%), technology (59%), sports (53%), music (41%) and agriculture (34%).

In both studies the youngsters pointed out the importance of having these needs dealt with. Attending these concerns will help make a more interesting and educational program resulting in more participation. Our educational programs identify creative and innovative strategies to attain a combined balance between the themes of major interest pointed out by the youngsters and the mission of the 4-H Program. PRAES professionals will use the technical material to reach and satisfy other necessities pointed out by the youngsters to develop values and life skills.

To achieve or accomplish an appropriate development of the 4-H Program, we will use different activities and methods, such as: camps, competitions, meetings, demonstrations, and workshops; but, especially, the development of projects as strategic learning tools. We will also promote learning experiences in-service that will give youngsters the opportunity for reflection and action about issues that impact them. Through the project the youngsters will acquire and develop 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.

**4) COMMUNITY RESOURCE DEVELOPMENT:**

Forty six per cent (46.1%) of the municipalities in Puerto Rico have from 50% to 59% of the families living below the poverty level (2000 Census of Population). The Special Communities Office of Puerto Rico developed social and economic studies in 686 special communities with a sample of 76,306 residents surveyed and found that there are 138 outskirts with 37.3% of the residents lack property titles to their houses; 37% of the houses are built of wood, cement and zinc; 78.3% of the residents are unemployed, lack security, public transportation and are faced with social diseases such as use of alcohol and drugs. In these social and economically disadvantaged communities there is a prevalence of families with some indicators of school desertion, illiteracy (10%), families with only one head of household working, unemployed persons, environmental problems, lack of basic public services such as schools, post offices, waste disposal management systems, lack of work skills, total or partial absence of infrastructure and basic services like electricity, aqueducts and sewers, and recreational areas. Other social problems such as addictions, lack of security and domestic violence are endemic. These situations force residents to depend on government assistance (42.4%. or 407,275 NAP families).

CRD focuses its efforts to attending the social and economically disadvantaged communities by training leaders in community organizations, fostering empowerment and self-management. Community development has been improving the social, economic, and environmental quality of live for individuals and families. Leadership developed in the communities contributes to civic engagement and healthy communities by promoting the interaction of community institutions, health, and social services. It is a priority of the State to build a visionary, accountable, and inclusive culture of civic decision-making and problem solving, ensuring strong human and social services to support individuals, families, and those in need; ensure public health and safety projects in the communities; and help build strong community development programs, anchored in research, education, and teaching their partners.

**Estimated number of professional FTEs/SYs to be budgeted for this plan.**

Year	Extension		Research	
	1862	1890	1862	1890
2007	198.2	0.0	0.0	0.0
2008	198.2	0.0	0.0	0.0
2009	198.2	0.0	0.0	0.0
2010	198.2	0.0	0.0	0.0
2011	198.2	0.0	0.0	0.0

**Merit Review Process**

**The merit review process that will be employed during the 5-Year Plan of Work cycle**

- Internal University Panel
- External Non-University Panel

#### **Brief explanation**

The Merit Review process is conducted through four committees representing each of the four major programs: Agriculture, Marketing and Natural Resources; Family and Consumer Sciences; Four-H and Youth Development; and Community Resource Development. Each committee is composed of at least five members: Internal University members, which includes the program leader and two specialists (one from the Planning and Evaluation Office and one from the major subject area); and one faculty member from similar disciplines; and the external Non-University members representatives of the major government agencies or organizations that work with similar audiences. Members to the different committees include the Family and Consumer Sciences program (UPR), the director of Agricultural Education department (UPR-RUM), and the director of the Institute for Community Development (UPR), as well as representatives from the regional or state level of the Department of the Family, the Department of Education, the Governor's Office for Special Communities, the Governor's Office for Youth Issues, the Farmers' Association, and the Farm Service Agency. Each committee meets quarterly to evaluate the proposed plan of work for the year. External committee members evaluate the quality and relevance of the activities and programs to the State goals and offer recommendations in order to continue emphasizing critical areas already addressed in the program or to modify those areas that need to be improved. A written report is prepared at the end of each fiscal year by the program leader, in accordance with the committee members. The report describes how the committee's recommendations will be addressed.

#### **Evaluation of Multis & Joint Activities**

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

{NO DATA ENTERED}

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

{NO DATA ENTERED}

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

{NO DATA ENTERED}

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

{NO DATA ENTERED}

#### **Stakeholder Input**

**1. Actions taken to seek stakeholder input that encourages their participation (Check all that apply)**

- Targeted invitation to traditional stakeholder individuals

#### **Brief explanation.**

Stakeholders for the input process consist mainly of traditional participants or clientele in our programs who are members of the Local Advisory Committee. These are clientele with vast experience in the four major Extension programs including farmers, homemakers, youth, and key community leaders. One or two representatives of state agencies that work with similar clientele are also members of the Local Advisory Committees and, therefore, they are invited to participate in the stakeholder input process.

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

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

- Use Advisory Committees
- Use Internal Focus Groups

**Brief explanation.**

Stakeholders are identified through the local advisory committees consisting mainly of internal members of the committees. Periodically, internal focus groups will be conducted with a sample of the committee members.

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

**1. Methods for collecting Stakeholder Input**

- Meeting with traditional Stakeholder individuals
- Other

**Brief explanation**

Input from stakeholders is collected at the meetings conducted by the local advisory committees. Stakeholders are asked about the most critical issues affecting the different areas in our educational programs including: agriculture, families and youth, and communities. They are also asked to help prioritize these issues. Focus groups will be conducted periodically at the state level with a representative sample of the committee members. A written report is prepared by the county agents in collaboration with the committee members and sent to the PRAES Planning and Evaluation Office at the state level.

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

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

**Brief explanation.**

Input collected from the stakeholders are received at the state level and discussed at staff meetings with program leaders, the Planning and Evaluation Office, and the Associate Dean in order to set priorities for our programs. When there are issues which need to be emphasized, programs are redirected to address these issues. Also new emerging issues are identified through these processes and analyzed according to staff and resources available to address these issues; when needed, recommendations will be set for hiring staff.

**1. Name of the Planned Program**

Human Health and Well-Being

**2. Program knowledge areas**

- 804 Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures 10 %
- 724 Healthy Lifestyle 80 %
- 723 Hazards to Human Health and Safety 10 %

**3. Program existence**

- Intermediate (One to five years)

**4. Program duration**

- Medium Term (One to five years)

**5. Brief summary about Planned Program**

PRAES will continue working in different partnerships with health and human services agencies to focus on collaborative efforts on the development of programs aimed at the promotion of health and the prevention of disease. We will promote healthy lifestyles for people in both rural and urban areas, also addressing high risk factors through the prevention and early detection of diseases, prevention of injuries and disabilities, and appropriate use of the health care system (promoting the development of self-care skills). Once the diverse need of the general public are recognized we will concentrate our efforts to train professionals, community leaders, and the public on decision-making related to health practices, including the importance of physical activity to prevent conditions related to the leading causes of death. We will develop a special project (Promoting Healthy Lifestyles) targeted at adult clients to educate and empower individuals and families to adopt healthy behaviors and lifestyles. A curriculum guide "Prevention of Injury Using Safety", targeted to the adult population, was developed to prepare individuals and families to take the correct steps in case of an emergency and to encourage them to incorporate safety habits in their lives.

We will also continue working in the Healthy Indoor Air for America's Home Project, which prepares individuals with the necessary skills to help them identify interior air contaminants, their sources, their effects in human health, and their mitigation. Youth will demonstrate the knowledge and skills acquired in this project through Indoor Air Quality 4-H competitions.

**6. Situation and priorities**

The general health status is the product of influences from the general environment and numerous specific risk factors associated to unhealthy behaviors, such as: cigarette smoking, physical inactivity, and unattended high blood pressure and diabetes. In 2004 about 46.6% of the Puerto Ricans reported that in the past month they had not participated in any physical activity (PRBRFSS, 2006). Obesity, which is caused by the interplay of poor diet and lack of sufficient physical activity, is another contributing factor associated with the leading causes of death. Overweight and obesity in general increased from 54.0% to 61.6% during 1996-2002. The prevalence of overweight was higher in males than in females, and increased significantly with age (PRBRFSS, 2004). Obesity is also a key factor in the development of Type 2 Diabetes. The estimated prevalence of Diabetes Mellitus in 18 year olds and the older population increased from 8.5 in 2000 to 10.7 in 2004. This increment has been observed in age and in both genders, although in 2003 and 2004 women had a higher estimated prevalence than men. The majority of the people spend approximately 90% of their time indoors. This can be highly harmful to their health, if we consider the scientific evidence which indicates that toxic levels in air in interiors can be higher than the outdoor air in even the largest and most industrialized cities. The lung is the most common site of injury by airborne pollutants. Pneumonia and influenza are the eighth leading cause of death in Puerto Rico. In 2003 there were a total of 1,022 deaths due to pneumonia and influenza; this represents 3.6% of the total deaths (Department of Health, 2006). Accidents, the seventh cause of death (Health Department, 2006), are a significant threat to adults and older people, causing death and an extraordinary number of disabilities. There is some concern among policymakers about both the cost and health implications of overuse and inappropriate use of emergency rooms. A recent study made by the "Oficina de la Procuradora del Paciente" found that 64.3% of the persons that visited hospital emergency rooms brought major and minor medical problems, but not urgent conditions. People need to know how to identify the signs and symptoms that require a visit to the emergency room. The priority areas in the Health and Safety program are: to promote healthy lifestyles for people addressing high risk factors, to prepare individuals with skills that may help them identify interior air contaminants and mitigate them, and to encourage individuals to incorporate safety habits in their lives.

**7. Assumptions made for the Program**

Education to PRAES agents and community leaders will help disseminate the information to the communities.  
 Working in different partnerships with health and human services agencies to focus on collaborative efforts will help in the development of programs aimed at the promotion and prevention of health.  
 Recent information related to medicine and health is available through the internet and PR Medical Science Campus, the State Department of Health (DOH), and other state agencies.  
 Those individuals who show up for a course or enroll in a program are motivated to learn/change.  
 The ability of learning is fundamental to the nature of humans, but there are individual differences between learners.

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

To promote healthy lifestyles for people addressing high risk factors through the prevention and early detection of diseases.  
 To prepare individuals and families to take the correct steps in case of an emergency and to encourage them to incorporate safety habits in their lives to reduce injuries. 3  
 To prepare individuals with skills that may help them identify interior air contaminants, their sources, their effects on human health, and their mitigation to improve the quality of indoor air.

**9. Scope of Program**

- In-State Extension

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other than formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	9.2	0.0	0.0	0.0
2008	9.2	0.0	0.0	0.0
2009	9.5	0.0	0.0	0.0
2010	9.5	0.0	0.0	0.0
2011	9.5	0.0	0.0	0.0

**Outputs for the Program**

**13. Activity (What will be done?)**

Conference/ training related to healthy lifestyle.  
 Conference/ training related to diabetes.  
 Conference/ training related to injury prevention .  
 Conference/ training related to indoor air quality.  
 Offer advice when clientele look up in the areas of health and safety .  
 Participate in radio and TV programs.  
 Prepare educational materials .  
 Prepare newsletters .  
 Continue working in partnership with other agencies to develop educational programs.

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

Extension	
Direct Method	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Other 1 (Radio Programs)</li> <li>● Other 2 (Exhibitions)</li> </ul>

**15. Description of targeted audience**

Extension professionals (in service training), individuals interested in postponing/preventing diseases and professionals from other agencies, and the general public.

**16. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	4000	5000	0	0
2008	4000	5000	0	0
2009	4000	5000	0	0
2010	4000	5000	0	0
2011	4000	5000	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

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

2007 Target: 1200  
 2008 Target: 1200  
 2009 Target: 1200  
 2010 Target: 1200  
 2011 Target: 1200

## Outcomes for the Program

### 19. Outcome measures

#### Outcome Text: Awareness created

##### Outcome Text

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

**Outcome Type:** Medium

2007 Target: 900

2008 Target: 900

2009 Target: 900

2010 Target: 900

2011 Target: 900

##### Outcome Text

Number of persons that reduced their risk levels for a chronic disease upon the increase of physical activity in to their lifestyle.

**Outcome Type:** Short

2007 Target: 900

2008 Target: 900

2009 Target: 900

2010 Target: 900

2011 Target: 900

##### Outcome Text

Number of persons learned about risk reduction and safety

**Outcome Type:** Short

2007 Target: 1200

2008 Target: 1200

2009 Target: 1200

2010 Target: 1200

2011 Target: 1200

##### Outcome Text

Number of adults learned about indoor air contamination

**Outcome Type:** Medium

2007 Target: 700

2008 Target: 700

2009 Target: 700

2010 Target: 700

2011 Target: 700

##### Outcome Text

Number of persons detected and controlled indoor air contaminants in their homes

**Outcome Type:** Medium

2007 Target: 400  
2008 Target: 400  
2009 Target: 400  
2010 Target: 400  
2011 Target: 400

**Outcome Text**

Number of persons acquired skills and modified attitudes and practices related to injury prevention

**Outcome Type:** Medium

2007 Target: 100  
2008 Target: 100  
2009 Target: 100  
2010 Target: 100  
2011 Target: 100

**20. External factors which may affect outcomes**

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

**Description**

Puerto Rico's location in the Caribbean area is subject to a variety of natural events, which include hurricanes with heavy winds, droughts, and heavy rainy seasons that can cause floods. The government's inability to solve the problems related to the budget, has the people feeling that we have an unstable economy. Because of this, we expect changes in the money assigned to government agencies and instrumentalities, as well as changes in public policies and regulations. Sometimes the support needed from the Municipal government may vary if his/ her interests are different from those presented by the program. A project presented or on-going could be affected if for any reason the person responsible for the agency's administration changes. The same situation can occur if the community leaders change and the next ones are not interested in continuing with the education process.

**21. Evaluation studies planned**

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

**Description**

Different methods will be employed to evaluate changes in the participants. These methods will vary according to the curriculum used as some topics will be measured with post tests, pre/post test and other topics will be evaluated using a post retrospective test. These methods will be used to evaluate changes in knowledge and practices in a sample of the participants.

**22. Data Collection Methods**

- Sampling
- On-Site
- Unstructured

**Description**

Data will be collected in a sample of participants through different tests (pre/post, post, and retrospective tests) administered on-site. In addition, non-structured interviews will be used to have an in depth understanding of changes and adoption of

practices in the participants.

### 1. Name of the Planned Program

Consumer Education and Individual and Family Resources Management

### 2. Program knowledge areas

- 801 Individual and Family Resource Management 80 %
- 607 Consumer Economics 20 %

### 3. Program existence

- New (One year or less)

### 4. Program duration

- Medium Term (One to five years)

### 5. Brief summary about Planned Program

Families are dealing in a complicated and aggressive world, where global marketing exposes them to irrational decision-making, conspicuous consumption, and faster economic resource exhaustion without the adequate consumer education that helps them to consume in a rational way. Financial education is an area that has gained interest among the public in recent years. Too many individuals and families are experiencing financial crisis because of inadequate savings, increasing debt, and lack of basic skills for a better financial decision-making. The goal of the planned program Consumer Education and Individual and Family Resource Management is to increase the financial well-being of consumers through knowledge, skills, and self-confidence in competencies such as: how consumer behavior influences decision-making, budgeting, debt reduction, credit wise, savings, and investment. The program targets low-income families, new couples, 4-H members, undergraduate students, and employees from public and private sectors. Educational activities will include group workshops and individual counseling. The Behavior Change Theory, as well as the stages of change and the process of changes concepts, will be applied in the design of the curriculum. This will give participants the opportunity to think about different strategies to move ahead toward change in conduct patterns. Furthermore, social marketing and outreach activities, such as seminars, newsletters, radio programs, bulletin information center, and websites will be employed to help individuals to foster the desired behavior change. Efforts will be joined through the establishment of coalitions with other agencies in Puerto Rico, such as: Department of Consumer Affairs, Department of Education, Consumer Credit Counseling, and the Puerto Rico Banks' Association, in order to work toward a successful consumer education program.

### 6. Situation and priorities

There are 3,808,610 people living in Puerto Rico (2000 US Population Census); an absolute increase of approximately 1.1 million people over the past 30 years. Families with both parents present comprise 68% of all families on the Island. Of this type of families, 31.4% lives under the poverty level (income is less than \$10,000 per year). On the other hand, the total number of families whose head of household is a woman (no man present) is 268,476, of which 49.8% earn less than \$10,000/year. According to the Financial Institutions Commission of the Commonwealth of Puerto Rico, credit card debt for 2005 (financial institutions) was \$1.69 billion. The Bankruptcy Bulletin informed a total of 13,170 individual bankruptcy cases submitted at the U.S. District Court of Puerto Rico by 2005. By year 2002, the number of divorced couples increased by 14,578. Many behavioral and psychological studies coincide that economic pressure is one of the main causes of divorce.

Financial problems can cause negative impacts on individuals, families, and employers. Today, families are dealing in a complicated and aggressive world, where global marketing exposes them to irrational decision-making, conspicuous consumption, and faster economic resource exhaustion without adequate consumer education to help them consume in a rational way. The advertising and marketing industry aggressively seeks to create perceived needs and desires of young people, individual, families, and the general public (Kraack and Pelletier, 1998). Anderson (2004) found in a study that low-income audiences, which are susceptible to lending predatory practices, didn't like to prepare their own budget. Irrational decision-making, the inflationary process and the lack of appropriate money management skills, constrains the consumers' income and spending patterns, forcing them to borrow. Consequently, consumers have a bad credit record. In addition, young individuals and couples lack good role models in financial matters and many employees are struggling with financial woes that threaten job productivity (Garman, 2005).

This social panoramic view shows the increasing need to help consumers and households to deal effectively in a complicated economy, through financial literacy and market understanding, giving them the appropriate tools for a better decision-making process. Financial education offered through PRAES' programs could help individuals to deal proactively with

the following areas: marketing problems, resource management expenses tracking, budgeting, savings, investment, debt reduction, and wise credit card use.

**7. Assumptions made for the Program**

Financial education is an area that has gained interest among the public in recent years. Too many individuals and families are experiencing financial crisis because of inadequate savings, increasing debt, and lack of basic skills for a better financial decision-making. According to Hogarth (2002), well educated consumers should make better decisions for their families, increasing their economic security and well-being. Furthermore, secure families are better able to contribute to vital, thriving communities, further fostering community economic development. Barheim, Garret, and Maki (2001) found that early exposure to financial concepts may increase comfort and familiarity with financial matters, thereby removing psychological barriers that impede proper decision-making.

According to O’Neill (1999), Money 2000 was an educational program that many State Cooperative Extension workers used as a method to increase the financial well-being of consumers. The most important find of this study was that those participants that paid more than the minimum balance due on credit cards, were more eager to make behavior changes, specifically on wise investment actions and setting financial goals. Utilizing the Transtheoretical Model of behavior change, individuals in the preparation and action stages of changes will probably be more attracted to enrollment in Money 2000 or other educational services programs than others that are not ready for change. O’Neill found that marketing and outreach activities, such as seminars, newsletters, and websites can help individuals to foster the desired change in anticipation of the preparation stage.

Coalitions with other consumer agencies will be an important component for a successful consumer education program. Such agencies could be: Department of Consumer Affairs, Department of Education, Consumer Credit Counseling, and the Puerto Rico Banks’ Association.

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

To increase the financial well-being of consumers through knowledge, skills and self-confidence in competencies such as: how consumer behavior influences decision making, budgeting, debt reduction, credit wise, savings, and investment.

**9. Scope of Program**

- In-State Extension

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other then formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	9.2	0.0	0.0	0.0
2008	9.2	0.0	0.0	0.0
2009	9.5	0.0	0.0	0.0
2010	9.5	0.0	0.0	0.0
2011	9.5	0.0	0.0	0.0

**Outputs for the Program**

**13. Activity (What will be done?)**

Curriculum and educational materials development

Training the trainers  
 Workshops  
 Establishment of collaborations  
 Consulting  
 Media programs  
 Exhibitions (Billboards in malls and public places with informative brochures and other educational material)

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

Extension	
Direct Method	Indirect Methods
<ul style="list-style-type: none"> <li>● Education Class</li> <li>● Workshop</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Web sites</li> <li>● Other 1 (Radio Program)</li> <li>● Other 2 (Exhibitions)</li> </ul>

**15. Description of targeted audience**

New couples, individuals, low-income families, Extension professionals, personnel from other State agencies.

**16. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	2400	5000	0	0
2008	2600	5250	0	0
2009	2800	5500	0	0
2010	3000	5750	0	0
2011	3250	6000	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

Total number of consumers that completed the Consumer Education Course.

2007 Target: 300  
2008 Target: 325  
2009 Target: 350  
2010 Target: 375  
2011 Target: 400

**Output Text**

Total number of consumers that completed individual and family resource management course.

2007 Target: 300  
2008 Target: 325  
2009 Target: 350  
2010 Target: 375  
2011 Target: 400

**Outcomes for the Program**

**19. Outcome measures**

**Outcome Text: Awareness created**

**Outcome Text**

Total number of consumers that acquired knowledge about consumption decision-making process (Consumer Education course)

**Outcome Type:** Short

2007 Target: 275  
2008 Target: 300  
2009 Target: 325  
2010 Target: 350  
2011 Target: 375

**Outcome Text**

Total number of consumers that acquired knowledge about their rights and responsibilities as consumers (Consumer Education course)

**Outcome Type:** Short

2007 Target: 275  
2008 Target: 300  
2009 Target: 325  
2010 Target: 350  
2011 Target: 375

**Outcome Text**

Total number of consumers that acquired skills on how to differentiate between needs and desires. (Consumer Education course)

**Outcome Type:** Short

2007 Target: 275  
2008 Target: 300  
2009 Target: 325  
2010 Target: 350  
2011 Target: 375

**Outcome Text**

Total number of consumers that acquired skills to avoid the influence of publicity and marketing on decision-making. (Consumer Education course)

**Outcome Type:** Short

2007 Target: 275  
2008 Target: 300  
2009 Target: 325  
2010 Target: 350  
2011 Target: 375

**Outcome Text**

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

**Outcome Type:** Medium

2007 Target: 200  
2008 Target: 225  
2009 Target: 250  
2010 Target: 275  
2011 Target: 300

**Outcome Text**

Total number of consumers that acquired knowledge to establish goals and objectives (Family Resource Management)

**Outcome Type:** Short

2007 Target: 275  
2008 Target: 300  
2009 Target: 325  
2010 Target: 350  
2011 Target: 375

**Outcome Text**

Total number of consumers that prepared an individual or family budget (Family Resource Management)

**Outcome Type:** Short

2007 Target: 275  
2008 Target: 300  
2009 Target: 325  
2010 Target: 350  
2011 Target: 375

**Outcome Text**

Total number of consumers that adopted the practice of preparing their individual or family budget (Family Resource Management)

**Outcome Type:** Medium

2007 Target: 200  
2008 Target: 225  
2009 Target: 250  
2010 Target: 275  
2011 Target: 300

**Outcome Text**

Total number of consumers that acquired skills on how to use their credit card, their checking account, or their savings account. (Family Resource Management)

**Outcome Type:** Short

2007 Target: 275  
2008 Target: 300  
2009 Target: 325  
2010 Target: 350  
2011 Target: 375

**Outcome Text**

Total number of consumers that made plans to reduce credit card use. (Family Resource Management)

**Outcome Type:** Short

2007 Target: 200  
2008 Target: 225  
2009 Target: 250  
2010 Target: 275  
2011 Target: 300

**Outcome Text**

Total number of consumers that adopted debt reduction.(Family Resource Management)

**Outcome Type:** Short

2007 Target: 200  
2008 Target: 225  
2009 Target: 250  
2010 Target: 275  
2011 Target: 300

**Outcome Text**

Total number of consumers that acquired knowledge about track spending patterns. (Family Resource Management)

**Outcome Type:** Short

2007 Target: 275  
2008 Target: 300  
2009 Target: 325  
2010 Target: 350  
2011 Target: 375

**Outcome Text**

Total number of consumers that adopted practices on how to save.(Family Resource Management)

**Outcome Type:** Medium

2007 Target: 200  
2008 Target: 225  
2009 Target: 250  
2010 Target: 275  
2011 Target: 300

**Outcome Text**

Number of consumers that opened a savings account. (Family Resource Management)

**Outcome Type:** Medium

2007 Target: 150  
2008 Target: 175  
2009 Target: 200  
2010 Target: 225  
2011 Target: 250

**Outcome Text**

Number of consumers that acquired knowledge to request their credit record. (Family Resource Management)

**Outcome Type:** Short

2007 Target: 275  
2008 Target: 300  
2009 Target: 325  
2010 Target: 340  
2011 Target: 275

**Outcome Text**

Number of consumers that improved their financial well-being.

**Outcome Type:** Long

2007 Target: 50  
2008 Target: 55  
2009 Target: 60  
2010 Target: 65  
2011 Target: 70

**20. External factors which may affect outcomes**

- Competing Public priorities
- Competing Programatic Challenges

**Description**

Goal enhancement could be affected by external elements, such as rivalry with other public priorities and other programmatic challenges. Said situation could realign human and fiscal resources to those other priorities, reducing the potential effectiveness of the proposed program.

**21. Evaluation studies planned**

- Retrospective (post program)

**Description**

After finishing the course, all contestants will answer a retrospective evaluation questionnaire. This evaluation would ask the participant to determine his or her level of knowledge, skills, and attitudes about such course.

**22. Data Collection Methods**

- Whole population
- On-Site

**Description**

An on-site retrospective test will be administered to all participants to measure changes in skill and practices after participating in the program.

## 1. Name of the Planned Program

Food Safety Program

## 2. Program knowledge areas

- 712 Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins 100 %

## 3. Program existence

- Mature (More than five years)

## 4. Program duration

- Long-Term (More than five years)

## 5. Brief summary about Planned Program

The goal of this program is "To improve food safety through the control, the reduction or the elimination of contamination risks". It includes four main components: A) "Fight BAC!" campaign for consumers; B) The Food Safety Certificate course for persons in charge of food establishments; C) Train-the-trainers for university personnel and professionals of other government agencies and organizations; and D) Trainings and food technology counseling for the development of food products, to small and medium processor plants.

The Fight BAC! Campaign is the consumer educational strategy promoted by the National Initiative, From Farm to Table. The Puerto Rico Agricultural Extension Service (PRAES) adapted it to the Puerto Rican consumer's particular situations for food handling and socioeconomic and cultural factors. PRAES has three curriculums: (1) Fight BAC!, maintain food free from bacteria; (2) Preparation of nutritional safe recipes; and (3) Protect your baby.

The Food Safety Certificate Course (FSCC) includes 12 lessons that facilitate the training of the persons in charge of food establishments in the FDA 2005 Food Code regulations: 17 knowledge areas (2-102.11), the responsibilities (FC 2-101.11, 2-103.11) and Hazard Analysis and Critical Control Points (HACCP). This course includes the certification test of knowledge that is required by the Puerto Rico Department of Health.

Train-the-trainers for PRAES personnel on the curriculums developed for their clientele and their professional continuing education. PRAES maintains coordination with Federal and State government agencies in their common goal to improve food safety. PRAES has a protagonist roll in the Partnership for Food Safety Education (PSE) that groups representatives of regulatory agencies and the ones that serve susceptible clientele. PFSEP makes plans and offers trainings to professional personnel; promotes the collaboration of private and public institutions; and delivers education to the respective clienteles. Educational activities are developed and celebrated during September, "Month of Food Safety Education".

Technical assistance to small food processing, packing, and distributing plants. The assistance and trainings to personnel focuses on "Hazard Analysis and Critical Control Point (HACCP)", "Good Manufacturing Practices (GMP)", and "Sanitation Standard Operating Procedures (SSOP)".

## 6. Situation and priorities

The food supply for Puerto Rico and the USA is safe thanks to a coordinated system of inspection that watches the entrance, the production and the distribution of foods. Foodborne illnesses are a great public health problem. According to CDC estimates, annually there are 76 millions cases, 325,000 hospitalizations, and 5,000 deaths. The number of cases for the four big foodborne illnesses (Puerto Rico Department of Health), were as follow: 1,044 cases of Salmonellosis, 207 of Hepatitis A, 12 of Shigellosis, and 1 of E. Coli 0157:H7 for 2001 and 798 cases of Salmonellosis, 102 of Hepatitis A, 33 of Shigellosis, and 3 of E. Coli 0157:H7 for 2003. The outbreaks of Salmonellosis and Hepatitis A were reduced in 24% and 51%, respectively, while the cases of Shigellosis increased in 60% and E. coli 0157:H7 is minimal.

Research among Americans ([fsis.usda.gov/OA/rePRAESrch](http://fsis.usda.gov/OA/rePRAESrch)) reveals that consumers are more knowledgeable about food safety, but may have erroneous ideas of which practices are effective to reduce risks and have attitudes that support it. The majority of the consumers are not carrying out the practices, although they wrote in a questionnaire that they were.

PRAES will continue developing and revising educational programs to support the "Fight BAC!" campaign. The Food Safety focal group concluded that educational priorities should emphasize on: 1) The four basic steps to prevent foodborne illnesses. 2) Food handling outside the home: adequate time/temperature. 3) Food storage time. 4) Food allergies.

About 80% of foodborne disease outbreaks are associated with meals served in commercial and institutional food services. Factors that contribute to this increase are: 1) Increase in the number of susceptible persons. 2) Consumers spend more money on meals outside the home. 3) Food employees untrained and are not supervised by well-trained managers. 4) Preparation of foods in supermarkets. 5) More surveillance and detection by Federal and State agencies.

During the past decade Federal and State agencies developed new laws and regulations bringing to the mass media

problems that always existed and hadn't been given the importance that they have on public health. PRAES' priority is to offer the Food Safety Certification Course (FSCC) to persons in charge of food establishments. Promote in the participants' increased knowledge about the Food Code regulations and the application of the recommended food handling practices to control, reduce or eliminate the risks associated to food-borne illnesses.

The professional personnel in charge of establishing and/or supervising the application of regulations and procedures in institutions that prepare and/or serve food to high risk clientele, are required to manage the food safety bases of the HACCP principles. PRAES' priority is to continue offering formal education to professionals that work in teaching or enforcing compliance of the regulations established.

Food processor plants in PR must operate with the HACCP plan, GMP & SSOP. PRAES will continue offering educational support and technical assistance to this personnel.

**7. Assumptions made for the Program**

Consumers – PRAES has 60 home economists that utilize three courses of “Fight BAC” to teach different types of clienteles. The curriculums were prepared and validated according to the Puerto Rican idiosyncrasy.

Persons in charge of FSCC – Since the year 2000, the Puerto Rico Department of Health adopted the FDA Food Code to regulate and inspect food establishments. This regulation demands that they have at least one certified person in charge during each shift to efficiently supervise food handling during the production and service hours. FSCC contains the regulations and all critical limits that food establishments must comply with. We expect all of them to adopt the majority of the practices learned. PRAES and personnel of other agencies – The Partnership for Food Safety Education in Puerto Rico discusses food safety public policy and makes agreements to enforce the Food Code and other regulations applying to institutions.

The small food product processors, packers and distributors do not have with enough economic resources to pay private consultants for assessment in the preparation and implementation of HACCP, GMP & SSOP. PRAES is currently offering that service without cost to small businesses to help them be competitive in the market and at the same time help Puerto Rico's general economy.

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

To improve food safety through the control, the reduction or the elimination of the contamination risks.

**9. Scope of Program**

- In-State Extension

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other then formula funds or state-matching funds**

- Yes

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	8.2	0.0	0.0	0.0
2008	8.2	0.0	0.0	0.0
2009	7.0	0.0	0.0	0.0
2010	7.0	0.0	0.0	0.0
2011	7.0	0.0	0.0	0.0

## Outputs for the Program

### 13. Activity (What will be done?)

For Consumers:

- Fight BAC! Courses: Teaching field personnel will select a minimum of four lessons out of eight available based on the needs of consumers.
- Protect your baby: Includes four lessons, brochures, and flit chart addressed to pregnant women and mothers with infants. We recommend it be offered to high school students and groups of young mothers.
- Course and competence Nutritional & innocuous recipes: Includes three lessons: 1) Developing nutritional & innocuous recipes. 2) Steps to prepare innocuous recipes. 3) Puerto Rico Food Pyramid and competition on the preparation of original nutritional and innocuous recipes.
- Exhibitions, information centers, radio programs, and other activities.

Persons in charge (PIC) of food establishments:

- Continue training and coordination using home economists to offer FSCC (12 lessons) to PIC. For 2007-2011 we expect 18 home economists to offer the FSCC to approximately 2,500 participants per year, with the advice and assistance of one to two food specialists.
- Specialists advising the impleme

### 14. Type(s) of methods will be used to reach direct and indirect contacts

Extension	
Direct Method	Indirect Methods
<ul style="list-style-type: none"> <li>● Education Class</li> <li>● Workshop</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● TV Media Programs</li> <li>● Web sites</li> <li>● Other 1 (Telephone Calls and Email)</li> <li>● Other 2 (Publications)</li> </ul>

### 15. Description of targeted audience

Fight BAC courses: Consumers, with emphasis on young mothers and susceptible groups (elderly, children, adolescents, and others).

Food Safety Certificate Course: PIC of foods in high risk institutions (school lunch program, children and elderly day care centers, and others), Owners/administrators, managers and food employees-Will give special attention to oystermen booths and improvised food establishments.

Training and specialized advising to professionals: Specialists, home economists and agricultural agents; Administrators of institutions that serve susceptible populations; Environment health inspectors, nutritionists, educators, agronomists, and others; Graduates students of the Food Science and Technology Program; Universities students; The professionals of institutions that belong (public educators) to the Partnership for Food Safety Education.

Advising and technical help in food processor plants: Owners/administrators, managers and food production and packaging supervisors; Persons that transport and distribute food products.

### 16. Standard output measures

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	12100	9000	0	0
2008	12100	9000	0	0
2009	10100	7000	0	0
2010	10100	7000	0	0
2011	10100	7000	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

Number of consumers completing one educational curriculum.

2007 Target: 1200  
 2008 Target: 1200  
 2009 Target: 1000  
 2010 Target: 1000  
 2011 Target: 1000

**Output Text**

Number of participants that completed FSCC.

2007 Target: 2500  
 2008 Target: 2500  
 2009 Target: 2500  
 2010 Target: 2500  
 2011 Target: 2500

**Output Text**

Number of technical help in HACCP, GMP and/or SSOP provides through visits, documents evaluation for revision or writing, to take samples, and others.

2007 Target: 4  
 2008 Target: 4  
 2009 Target: 1  
 2010 Target: 1  
 2011 Target: 1

**Output Text**

Number HACCP, GMP y/o SSOP documents evaluated, corrected or written.

2007 Target: 3  
 2008 Target: 3  
 2009 Target: 1  
 2010 Target: 1  
 2011 Target: 1

## Outcomes for the Program

### 19. Outcome measures

#### Outcome Text: Awareness created

##### Outcome Text

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

##### Outcome Type: Medium

2007 Target: 1000

2008 Target: 1000

2009 Target: 1000

2010 Target: 1000

2011 Target: 1000

##### Outcome Text

Number of participants that approved the certification exam.

##### Outcome Type: Medium

2007 Target: 2500

2008 Target: 2500

2009 Target: 2500

2010 Target: 2500

2011 Target: 2500

##### Outcome Text

Number of participants that wrote a plan to control the temperatures in Potentially Hazardous Foods (PHF).

##### Outcome Type: Medium

2007 Target: 1200

2008 Target: 1200

2009 Target: 1200

2010 Target: 1200

2011 Target: 1200

##### Outcome Text

Number of participants that adopted 15 or more of 20 selected food handling practices recommended by the Food Code.

##### Outcome Type: Medium

2007 Target: 1750

2008 Target: 1750

2009 Target: 1750

2010 Target: 1750

2011 Target: 1750

##### Outcome Text

Number of facilities that implement prepared or corrected HACCP plan as a result of the technical help offered.

**Outcome Type:** Short

- 2007 Target: 3
- 2008 Target: 3
- 2009 Target: 1
- 2010 Target: 1
- 2011 Target: 1

**Outcome Text**

Number of facilities improving or modifying the existing GMP and SSOP as a result of the technical help offered.

**Outcome Type:** Short

- 2007 Target: 3
- 2008 Target: 3
- 2009 Target: 1
- 2010 Target: 1
- 2011 Target: 1

**20. External factors which may affect outcomes**

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

**Description**

Puerto Rico is in a high-risk area for hurricanes, especially between July and November. After a disaster, the risks of foodborne illnesses originated by floods and water and the interruption of electricity and potable water services increases. The interruption of these services has become a common issue, which requires constant education about the additional practices that the whole population has to carry out to maintain safe foods. PRAES has developed special educational material entitled "Fight BAC! After Floods and Blackouts". The profession personnel at the local level will offer education through short courses, mass media community resources during hurricane season.

Puerto Rico's economy has been affected by the increase in the prices of petroleum products and the new sales tax laws. These changes could affect the safety of foods. Imposition of penalties by inspectors of the PR Department of Health should have positive effects of food safety.

**21. Evaluation studies planned**

- Before-After (before and after program)
- During (during program)

**Description**

An evaluation will be conducted during the program to assess if program is implemented as originally planned. The purpose is to identify areas for improvement in the curriculum according to the suggestions offered by clients and by staff. It will address questions such as: Is the curriculum appropriate for the target audience? Are participants getting involved in the program? and What is the level of satisfaction with the training? Also, a pre/post evaluation study will be conducted to assess adoption of practices by the participants after completing the program.

**22. Data Collection Methods**

- Whole population
- On-Site
- Observation
- Tests

**Description**

To collect data on the pre/post evaluation, for each course, a questionnaire will be administered on-site to determine adoption of food handling practices by the participants. These will be administered to the total population of participants in each course. Data is reported on the Information Electronic Reporting System for PRAES. For the Food Safety certificate Course, all participants will complete a final examination. Certification is granted to all participants having a score of 70 or more. For

process evaluation, the Food Safety Specialist will select a sample of the total groups to evaluate through observation how appropriate the program is for the target audience. Also, the level of satisfaction with the program will be evaluated by a questionnaire administered at the end of the program.

**1. Name of the Planned Program**

Strengthening Youth Life Skills, Leadership and Their Community

**2. Program knowledge areas**

- 806 Youth Development 100 %

**3. Program existence**

- Intermediate (One to five years)

**4. Program duration**

- Long-Term (More than five years)

**5. Brief summary about Planned Program**

Today's children and youth face a diversity of social problems that can result in risky behavior when kids are poorly equipped with the necessary skills to avoid them. The use and abuse of substances is a major social-medical problem of great impact in the adolescent and young adult population of Puerto Rico. An estimated three quarters of Puerto Rican students have consumed some alcohol in their life time and one third of them have used cigarettes. Studies indicate that this can be translated, in many occasions, in school absenteeism, poor academic progress, in physical and emotional change, being sexually active without any responsibility, and poorly accepted social behavior. 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. These children and youth do not have the advantages that promote an optimum, healthy development of the 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. The Puerto Rico 4-H and Youth Development Program has identified Youth Development as a mayor emphasis area 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 through research-based educational programs focusing on Family and Consumer Sciences, (health, nutrition, food safety, managing resources, personal relations, clothing, consumer education, child care and development, and others), Science and Technology (aerospace and astronomy, computer sciences, electricity, energy, photography, and others), Community and Economic Development (civic education, workforce readiness, leadership, community services, and others), and Agriculture and National Resources (plant and animals, veterinary sciences, and others.) To achieve or accomplish an appropriate development of the 4-H Program, we will use different activities and methods, such as: camps, competitions, meetings, demonstrations, and workshops; but, especially, the development of projects as strategic learning tools. We will also promote learning experiences in-service that will give youngsters the opportunity for reflection and action about issues that impact them. Through the project the youngsters will acquire and develop 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. The development of life skills for the prevention of negative high risk conduct will be emphasized in this program.

**6. Situation and priorities**

The primary audience of the 4-H and Youth Development program are children and youngsters between 5 to 19 years old. Due to the difference of age and diversity, their characteristics may vary according to their stage of development. In the FY 2003-2004 Stakeholders' Input process the youngsters selected the use of alcohol and drugs, sexuality, and criminality as the areas of most concern to them. According to statistics of the Department of Education (Area of Planning and Education Development, Statistics Division), during 2001-2002 there were a total of 1,872 school desertions at the intermediate and high school levels of an enrollment of 211,523 youngsters (approximately 1% of school deserters in relation to the total student population); and studies indicate a close relationship between school desertion and juvenile delinquency. One of these studies, by Dora Nevárez-Muñiz, is entitled Crime in Puerto Rico. The Administration for Mental Health and Addiction Control Services (ASSMCA, 2004) revealed that 56.9% of about 24,000 students at the elementary, intermediate, and high school levels from public and private schools drink alcohol; and the Alliance for a Puerto Rico Without Drugs (2002-2004) indicated that alcohol was the substance mostly used among youngsters of the public school system. Some 55.9% of the adolescents reported having drunk alcohol at least once in their life time. Other problems are offences made by these minors against society (Puerto Rico's Assistant Police Superintendent for Citizen Services of the Statistics Division, 2004) with a total 933 cases for the entire island. Of these, 716 cases were drug related. Also a total of 5,168 minors were intervened by the police (Puerto Rico Police Statistics Division, 2003). These offences were related to violence and not to sexual crimes as it was thought before. Another grave problem that may lead to school desertion is pregnancy among adolescents. Sources from the Department of

Education indicate that during 2001-2002 there were 244 pregnant students at the intermediate level and 1,037 at the high school level; and statistics from the Department of Health (2003) reveal that births from adolescent mothers constitute 17.7% of all births in Puerto Rico. These data confirm the concerns of the youngsters consulted in the Stakeholders' Input Process (2003-2004).

In the FY 2004-2005 Stakeholders' Input process, the selected youngsters chose the curricular areas of most interest to them. These were: arts (65%), technology (59%), sports (53%), music (41%) and agriculture (34%). In both studies the youngsters pointed out the importance of having these necessities dealt with. Attending to these concerns will help make a more interesting and educational program resulting in more participation. We should identify creative and innovative strategies to attain a combined balance between the themes of major interest pointed out by the youngsters and the mission of the 4-H Program. PRAES professionals will use the technical material to reach and satisfy other needs pointed out by the youngsters to develop values and life skills.

**7. Assumptions made for the Program**

When we work in an integral form respecting the competency and potential of each participant, there is a great amount of motivation and disposition on behalf of the youngsters to learn and participate in 4-H, scholastic, and community activities. The experience to learning-to-know, learning-to-make, learning-to-be and learning-to-live, according to John Dewey's philosophy, has been extensively used by the 4-H program "Learning-by-doing".

We have 1,309 volunteers working with youngsters in different activities in which they support the 4-H Program (Youth Enrollment Report 2005).

Life skills prepare people to be successful in life. The goal is that every person learn the necessary skills to succeed. Life skills are the tools to cope with whatever life brings. When integrated into curriculum development, life skills determine how subject matter content is delivered and practiced, when a learner is engaged in an educational activity. Life skills are useful long afterwards in other life situations.

We depend on a dedicated staff that acknowledges the mission of the 4-H Program to address the youth needs.

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

Increase the number of youngsters that have improved their life skills for better decision making in life.

**9. Scope of Program**

- In-State Extension

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other then formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	43.6	0.0	0.0	0.0
2008	43.6	0.0	0.0	0.0
2009	43.6	0.0	0.0	0.0
2010	43.6	0.0	0.0	0.0
2011	43.6	0.0	0.0	0.0

**Outputs for the Program**

**13. Activity (What will be done?)**

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.

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

Extension	
Direct Method	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● Web sites</li> <li>● Other 1 (Radio Programs)</li> <li>● Other 2 (Exhibitions)</li> </ul>

**15. Description of targeted audience**

Youth and 4-H members, Extension professionals, professional government personnel, volunteers, and community residents.

**16. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	1500	0	50000	30000
2008	1500	0	50000	30000
2009	1500	0	50000	30000
2010	1500	0	50000	30000
2011	1500	0	50000	30000

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

Number of training and workshops in life skills and subject matter.

2007	Target:	500
2008	Target:	500
2009	Target:	700
2010	Target:	800
2011	Target:	900

**Output Text**

Number of children/ youth who participated in competitive activities.

2007	Target:	1000
2008	Target:	1000
2009	Target:	1000
2010	Target:	1000
2011	Target:	1000

**Output Text**

Number of children/ youth who participated in non competitive activities.

2007	Target:	5000
2008	Target:	5500
2009	Target:	6000
2010	Target:	6500
2011	Target:	7000

**Output Text**

Number of youth who participated in community service projects.

2007	Target:	500
2008	Target:	500
2009	Target:	500
2010	Target:	600
2011	Target:	650

**Output Text**

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

2007	Target:	5000
2008	Target:	5000
2009	Target:	5000
2010	Target:	5000
2011	Target:	5000

**Output Text**

Number of youth and others volunteers working with youth in youth development programming.

2007 Target: 800  
2008 Target: 850  
2009 Target: 900  
2010 Target: 1000  
2011 Target: 1000

**Output Text**

Number of children/youth participating in youth leadership programs.

2007 Target: 1000  
2008 Target: 1500  
2009 Target: 2000  
2010 Target: 2300  
2011 Target: 2500

**Outcomes for the Program**

**19. Outcome measures**

**Outcome Text: Awareness created**

**Outcome Text**

Number of children/youth who reported working in one or more educational project areas.

**Outcome Type:** Short

2007 Target: 500  
2008 Target: 1000  
2009 Target: 1200  
2010 Target: 1500  
2011 Target: 2000

**Outcome Text**

Number of children/youth who reported improved decision making skills.

**Outcome Type:** Short

2007 Target: 500  
2008 Target: 800  
2009 Target: 1000  
2010 Target: 1300  
2011 Target: 1500

**Outcome Text**

Number of children/youth who reported improved communication relationships with parents or peers.

**Outcome Type:** Medium

2007 Target: 1300  
2008 Target: 1800  
2009 Target: 2000  
2010 Target: 2500  
2011 Target: 2800

**Outcome Text**

Number of children/youth who assumed leadership roles.

**Outcome Type:** Long

2007 Target: 0  
2008 Target: 100  
2009 Target: 300  
2010 Target: 500  
2011 Target: 1000

**Outcome Text**

Number of children/youth who reported improved conflict management skills.

**Outcome Type:** Short

2007 Target: 1000  
2008 Target: 1000  
2009 Target: 1000  
2010 Target: 1000  
2011 Target: 1000

**Outcome Text**

Number of children/youth who reported improved planning and organization skills.

**Outcome Type:** Short

2007 Target: 2000  
2008 Target: 2400  
2009 Target: 2600  
2010 Target: 2800  
2011 Target: 3000

**Outcome Text**

Number of youth volunteers conducting community service programs.

**Outcome Type:** Medium

2007 Target: 200  
2008 Target: 325  
2009 Target: 325  
2010 Target: 325  
2011 Target: 325

**Outcome Text**

Number of children/youth who developed and established a community projects to address a particular issue.

**Outcome Type:** Medium

2007 Target: 20  
2008 Target: 20  
2009 Target: 20  
2010 Target: 20  
2011 Target: 20

## 20. External factors which may affect outcomes

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

### Description

The Island's location in the Caribbean area put it in the area of tropical hurricanes with heavy winds and heavy rains which cause floods. The people's feeling that we have an unstable economy, because of the government's inability to solve its budget problems. We expect that there may be changes in the budget assigned to government agencies and changes in public policy.

## 21. Evaluation studies planned

- Retrospective (post program)
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.

### Description

Life skills developed will be determined by a post-retrospective test administered to those youth that completed a project. This will allow the participants evaluate how this experience has helped them to develop or improve their like skills. In addition, by the end of the fiscal year 2007 a comparative study will be conducted among 4-H members that have participated in clubs with the new life skill curriculum and those that have continued with the traditional curriculum to determine if greater outcomes are achieved with the new approach.

## 22. Data Collection Methods

- Sampling
- Unstructured

### Description

For data collection on the comparative study, a life skill questionnaire will be administered on-site to a random sample of 20% of the participants with the new life skill curriculum. The Tennessee Life Skill Evaluation System will be used as the basis to develop and adapt the life skill questionnaire. Also non- structured interviews will be employed.

## 1. Name of the Planned Program

Crop Production

## 2. Program knowledge areas

- 205 Plant Management Systems 70 %
- 204 Plant Product Quality and Utility (Preharvest) 30 %

## 3. Program existence

- Intermediate (One to five years)

## 4. Program duration

- Long-Term (More than five years)

## 5. Brief summary about Planned Program

An economically profitable and progressive agriculture requires efficient plant management and good pre-harvesting management practices of products to obtain excellent quality and better utilities. New technological practices and product quality innovations are essential for farmers to survive in the new global agriculture. The Crop Production program seeks ways to improve the use of improved production practices and Good Agricultural Practices (GAP) to provide farmers with better growth management systems. Our efforts are geared toward the effective production of our crop commodities and improved product quality.

## 6. Situation and priorities

Crop production is the second most important economic area of Puerto Rico's agriculture. In 2004-2005 the value of crop production was \$305,768,000, an increase of \$14 million compared to 2003-2004. The crop commodities include fruit (mango, avocado, pineapple, oranges, papaya, Spanish lime, Rambutan, other citrus and fruit), vegetable crops (tomatoes, peppers, sweet peppers, onions, pumpkin, aromatic herbs, and others), starchy crops (yams, tanager, cassava, and others), ornamentals (flowering plants, cut flowers, interior and exterior foliage plants, and landscaping), coffee, bananas, and plantains. Most of the farms are small or medium sized and owner operated. Their main crop production problems are product quality and the poor use of adequate crop cultivation practices. An economically profitable and progressive agriculture requires efficient plant management and good pre- and post-harvesting management practices of products to obtain excellent quality and better utilities.

New technological practices and product quality innovations are essential for farmers to survive in the new global agriculture with GAP. The farmers should be educated to change production practices from craft production practices to more effective ones. Such efforts will help them to achieve higher production, better crop varieties, extend the harvest season, value-added, and improve quality to increase their profits.

The Crop Production program will make the Plant Product Quality and Utility and Plant Management Systems important key issues to the farmer's education program.

## 7. Assumptions made for the Program

Our experience with crop production programs shows that farmers are motivated by economic government incentives and high product prices. In the past six months the Puerto Rico Department of Agriculture announced a reduction in crop production incentives. It is important to move the farmers to be competitive with better and more cost effective plant management practices to increase the production, quality, and utility of their products. With better management, good quality and different product uses, the products can be sold in different market places. Different product uses (value-added) and high quality are essential to sell products to niche markets like hotels, restaurants and cruise lines that pay a high prices for products of better quality.

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

To improve product quality, increase production and competitiveness through the use of the most effective management system practices, new varieties, and good agricultural practices.

## 9. Scope of Program

- In-State Extension

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other than formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	20.0	0.0	0.0	0.0
2008	20.0	0.0	0.0	0.0
2009	20.0	0.0	0.0	0.0
2010	20.0	0.0	0.0	0.0
2011	20.0	0.0	0.0	0.0

**Outputs for the Program**

**13. Activity (What will be done?)**

Conduct production trainings.  
 Farmers visits and guidance.  
 Conduct farmers' meetings.  
 Collaborate with local government agencies (Departments of Agriculture and Environmental and Natural Resources) and USDA (NRCS and others) .  
 Prepare cultivation practices plan.  
 Prepare products quality improvement plan.  
 Distribute publications.  
 Prepare crop production publications.

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

Extension	
Direct Method	Indirect Methods
<ul style="list-style-type: none"> <li>● Education Class</li> <li>● Workshop</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● TV Media Programs</li> <li>● Other 1 (Radio Programs)</li> <li>● Other 2 (CDs and DVDs)</li> </ul>

**15. Description of targeted audience**

Farmers, government professionals, Extension professionals, USDA professionals, product distributors, and professionals from the private sector.

**16. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	6000	3000	0	0
2008	6500	3000	0	0
2009	7000	3000	0	0
2010	7500	3000	0	0
2011	7500	3000	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

Number of persons trained on plant management systems in crop commodities.

2007 Target: 1000  
 2008 Target: 1200  
 2009 Target: 1350  
 2010 Target: 1500  
 2011 Target: 1600

**Output Text**

Number of persons trained on products quality in crop commodities.

2007 Target: 570  
 2008 Target: 700  
 2009 Target: 800  
 2010 Target: 950  
 2011 Target: 1000

**Output Text**

Number of persons trained on value added in crop commodities.

2007 Target: 300  
 2008 Target: 400  
 2009 Target: 500  
 2010 Target: 550  
 2011 Target: 600

## Outcomes for the Program

### 19. Outcome measures

#### Outcome Text: Awareness created

##### Outcome Text

Number of farmers that adopted one or more recommended practices of the plant management systems in crop commodities.

**Outcome Type:** Medium

2007 Target: 625

2008 Target: 800

2009 Target: 900

2010 Target: 1000

2011 Target: 1100

##### Outcome Text

Number of farmers that increased production in crop commodities.

**Outcome Type:** Long

2007 Target: 350

2008 Target: 475

2009 Target: 580

2010 Target: 700

2011 Target: 800

##### Outcome Text

Number of farmers that increased the quality in crop commodities.

**Outcome Type:** Medium

2007 Target: 400

2008 Target: 450

2009 Target: 500

2010 Target: 600

2011 Target: 700

##### Outcome Text

Number of farmers that adopted new value-added practices in crop commodities.

**Outcome Type:** Long

2007 Target: 150

2008 Target: 200

2009 Target: 250

2010 Target: 300

2011 Target: 325

##### Outcome Text

Number of farmers that increased their income after having adopted one or more practices of plant management systems.

**Outcome Type:** Long

2007 Target: 250  
2008 Target: 300  
2009 Target: 350  
2010 Target: 400  
2011 Target: 450

**20. External factors which may affect outcomes**

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

**Description**

Puerto Rico, being a tropical island in the Caribbean, can be affected by natural disasters that in turn can have devastating effects on our agriculture. Long periods with too much rain or without rain and hurricanes are common. High winds and rain from tropical storms (hurricanes) affect production, product quality, and increase the dependence on imported products. Changes in the economy and public policies cause farmers to change their priorities and reduce their farm capital. When the general feeling in the economy is positive, the farmers are more aggressive in their farm investments. Puerto Rico depends on imports of food products to supply the food demand. Also, changes in prices and the quantity of products from other countries affect the local production. The success of crop production programs depends on the amount of time allocated by PRAES county agents and crop specialists. Changes in program priorities by the administration have negative effects on program goals.

**21. Evaluation studies planned**

- Before-After (before and after program)

**Description**

Before and after each training a test will be administered to the participants to measure knowledge gained.

**22. Data Collection Methods**

- Sampling

**Description**

The county agents can take notes of farmer's progress during the farm visits and in trainings or short courses. They can also administer tests to know how the farmers are using the different practices.

## 1. Name of the Planned Program

Engineering and Biosystems

## 2. Program knowledge areas

- 405 Drainage and Irrigation Systems and Facilities 10 %
- 403 Waste Disposal, Recycling, and Reuse 65 %
- 401 Structures, Facilities, and General Purpose Farm Supplies 15 %
- 402 Engineering Systems and Equipment 10 %

## 3. Program existence

- Intermediate (One to five years)

## 4. Program duration

- Long-Term (More than five years)

## 5. Brief summary about Planned Program

A cost-effective agriculture requires efficient engineering practices. The majority of the farms in Puerto Rico have structures that form part of their infrastructure. Biological systems compose most of the waste management, recycling, and reuse operations in farms with animals in confinement. The Engineering and Biosystems program seeks to improve existing structures and to provide farmers with model plans that comply with permits requirements. Through this program, PRAES helps farmers with animals in confinement to prepare waste management systems that meet state and federal requirements. In the area of irrigation and drainage, most of our efforts are aimed at the effective operation and maintenance of the equipment and water conservation

## 6. Situation and priorities

Most farms in Puerto Rico have structures and waste management systems as part of their infrastructure; many of which are old and were built without permits. The experience with tropical hurricanes during the past two decades has motivated changes in the local building codes that affect agriculture. In addition to reducing the risk to human life of many of the existing structures, new structures need to follow efficient engineering practices and comply with the permit requirements of the Puerto Rico Buildings and Regulations Authority and Environmental Quality Board, the Department of Health, and other agencies. Financing and government incentives for new projects are issued pending compliance with all permits.

There is a high risk of pollution of surface and groundwater by agriculture. New regulations for farms with animals in confinement have completed the public hearings process and are expected to be signed into law before the end of 2006. These regulations affect all farms with animals in confinement that produce more than 5 cubic feet of waste. Farmers need to be oriented on these new regulations. Also, the existing waste management systems of many farms will have to be modified and, in some cases, relocated. These modifications need to be done minimizing the economic burden on the farmers.

Water quality is also affected by the design, construction, and maintenance of septic systems. More than 50% of all households in Puerto Rico dispose of their wastewater in septic systems; many of which are overloaded, their drain fields are not working, and receive no maintenance.

Preliminary research results by the School of Public Health of the UPR indicate that the risk to human health from septic systems is imminent.

More than 300 new irrigation systems were constructed on the Island as a result of legislation issued in 1995. These new systems need maintenance so that they work effectively. The older systems also need operation and maintenance. The subject of efficient water use and conservation by the agricultural sector is addressed in a forthcoming water use plan by the Department of Natural and Environmental Resources. This document will make water conservation a key issue and farmers need to be kept informed and educated on this matter.

## 7. Assumptions made for the Program

In our experience with the Engineering and Biosystems program we have found that farmers are motivated by one or more of the following: economic incentives from the government, laws and regulations that require they make improvements in their farms, and a high rate of return in their investment (cost effectiveness). The economic incentives that most of our farmers receive have traditionally been from the PR Department of Agriculture (PRDA). Even though the PRDA has announced reductions in some of the incentives, they will still continue to offer incentives for the improvement of farm structures and the installation of waste management systems. New environmental regulations and pressure from environmentalists will move farmers to improve their waste management practices. To be cost effective, many of the small farmers will try to increase the size of their operations (economies of scale). Success in achieving their goal will depend on obtaining all of the required permits and financing from the lending institutions. The financing packages offered by banks for new projects and for improvements to existing projects require compliance with all permits and insurance companies only insure those structures which can be guaranteed to comply with the new building code requirements. PRAES staff has been submitting proposals and working on special projects to obtain external resources to expand our capabilities. Our program could be expanded, if we are successful in attracting external funding and working through our network of county agents.

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

Improve agricultural infrastructures and waste disposal management through the use of effective engineering and biological systems.

**9. Scope of Program**

- In-State Extension

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other than formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	5.0	0.0	0.0	0.0
2008	5.0	0.0	0.0	0.0
2009	5.0	0.0	0.0	0.0
2010	5.0	0.0	0.0	0.0
2011	5.0	0.0	0.0	0.0

**Outputs for the Program**

**13. Activity (What will be done?)**

Conduct workshops and meetings.  
 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.  
 Develop educational material consisting of model plans and specifications for structures.  
 Distribute plans and specifications for structures.  
 Design waste management systems (new or improvement to existing facilities).  
 Collaborate in the construction of demonstration facilities.

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

Extension	
Direct Method	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● Web sites</li> <li>● Other 1 (Exhibitions)</li> </ul>

**15. Description of targeted audience**

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

**16. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	4000	1000	0	0
2008	4100	1000	0	0
2009	4200	1000	0	0
2010	4300	1000	0	0
2011	4500	1000	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

Number of workshops and meetings offered.

- 2007 Target: 5
- 2008 Target: 5
- 2009 Target: 5
- 2010 Target: 5
- 2011 Target: 5

**Output Text**

Number of collaborations established to improve engineering and biological systems infrastructure.

- 2007 Target: 25
- 2008 Target: 25
- 2009 Target: 25
- 2010 Target: 25
- 2011 Target: 25

**Output Text**

Number of clients that participated in the workshop on structures.

2007 Target: 50  
2008 Target: 50  
2009 Target: 50  
2010 Target: 50  
2011 Target: 50

**Output Text**

Number of clients that participated in workshop on waste management systems.

2007 Target: 200  
2008 Target: 200  
2009 Target: 200  
2010 Target: 200  
2011 Target: 200

**Output Text**

Number of waste management systems designed.

2007 Target: 50  
2008 Target: 50  
2009 Target: 50  
2010 Target: 50  
2011 Target: 50

**Output Text**

Number of clients that participated in workshop on drainage or irrigation systems.

2007 Target: 10  
2008 Target: 10  
2009 Target: 10  
2010 Target: 10  
2011 Target: 10

**Output Text**

Number of plans and specifications for model structures completed and distributed.

2007 Target: 100  
2008 Target: 100  
2009 Target: 100  
2010 Target: 100  
2011 Target: 100

**Output Text**

Number of demonstration facilities established.

2007 Target: 2  
2008 Target: 2  
2009 Target: 2  
2010 Target: 2  
2011 Target: 2

## Outcomes for the Program

### 19. Outcome measures

#### Outcome Text: Awareness created

##### Outcome Text

Number of clients that increased their knowledge about improvements to increase the efficiency of their structures (new and existing) and compliance with regulations.

##### Outcome Type: Short

2007 Target: 50

2008 Target: 50

2009 Target: 50

2010 Target: 50

2011 Target: 50

##### Outcome Text

Number of clients that increased their knowledge about appropriate systems for waste management in their projects.

##### Outcome Type: Short

2007 Target: 200

2008 Target: 200

2009 Target: 200

2010 Target: 200

2011 Target: 200

##### Outcome Text

Number of clients that increased their knowledge about drainage or irrigation facilities.

##### Outcome Type: Short

2007 Target: 10

2008 Target: 10

2009 Target: 10

2010 Target: 10

2011 Target: 10

##### Outcome Text

Number of clients that adopted one or more of the recommended practices to increase the efficiency of their structures and comply with all permits.

##### Outcome Type: Medium

2007 Target: 25

2008 Target: 25

2009 Target: 25

2010 Target: 25

2011 Target: 25

##### Outcome Text

Number of clients that adopted one or more practices to improve their drainage or irrigation facilities.

**Outcome Type:** Medium

2007 Target: 5  
2008 Target: 5  
2009 Target: 5  
2010 Target: 5  
2011 Target: 5

**Outcome Text**

Number of farmers that improved their structures (new or existing) and/or comply with permits.

**Outcome Type:** Long

2007 Target: 25  
2008 Target: 25  
2009 Target: 25  
2010 Target: 25  
2011 Target: 25

**Outcome Text**

Number of waste management systems improved (new or existing).

**Outcome Type:** Long

2007 Target: 100  
2008 Target: 100  
2009 Target: 100  
2010 Target: 100  
2011 Target: 100

**Outcome Text**

Number of drainage or irrigation facilities improved.

**Outcome Type:** Long

2007 Target: 5  
2008 Target: 5  
2009 Target: 5  
2010 Target: 5  
2011 Target: 5

**Outcome Text**

Number of farmers that increased their production as a result of improving their structures.

**Outcome Type:** Long

2007 Target: 25  
2008 Target: 25  
2009 Target: 25  
2010 Target: 25  
2011 Target: 25

**Outcome Text**

Number of farmers that increased their production as a result of improving their waste management systems.

**Outcome Type:** Long

2007 Target: 70  
2008 Target: 70  
2009 Target: 70  
2010 Target: 70  
2011 Target: 70

**Outcome Text**

Number of farmers that increased their production as a result of improving their drainage or irrigation facilities.

**Outcome Type:** Long

2007 Target: 2  
2008 Target: 2  
2009 Target: 2  
2010 Target: 2  
2011 Target: 2

**20. External factors which may affect outcomes**

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

**Description**

In a tropical island setting, agricultural priorities can be drastically affected by natural disasters. Tropical hurricanes and long periods without rain or with too much rain are the most common. Many agricultural facilities can be severely affected by high winds caused by tropical hurricanes and periods of no rain or excessive rain can severely affect crops and increase the dependency on imported concentrated cattle feed. A general feeling that the economy is weak is another factor that precludes people from investing in the improvement of the infrastructure in their farms. When the general feeling is that the economy is strong, people tend to be more aggressive. Changes in public policies and regulations cause farmers to change their priorities and to have to postpone projects. The availability of economic incentives is decisive in making final decisions that require capital investments. Many projects depend on economic incentives to be cost effective. Our program depends on the amount of time that the PRAES county agents can allocate to it. Any changes in priorities set by the administration will have an effect on the program's outcomes.

**21. Evaluation studies planned**

- Case Study

**Description**

Case studies will be used to evaluate this planned program to gather an in-depth understanding of the factors of the program that have influenced the farmers to adopt the recommended practices. The cases will be individual clients that have succeeded in adopting the recommended practices. Therefore, the evaluation period will depend on the time for adoption. Case studies will begin approximately by the second year of the program. Five clients will be selected, one from each of our district regions.

**22. Data Collection Methods**

- Case Study
- Observation

**Description**

We will make use of qualitative methods, including observations in the projects, and interviews with the clients. Interviews will be non-structured, as themes and issues will emerge through the conversation. We will sample five clients to gather

in-depth understanding of how the program has helped them achieve success in their projects.

## 1. Name of the Planned Program

Families and Children

## 2. Program knowledge areas

- 802 Human Development and Family Well-Being 100 %

## 3. Program existence

- Intermediate (One to five years)

## 4. Program duration

- Long-Term (More than five years)

## 5. Brief summary about Planned Program

The family structure in Puerto Rico has changed with important implications for children. The issues that most concern policy makers and the public are the increasing number of single-parent families over the past three decades and the increase in family violence, which affect the well-being of our families and their members. It is important to develop educational programs to empower families to nurture, support, and guide their members throughout their lives and motivate them to improve their quality of life and well-being. To reach this goal, the family life specialist develops programs facilitating strategic planning, workshops, curriculum, and trainings in successful parenting, character traits, values, family strengths, aging aspects, and life skills for families, children, youth, and elderly people. A special family project will be continued to help develop skills to change behaviors and adopt practices to strengthen family relations and values.

## 6. Situation and priorities

The family is considered the first institution that has the responsibility and commitment to prepare and educate its members and it is where character is formed and values are learned. According to the 2000 Census of Population for Puerto Rico and other statistics, the increase in population, social, political, and economic changes have impacted Puerto Rican families, affecting their vital function. The increase in the number of divorces, single mothers, adolescent mothers, stepfamilies, woman headed household families (27%), and grandparents rising grandchildren (53%) have affected the quality of life. This has resulted in an increase in child maltreatment and neglect, sexual and emotional abuse, family violence, high school dropouts (14%), and others. We must, therefore, direct our efforts to changing this situation by developing and promoting education to provide knowledge, strategies, and skills to change behaviors and adopt practices to strengthen and empower family relations and values.

## 7. Assumptions made for the Program

Our experience working with this program shows that:

Coordination and collaboration with government and private agencies and partnerships are important to increase the impact of educational/preventive programs through the intervention of Extension Specialists/Educators.

Education to our Extension agents/educators and community leaders will help to disseminate and promote the information to families and children.

Clientele is motivated to learn and adopt practices in family relations and related areas to satisfy their essential needs.

Submitting proposals and working on special projects to obtain external resources that expand our staff and capabilities.

Information related to human development and family relations available through the internet, publications, curriculum, articles, radio and TV programs, and trainings help to reach state goals.

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

Increase the number of families that support and guide their members throughout their lives.

Decrease child maltreatment and family violence.

## 9. Scope of Program

- In-State Extension

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other than formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	9.2	0.0	0.0	0.0
2008	9.2	0.0	0.0	0.0
2009	9.5	0.0	0.0	0.0
2010	9.5	0.0	0.0	0.0
2011	9.5	0.0	0.0	0.0

**Outputs for the Program**

**13. Activity (What will be done?)**

Participate in radio/TV programs.  
 Offer advice when clientele visit the office.  
 Develop curriculum related to family relations, child development, human development, elder care, family resilience, and related areas.  
 Conduct workshops, trainings, and meetings.  
 Continue the collaboration with government and private agencies and institutions (Department of Family, Department of Education, Head Start, local government).  
 Collaboration with partners in the University of Puerto Rico and other educational institutions.  
 Use and implementation of curriculum, educational material, etc.  
 Write proposals.

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

Extension	
Direct Method	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Web sites</li> <li>● Other 1 (Radio Programs)</li> <li>● Other 2 (Campaigns &amp; Exhibitions)</li> </ul>

**15. Description of targeted audience**

Extension agents, home economists, PRAES specialists, government personnel (professionals), professionals from other agencies, parents, families, children, youth, elder people, volunteers, and general public.

**16. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	10500	15000	0	0
2008	10500	15000	0	0
2009	10500	15000	0	0
2010	10500	15000	0	0
2011	10500	15000	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

Number of workshops, trainings, and meetings offered.

2007 Target: 60  
 2008 Target: 60  
 2009 Target: 60  
 2010 Target: 60  
 2011 Target: 60

**Output Text**

Number of collaborations/established.

2007 Target: 260  
 2008 Target: 260  
 2009 Target: 260  
 2010 Target: 260  
 2011 Target: 260

**Output Text**

Number of persons trained in parenting and related areas.

2007 Target: 900  
 2008 Target: 900  
 2009 Target: 900  
 2010 Target: 900  
 2011 Target: 900

**Output Text**

Number of volunteers/community leaders trained in family relations and related areas.

2007 Target: 200  
2008 Target: 200  
2009 Target: 200  
2010 Target: 200  
2011 Target: 200

**Output Text**

Number of persons trained in aging aspects.

2007 Target: 200  
2008 Target: 200  
2009 Target: 200  
2010 Target: 200  
2011 Target: 200

**Output Text**

Number of persons trained in values, character traits, and/or family strengths.

2007 Target: 600  
2008 Target: 600  
2009 Target: 600  
2010 Target: 600  
2011 Target: 600

**Outcomes for the Program**

**19. Outcome measures**

**Outcome Text: Awareness created**

**Outcome Text**

Number of persons that reported improved parenting skills.

**Outcome Type:** Short

2007 Target: 600  
2008 Target: 600  
2009 Target: 600  
2010 Target: 600  
2011 Target: 600

**Outcome Text**

Number of persons that increased knowledge in parenting and related areas.

**Outcome Type:** Short

2007 Target: 600  
2008 Target: 600  
2009 Target: 600  
2010 Target: 600  
2011 Target: 600

**Outcome Text**

Number of volunteer/community leaders that demonstrated their adopted skills by teaching and/or training others.

**Outcome Type:** Medium

2007 Target: 100  
2008 Target: 100  
2009 Target: 100  
2010 Target: 100  
2011 Target: 100

**Outcome Text**

Number of persons that gained knowledge in aging aspects.

**Outcome Type:** Short

2007 Target: 100  
2008 Target: 100  
2009 Target: 100  
2010 Target: 100  
2011 Target: 100

**Outcome Text**

Number of persons reported improved skills and increased knowledge in values and character traits.

**Outcome Type:** Short

2007 Target: 600  
2008 Target: 600  
2009 Target: 600  
2010 Target: 600  
2011 Target: 600

**Outcome Text**

Number of children and youth benefitted indirectly.

**Outcome Type:** Short

2007 Target: 200  
2008 Target: 200  
2009 Target: 200  
2010 Target: 200  
2011 Target: 200

**Outcome Text**

Number of persons that increased knowledge from educational material and resources through campaigns and other educational methodologies

**Outcome Type:** Short

2007 Target: 2000  
2008 Target: 2000  
2009 Target: 2000  
2010 Target: 2000  
2011 Target: 2000

## 20. External factors which may affect outcomes

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

### Description

In a tropical island setting, we are subject to a variety of natural events, which include hurricanes, long periods with heavy rains and/or winds, and droughts. There is a general feeling that the economy is weak and the government's inability to solve our budget problems project an unstable economy. As a result, we expect changes in the money assigned to government agencies and changes in public policy and priorities. The support needed from the municipal mayors may vary if their interests are different from the interests presented by the program. Another situation could be any change in priorities of the agency's administrators that could have an effect on the program outcomes.

## 21. Evaluation studies planned

- Retrospective (post program)

### Description

The retrospective test is one of the most useful ways to determine knowledge, skills and/or attitudes acquisition. It is an important tool of evaluation that helps us to know the clientele knowledge before and after the participation in the program and determine its effectiveness and improvement in the quality of life.

## 22. Data Collection Methods

- Sampling
- Whole population
- Unstructured
- Observation
- Journals

### Description

Data will be collected in different ways: (1) The unstructured interview is useful when we want to fully understand someone's impressions or experiences and get full range and indepth information. (2) The observation method is helpful to gather information about how a program actually operates and allows its adaptation to events as they occurred. (3) The reflexive journal provides data base for transferability judgments and provides an opportunity for the participant to reflect on the changes experienced.

**1. Name of the Planned Program****Empowering and Self-management Communities****2. Program knowledge areas**

- 803 Sociological and Technological Change Affecting Individuals, Families and Communities 50 %
- 805 Community Institutions, Health, and Social Services 50 %

**3. Program existence**

- Intermediate (One to five years)

**4. Program duration**

- Long-Term (More than five years)

**5. Brief summary about Planned Program**

Poverty is one of the most serious and urgent problems in Puerto Rico. The 2000 population census establishes that 48% of Puerto Rican population lives below the poverty level. Some of our communities are at high risk of suffering from natural disasters such as floods by rivers and streams during the rainy season. The Community Resources Development program approaches its efforts to guide the communities' leaders towards self-management and empowerment and developing their emergency plans to those situations. This is obtained through trainings to develop the leaders' capacities and to acquire the necessary tools to organize their communities, getting involved in the decision-making process, as well as facilitating and encouraging the communities' participation. In our social and disadvantaged communities, there is a prevalence of families with unequal access to economic and social development compared to other population groups on the island. With the development of the Empowering and Self-management Communities program, we expect the citizen's participation in personal, family, and community decision-making. We also encourage community efforts to respond to and find solutions to population needs, participate in power structures, and access to ways of preventing social problems. The community is the focal point where people feel a sense of personal involvement and take pride in their actions. Work in this area provides the opportunity to obtain empowering and self-managing communities, by the understanding of social, technological, and demographic changes occurring in society. Understanding of the development, quality, and function of community institutions and social services are other desirable outcomes. The areas of work include the sociology/psychology of the farm family and other aspects of rural life and living conditions; impact of change in communities; community development, asset building, civic engagement, and leadership; social and educational factors affecting poverty and social impact of environmental change; development, coordination, and adaptation of agencies and organizations; community services institutions, including volunteer organizations, non-profit groups, and centers; development of community fire prevention and other emergencies in the community, suppression plans, and related homeland security activities; community and civic engagement. The empowering and self-management of the communities requires information, guidance, education, and civic engagement. Strong communities develop programs anchored in research, education, and in teaching their partners. It is important to help diverse communities to chart their futures.

**6. Situation and priorities**

Forty six per cent (46.1%) of the municipalities in Puerto Rico have from 50% to 59% of the families living below the poverty level (2000 Census of Population). The Special Communities Office of Puerto Rico developed social and economic studies in 686 special communities with a sample of 76,306 residents surveyed and found that there are 138 outskirts with 37.3% of the residents jacking property titles of their houses; 37% of the houses are built in wood, cement and zinc; 78.3% of the residents are unemployed, lacking security, public transportation and confronting social diseases such as use of alcohol and drugs. In the social and economically disadvantaged communities there is a prevalence of families with some indicators of school desertion, illiteracy (10%), families with only one head of household working, unemployed persons, environmental problems, lack of basic public services such as schools, post offices, waste disposal management systems, lack of work skills, total or partial absence of infrastructure and basic services like electricity, aqueducts and sewers, and recreational areas. Other social problems such as addictions, lack of security and domestic violence are endemic. These situations force residents to depend on government assistance (42.4% or 407,275 PAN families). CRD focuses its efforts to attending the social and economically disadvantaged communities by training leaders in community organizations, fostering empowerment and self-management. Community development has been improving the social, economic, and environmental quality of live for individuals and families. Leadership developed in the communities contributes to the civic engagement and healthy communities by promoting the interaction of community institutions, health, and social services. It is a priority of the State to build a visionary, accountable and inclusive culture of civic decision-making and problem solving ensuring strong human and social services to support individuals

families and those in need; ensure public health and safety projects in the communities; and help build strong community development programs, anchored in research, education, and teaching their partners.

**7. Assumptions made for the Program**

To obtain a positive outcome in the development of the program it is necessary that people work together to address their common interests and goals. A strong program is developed when the people involved in it are motivated to learn and adopt changes in the program’s implementation. The use of capable leaders in making decisions, participating in community organization and evaluation, help bring about solutions to population needs and encourages a strong program.

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

To obtain empowered and self-managed communities improving the social, economic and environmental quality of life for individuals and families.

**9. Scope of Program**

- In-State Extension

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other than formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	23.0	0.0	0.0	0.0
2008	23.0	0.0	0.0	0.0
2009	23.0	0.0	0.0	0.0
2010	23.0	0.0	0.0	0.0
2011	23.0	0.0	0.0	0.0

**Outputs for the Program**

**13. Activity (What will be done?)**

Workshops and meetings.

Develop educational material like curriculums and modules.

Establish community coalitions with volunteer organizations, community service organizations, institutions, and other agencies.

Seminars with community services institutions that offer assistance in disaster or emergency situations, including volunteer organizations, non-profit groups, and government agencies.

Community educational campaigns.

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

Extension	
Direct Method	Indirect Methods
<ul style="list-style-type: none"> <li>● Education Class</li> <li>● Workshop</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Public Service Announcement</li> <li>● Newsletters</li> <li>● Other 1 (Radio Programs)</li> <li>● Other 2 (Exhibitions)</li> </ul>

**15. Description of targeted audience**

Individuals and families in social and economic disadvantaged communities and key leaders.

**16. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	1000	10000	0	0
2008	1400	10000	0	0
2009	1800	10000	0	0
2010	2200	10000	0	0
2011	2600	10000	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

Number of workshops in leadership development.

- 2007 Target: 25
- 2008 Target: 35
- 2009 Target: 45
- 2010 Target: 55
- 2011 Target: 65

**Output Text**

Number of leaders participating in workshops.

2007 Target: 250  
2008 Target: 350  
2009 Target: 450  
2010 Target: 550  
2011 Target: 650

**Output Text**

Number of workshops on community organization and empowerment development.

2007 Target: 25  
2008 Target: 35  
2009 Target: 45  
2010 Target: 55  
2011 Target: 65

**Output Text**

Number of leaders participating in workshops on community organization and empowerment development.

2007 Target: 25  
2008 Target: 35  
2009 Target: 45  
2010 Target: 55  
2011 Target: 65

**Output Text**

Number of coalitions established in the communities.

2007 Target: 25  
2008 Target: 30  
2009 Target: 35  
2010 Target: 40  
2011 Target: 50

**Output Text**

Number of coalition members.

2007 Target: 150  
2008 Target: 200  
2009 Target: 350  
2010 Target: 400  
2011 Target: 0

**Output Text**

Number of seminars on emergency and disaster situations offered.

2007 Target: 25  
2008 Target: 30  
2009 Target: 35  
2010 Target: 40  
2011 Target: 50

**Output Text**

Number of leaders participating in seminars.

2007 Target: 250  
2008 Target: 300  
2009 Target: 350  
2010 Target: 450  
2011 Target: 550

**Outcomes for the Program**

**19. Outcome measures**

**Outcome Text: Awareness created**

**Outcome Text**

Number of communities organized.

**Outcome Type:** Medium

2007 Target: 25  
2008 Target: 30  
2009 Target: 35  
2010 Target: 40  
2011 Target: 50

**Outcome Text**

Number of communities that took action over their necessities to improve their quality of life through empowerment and self-management.

**Outcome Type:** Long

2007 Target: 20  
2008 Target: 30  
2009 Target: 35  
2010 Target: 40  
2011 Target: 50

**Outcome Text**

Number of leaders with community and civic engagement.

**Outcome Type:** Medium

2007 Target: 150  
2008 Target: 250  
2009 Target: 350  
2010 Target: 400  
2011 Target: 500

**Outcome Text**

Number of communities that took action over specific necessities.

**Outcome Type:** Medium

2007 Target: 25  
2008 Target: 30  
2009 Target: 35  
2010 Target: 40  
2011 Target: 50

**Outcome Text**

Number of community projects established to benefit the community.

**Outcome Type:** Medium

2007 Target: 25  
2008 Target: 30  
2009 Target: 35  
2010 Target: 40  
2011 Target: 50

**Outcome Text**

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

**Outcome Type:** Medium

2007 Target: 250  
2008 Target: 300  
2009 Target: 350  
2010 Target: 400  
2011 Target: 500

**Outcome Text**

Number of communities that developed an emergency and safety plan.

**Outcome Type:** Long

2007 Target: 25  
2008 Target: 30  
2009 Target: 35  
2010 Target: 40  
2011 Target: 50

**Outcome Text**

Number of governmental or other organizations that collaborated in the communities' organization and development.

**Outcome Type:** Medium

2007 Target: 25  
2008 Target: 30  
2009 Target: 35  
2010 Target: 40  
2011 Target: 50

**20. External factors which may affect outcomes**

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

#### **Description**

The external factors that interact and influence the development of the program include natural disasters, the economic structure, changes in public politics and issues, changing policies and programs priorities.

#### **21. Evaluation studies planned**

- Case Study

#### **Description**

Descriptive case studies will be used to understand how Extension has contributed in the development of self-managed communities. A sample of five communities will be selected. These communities will be followed throughout the program to describe their transformation and empowerment process.

#### **22. Data Collection Methods**

- Sampling
- Unstructured
- Case Study
- Observation
- Portfolio Reviews
- Journals
- Other

#### **Description**

A sample of five communities will be followed to describe the empowerment process in the communities. The main methodology for data collection will be defined as case studies; however, various common methods will be employed during this process:

- Non-structured – Interviews with key leaders to understand how Extension has contributed in their leadership development and how Extension can contribute to the empowerment of their communities.
- Observations – A structured standardized guideline will be employed to observe meetings and other activities in the community to identify the number and level of participation of the community members.
- Portfolios – Analysis of documents used by the community to describe their activities.
- Journals – Key members in the communities will be asked to keep journals to describe the changes they observe in their communities as well as on their own personal changes and civic engagement.
- Focus groups – This qualitative methodology will be used to understand, through the dynamics of the group process, how the members of the community describe the changes that occurred and how these changes have affected their personal life and the quality of life of the community.

**1. Name of the Planned Program**

Plant Protection

**2. Program knowledge areas**

- 211 Insects, Mites, and Other Arthropods Affecting Plants 25 %
- 212 Pathogens and Nematodes Affecting Plants 20 %
- 216 Integrated Pest Management Systems 30 %
- 214 Vertebrates, Mollusks, and Other Pests Affecting Plants 5 %
- 213 Weeds Affecting Plants 20 %

**3. Program existence**

- Mature (More than five years)

**4. Program duration**

- Long-Term (More than five years)

**5. Brief summary about Planned Program**

PRAES uses the Plant Protection program to manage, enhance, and implement integrated pest management (IPM) techniques. Its objectives are broad and may change in scope from year to year depending on the pest incidence. It includes all horticulture and agronomic plants of economic importance to Puerto Rico. Our plant protection educational programs promote the adoption of the best management practices to develop IPM systems that protect the environment, conserve the natural resources, and contribute to the competitiveness, profitability, and sustainability of Puerto Rico's agriculture. The objective is to develop integrated approaches to crop protection, minimizing the impact of pesticides on the environment. The Plant Protection program facilitates the coordination of work that includes diverse disciplines, organizations, and job functions (extension, teaching, research). It is the central point of contact for inquiries about integrated pest management, pesticide applicator training, and pesticide impact that enhances the visibility of the University of Puerto Rico-Mayaguez Campus' protection program.

**6. Situation and priorities**

The main agricultural enterprises in Puerto Rico are: coffee, vegetables, banana and plantains, citrus fruits, starchy crops, and ornamentals. Their annual contribution to the economy is about \$300 millions. These crops are intensively managed, with high use of fertilizers and pesticides that create a potential threat to human health and the environment. With rising pesticide costs and growing public concerns about pesticide residues in food and contamination of surface and ground-water supplies, farmers want to reduce their reliance on chemicals used to control insects, nematodes, weeds, and diseases. There is a similar situation in Puerto Rico's urban settings. The Island has experienced unprecedented rates of urban and industrial development. Between 1992 and 1997, Puerto Rico lost approximately 12,460 acres per year of agricultural and open land (USDA National Resources Inventory). Such an accelerated development has triggered a boom of the landscape maintenance industry. This sector includes approximately 1,500 pest control operators (PCO's) and 1,000 landscapers. Personal interviews conducted in 2002 with PCO's, landscapers, county agents, and pesticide distributors revealed that the industry represents a significant challenge and opportunity for the adoption of the IPM approach. Approximately 80% of landscapers and their employees do not know how to monitor and diagnose key pest problems and instead resort to indiscriminate periodic pesticide applications. This situation promotes unnecessary applications of pesticides with monetary costs and needlessly increases the load of these pollutants in the urban environment. The priority of the Extension Plant Protection program is to produce educational materials for Extension agents and other agricultural educators in Puerto Rico. IPM educational materials available are in English and/or are not readily available or comprehensible to an average field employee; therefore, it is necessary that these materials be available in Spanish to teach environmentally responsible pest management strategies for the protection of our crops and urban vegetated areas. IPM helps these diverse audiences accomplish this goal. Rather than relying strictly on pesticides to cope with pest problems, they can use a combination of biological, cultural, mechanical, and limited chemical control strategies. This approach minimizes the potential for adverse effects on human health or the environment while maximizing economic benefits to both producers and consumers. The adoption of the IPM approach key to diminish the negative impacts associated with pest control. In agriculture and landscape, IPM effectively reduces the potential for pest problems, is environmentally responsible and economically practical.

**7. Assumptions made for the Program**

Puerto Rico grows a great diversity of valuable crops that constitute a major source of healthy locally-grown products which contribute to the local and regional economies. Progress has been made in developing management programs and educational

materials for some crops, such as: coffee, plantain and banana, and citrus. These commodities are affected by a variety of pests. Thus coordinated efforts are needed to determine the importance of each crop, the associated pests, and the plan of action. Vegetables are often grown close to urban neighbors and negative impact related to pesticide use is expected. The development and implementation of IPM programs in Puerto Rico that focus on reduced pesticide input would help minimize problems associated with pesticide use near urban areas. Such efforts would be enhanced by educational programs that teach growers integrated management methods. Moreover, federal and state laws and regulations favor the use of integrated pest management. The Food Quality Protection Act greatly restricts the use of pesticides while promoting IPM practices. To achieve permanent solutions to pest problems, the pest management staff will educate Extension agents and other agricultural educators in Puerto Rico about their role and participation in the training of growers, pesticide applicators, landscapers, and other personnel related to agriculture. Also, cooperation from extension agents, researchers, faculty, and government entities (PR Department of Agriculture, USDA Forest Service) is an integral part of PRAES' pest management program and, as a result of this multidisciplinary teamwork, pest management services and information flow more effectively to the clientele. The Extension Plant Disease Clinic will diagnose disease problems and make pest management recommendations to growers, ornamental producers, landscapers, and other persons aiding in the main goal of the program of promoting the use of IPM and providing technical assistance to a diverse clientele. The clinic is connected to the IFAS Distance Diagnostic and Identification System (DDIS) which allows users to submit digital samples obtained in the field for rapid diagnosis and identification of pests.

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

To increase the use of integrated pest management options to minimize pesticide use and reduce contamination.

**9. Scope of Program**

- In-State Extension

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other than formula funds or state-matching funds**

- Yes

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	10.0	0.0	0.0	0.0
2008	10.0	0.0	0.0	0.0
2009	10.0	0.0	0.0	0.0
2010	10.0	0.0	0.0	0.0
2011	10.0	0.0	0.0	0.0

**Outputs for the Program**

**13. Activity (What will be done?)**

PRAES agents will continue training the farmers on pests of economical importance that affect the profitability of the crop commodities. In banana and plantain we will develop a manual guide and electronic presentations in integrated management of starchy commodities to assist Extension agents and other educators. Pests related to the plantain and banana commodities will be emphasized, (especially Black Sigatoka) in order to train the growers on IPM approach. After delivering the educational materials to educators, demonstrations will be carried out in farms of interested farmers to show the benefits of IPM. In forest, IPM we will develop field guides and a series of electronic presentations for Extension agents, agricultural educators, and personnel of the Department of Natural and Environmental Resources about management of key pests in nurseries and urban

forests. The manual and electronic presentations will be posted in the Extension web page. In the next five years we will continue updating the web page and information on destructive key pests and pests of possible introduction, to make easier to document benefits derived from IPM and guide future research and education efforts. In herb production, educational efforts will emphasize the identification of key pests of culantro (“Eryngium foetidum”) and cilantro (“Coriandrum sativum”) and the development of educational materials. A field guide and electronic presentation about management of key pests of culantro and cilantro will be developed to assist agricultural educators in training farmers to understand and implement IPM practices. Seminars and radio programs will be developed to inform about key pests of cilantro and cilantro and the management practices available for control. Demonstrations in farms or hydroponic nurseries of interested producers will be done to demonstrate the benefits of IPM practices and promote their adoption. The citrus commodity will emphasize on evaluating IPM practices in nurseries to control the citrus leafminer and developing the Citrus Crop Profile. The Crop profile will be developed by the IPM specialist in coordination with the citrus commodity leader and the fruit specialist. The evaluation of citrus leaf miner IPM practices in nurseries will be made by an entomologist, researcher of the Crop Protection Department. Seminars will be developed to inform nursery managers, Extension agents and other agricultural educators about the available IPM practices. The plant protection program will continue collaborating with the USDA Forest Service to assist forest nurseries and personnel of state agencies related to forest management by developing educational materials in IPM and updating the web page with forest health information.

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

Extension	
Direct Method	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● One-on-One Intervention</li> <li>● Demonstrations</li> <li>● Other 1 (Seminars)</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Web sites</li> <li>● Other 1 (Radio Programs)</li> <li>● Other 2 (Exhibitions)</li> </ul>

**15. Description of targeted audience**

Pesticide applicators, homeowners, landscapers, Extension agents, farmers, personnel of the Department of Environmental and Natural Resources, agronomists of the Department of Agriculture

**16. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	9000	2000	0	0
2008	9300	2500	0	0
2009	9500	3000	0	0
2010	9500	3500	0	0
2011	9500	3500	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

Number of trainings offered on pesticide use and IPM program.

2007 Target: 200  
 2008 Target: 250  
 2009 Target: 200  
 2010 Target: 200  
 2011 Target: 200

**Output Text**

Number of persons that completed a training program in integrated pest management in the crop commodities.

2007 Target: 400  
 2008 Target: 450  
 2009 Target: 500  
 2010 Target: 500  
 2011 Target: 500

**Output Text**

Number of farmers that completed a training program on pesticide application.

2007 Target: 2000  
 2008 Target: 2000  
 2009 Target: 2000  
 2010 Target: 2000  
 2011 Target: 2000

**Output Text**

Number of persons trained on commercial pesticide application.

2007 Target: 1300  
 2008 Target: 1400  
 2009 Target: 1500  
 2010 Target: 1500  
 2011 Target: 1500

## Outcomes for the Program

### 19. Outcome measures

#### Outcome Text: Awareness created

##### Outcome Text

Number of persons that acquired knowledge after completing a training program in integrated pest management.

##### Outcome Type: Short

2007 Target: 375

2008 Target: 425

2009 Target: 450

2010 Target: 450

2011 Target: 450

##### Outcome Text

Number of persons that adopted one or more techniques after completing an integrated pest management program.

##### Outcome Type: Medium

2007 Target: 150

2008 Target: 150

2009 Target: 150

2010 Target: 200

2011 Target: 200

##### Outcome Text

Number of persons that reduced the use of pesticides after completing an integrated pest management program.

##### Outcome Type: Long

2007 Target: 75

2008 Target: 100

2009 Target: 125

2010 Target: 140

2011 Target: 140

##### Outcome Text

Number of persons that established IPM program after completing a training program.

##### Outcome Type: Long

2007 Target: 25

2008 Target: 40

2009 Target: 50

2010 Target: 60

2011 Target: 70

##### Outcome Text

Number of farmers that acquired knowledge after completing a training program in pesticide application.

**Outcome Type:** Short

2007 Target: 1900  
2008 Target: 1900  
2009 Target: 1900  
2010 Target: 1900  
2011 Target: 2000

**Outcome Text**

Number of farmers that acquired knowledge after completing a training program in integrated pest management.

**Outcome Type:** Short

2007 Target: 200  
2008 Target: 225  
2009 Target: 225  
2010 Target: 225  
2011 Target: 225

**20. External factors which may affect outcomes**

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

**Description**

In Puerto Rico we have the risk of hurricanes, heavy rainfalls, and droughts that can affect crop production. This in turn affects the emphasis on different programs within the agency and the activities that can be performed in the field (field days, field demonstrations, farm visits, etc.).

**21. Evaluation studies planned**

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

**Description**

A survey prior to initiation of trainings and immediately after their completion among PRAES agents and other educators will evaluate their knowledge and attitudes concerning IPM. At the end of each workshop, a post activity survey will collect data about the effectiveness of the training in meeting behavior-based objectives. The future evaluation of educational activities and materials will be tracked by mail surveys, and interviews of the clientele by Extension Agents to determine if they have incorporated IPM practices in their farm management.

**22. Data Collection Methods**

- Sampling
- Mail
- Structured
- Observation

**Description**

To achieve the proposed objectives in the plant protection program we plan to conduct surveys to request information on pesticide use and IPM practices. The surveys will be prepared by the Extension specialists and delivered to the field by the Extension agents. The surveys will be addressed to farmers, pesticide applicators, personnel related to forest management, landscapers, and ornamental producers. Specific indicators of program impacts measured by surveys will include: crop production acreage, number of crop farms and average extension, number of pesticide treatments, rate of pesticides applications, number and kinds of pesticides used (formulation specific), target organisms intended, percentage of growers following pesticide container disposal practices, cost of pesticide application and overall pest management, alternative control measures, number and percentage of farmers following IPM practices such as scouting, biological controls or beneficial organisms, and other specific IPM practices. Evaluation of progress toward objectives of the program will be accomplished through repeated surveys before and after educational activities. The initial survey will be administered at the beginning of the educational program and a second survey at the end to evaluate program impacts. Both surveys will include the same persons

surveyed initially in order to sensitively measure changes in practices and attitudes.

**1. Name of the Planned Program**

Soil, Water, and Air

**2. Program knowledge areas**

- 104 Protect Soil from Harmful Effects of Natural Elements 10 %
- 101 Appraisal of Soil Resources 10 %
- 141 Air Resource Protection and Management 10 %
- 112 Watershed Protection and Management 15 %
- 111 Conservation and Efficient Use of Water 15 %
- 102 Soil, Plant, Water, Nutrient Relationships 40 %

**3. Program existence**

- Intermediate (One to five years)

**4. Program duration**

- Medium Term (One to five years)

**5. Brief summary about Planned Program**

The Soil, Water, and Air program intends to train our farmers on the appropriate management of our soil, water, and air resources in order to increase yields and prevent contamination. This is necessary since we are losing available land suitable for agriculture, have a high rate of erosion, low soil fertility, and problems with salinity. Also, our watersheds are being sedimented, water for irrigation is scarce and expensive, and agriculture produces small particles and odors which affect the people and the efficiency of the enterprises. The regulatory agencies are enforcing laws to reduce environmental impact and which farmers have to comply with to receive the required farm operations permits.

Although the Aqueduct & Sewer Agency provides most of the water that we consume, 300 communities are still operating their own drinking water systems. These systems extract the water from rivers, streams or groundwater. We need to develop a program that will encourage farmers to adopt practices to reduce the effect of residual fertilizers and conserve the quality of the water. PRAES will offer technical assistance, conduct follow-ups to the producers, and visit the farms to ensure that the recommended practices are being implemented and working properly. The relation soil-plant-water-air will be analyzed to maintain a balance. Also, educational material will be prepared to deliver the information to the farmers and collaborative efforts with other agencies will strengthen the education. The planned program will be evaluated using case studies at the middle and at the end of the program.

**6. Situation and priorities**

Puerto Rico is 8,959 square kilometers, and has 7,659 farmers that grow around 57 commodities (2002 Agricultural Census). Sixty percent (60%) of the cultivated land is more than 20% slopes. According to data from the Natural Resources Conservation Service, there is 10% of erosion annually. The soils have been meteorized creating a low fertility, wherefore the farmers have to establish conservation practices and a good fertilization program to get reasonable yields. The main enterprises coffee, plantains, fruits, and starchy crops are cultivated in the hilly area and represent 25% of the total gross agricultural income. Some animal waste disposal systems in Puerto Rico have never been completed or submitted for approval to the regulatory agencies. Often, they lack an adequate system and receive poor maintenance, causing environmental impacts among which are odor, land and water pollution, and dissemination of pathogens, among others. Animal production (2002 Agricultural Census) is mostly composed of 195 broilers, 130 egg producers, 363 dairy farms, 700 beef cattle, 1,170 swine, 395 rabbit, 309 lamb, and 208 goat farms. Most of these are small sized family operated farms and have conventional waste management systems, which rely mostly on uncovered lagoons to avoid runoff and possible surface and ground water contamination. The residues are applied to crops or pasture as organic fertilizer. Such practices reduce the nitrogen content of manure by volatilizing nitrogen (ammonia) to the atmosphere with other volatile compounds such as methane, organic and sulfur. Few options are available. Research is being conducted by the Puerto Rico Agriculture Experiment Station on anaerobic digester to respond to this situation in the dairy cattle and swine enterprises. But still much needed research on practices for combined air and water quality that are environmentally sound and economically feasible is essential. This program is devoted to promoting the education of farmers and people related with agriculture through activities addressed to establish conservation practices to protect the watersheds, increase appropriate fertilization practices, conserve water, and mitigate emissions of particles from agricultural to the air. We will also emphasize on better soil management on the flood plains, the recharge of groundwater, and new alternatives to ensure compliance with air and water quality regulations.

**7. Assumptions made for the Program**

Most of the animal farm production is family operated and small in size; few options are available for them in terms of adequate waste disposal, considering that such systems require big land areas and are expensive. We have to train the farmers on land movement to reduce the erosion of the soils. NRCS, the Puerto Rico Departments of Agriculture and Natural Resources and Environment will approve incentives to establish conservation practices, as well as water retention and sedimentation reduction practices. The Puerto Rico Department of Health, the Environmental Quality Board, and the Department of Natural Resources and Environment annually report on the regulations and other information which our agricultural agents use to orient our clientele. If farmers obtain their operation permits and comply with the environmental regulations, the quality of our soil, air, and water will improve.

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

To improve the utilization and conservation of soil, water, and air through the adoption of practices and regulations.

**9. Scope of Program**

- In-State Extension

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other than formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	8.0	0.0	0.0	0.0
2008	8.0	0.0	0.0	0.0
2009	8.0	0.0	0.0	0.0
2010	8.0	0.0	0.0	0.0
2011	8.0	0.0	0.0	0.0

**Outputs for the Program**

**13. Activity (What will be done?)**

- Development of a curriculum on air quality in agriculture (animal waste management).
- Compile the guidelines of the regulatory laws for water quality.
- Offer short courses and trainings.
- Develop a curriculum related to watersheds protection.
- On-site farm visits.
- Establish demonstrative projects on the recommended practices for air quality and soil conservation practices.
- Establish collaboration with government agencies (local, state & federal).
- Distribute information at agricultural fair & festivals.

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

Extension	
Direct Method	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> <li>● Demonstrations</li> <li>● Other 1 (Curriculum)</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Web sites</li> <li>● Other 1 (Radio Programs)</li> <li>● Other 2 (Exhibitions)</li> </ul>

**15. Description of targeted audience**

Farmers (includes small family farms, large scale farm business operation), farm workers, government professionals.

**16. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	3000	2000	0	0
2008	3500	2500	0	0
2009	4000	3000	0	0
2010	4500	3500	0	0
2011	5000	4000	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

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

2007 Target: 15  
 2008 Target: 15  
 2009 Target: 20  
 2010 Target: 20  
 2011 Target: 20

**Output Text**

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

2007	Target:	100
2008	Target:	150
2009	Target:	200
2010	Target:	250
2011	Target:	300

**Output Text**

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

2007	Target:	200
2008	Target:	300
2009	Target:	400
2010	Target:	500
2011	Target:	600

**Output Text**

Number of farmers trained on soil fertility.

2007	Target:	200
2008	Target:	250
2009	Target:	300
2010	Target:	350
2011	Target:	400

**Output Text**

Number of farmers trained on soil conservation practices.

2007	Target:	100
2008	Target:	150
2009	Target:	200
2010	Target:	250
2011	Target:	300

**Output Text**

Number of people trained on watershed protection.

2007	Target:	50
2008	Target:	75
2009	Target:	100
2010	Target:	125
2011	Target:	150

**Output Text**

Number of people trained on conservation and effective use of water resources.

2007 Target: 200  
2008 Target: 250  
2009 Target: 300  
2010 Target: 400  
2011 Target: 500

## Outcomes for the Program

### 19. Outcome measures

#### Outcome Text: Awareness created

##### Outcome Text

Number of farmers that adopted the recommended practices for air and water quality

**Outcome Type:** Medium

2007 Target: 50  
2008 Target: 75  
2009 Target: 100  
2010 Target: 125  
2011 Target: 150

##### Outcome Text

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

**Outcome Type:** Long

2007 Target: 100  
2008 Target: 150  
2009 Target: 200  
2010 Target: 250  
2011 Target: 300

##### Outcome Text

Number of farmers that adopted the fertilization practices.

**Outcome Type:** Medium

2007 Target: 150  
2008 Target: 200  
2009 Target: 250  
2010 Target: 300  
2011 Target: 350

##### Outcome Text

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

**Outcome Type:** Medium

2007 Target: 75  
2008 Target: 100  
2009 Target: 150  
2010 Target: 200  
2011 Target: 250

**Outcome Text**

Number of farmers that established practices for the protection of watersheds.

**Outcome Type:** Medium

2007 Target: 25

2008 Target: 40

2009 Target: 60

2010 Target: 80

2011 Target: 100

**Outcome Text**

Number of persons that adopted practices to improve water resources.

**Outcome Type:** Medium

2007 Target: 150

2008 Target: 200

2009 Target: 250

2010 Target: 300

2011 Target: 350

**20. External factors which may affect outcomes**

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

**Description**

As Puerto Rico is located in the path of hurricanes, it is annually threatened by these natural phenomena (June to November). Often, heavy rains (early in May through October) cause floods or mud slides. In the central mountain region the heavy rains increase the soil erosion and sedimentation of rivers and watersheds.

In relation to obtaining operation licenses or permits, the various agencies that farmers have to go through to submit the required documents, the time incurred, and the procedures are a burden and the main factors that discourage them from completing the process. Also, if the farmers still need some financing to cover the costs of improving their waste disposal system, they will incur in additional delays.

**21. Evaluation studies planned**

- Before-After (before and after program)
- Case Study

**Description**

Case studies will be used to evaluate this planned program and gather information of factors that influence the farmers in adopting the recommended practices. The cases will be individual clients that have succeeded in adopting the practices. Case studies will begin during the third year of the program. Three cases will be selected.

**22. Data Collection Methods**

- Sampling
- Case Study
- Portfolio Reviews

**Description**

Agricultural agents are required to keep a file of the farmers they visit or offer technical assistance to. It includes a farm development plan, the main practices implemented on the farm, problems, and recommendations, as well as participation in other USDA program assistance.

**1. Name of the Planned Program**

Healthy: No matter what my size or income

**2. Program knowledge areas**

- 703 Nutrition Education and Behavior 80 %
- 704 Nutrition and Hunger in the Population 20 %

**3. Program existence**

- New (One year or less)

**4. Program duration**

- Long-Term (More than five years)

**5. Brief summary about Planned Program**

This program is based on the idea that a healthy body feels good and looks good, no matter what its size. The basic attitude to be developed is: "I inherited a unique, complex, and attractive body. I will make sure it is as healthy as possible." Although it seems contradictory, studies in the USA show that low-income populations are at an increased risk of being overweight and obese. The problem may be related to the fact that they may not be able to feed their family adequately the entire month using the money available; thus being motivated to use low-cost-non-nutritious foods. Low-income participants who have no children or have pre-school children are particularly at risk for hunger. A total of 10 lessons will be available to home economists, of which they will pick the six that are most appropriate to the expressed needs of their particular audiences. These lessons are based on learning tasks and emphasize attitudes and skills. Among the attitudes to be developed are: "I can include more physical activity in my daily life", "I am an attractive person", "I can prepare meals for myself and for my family", and "I can make nutritious choices when I eat out". The skills to be learned include: how to compliment a person without referring to their size, how to cook meals for myself and for my family, how to make nutritious choices when eating out, and leaving food on the plate, if too much is served. It is very important that people who have limited incomes be taught food preparation skills and how to make the best use of the money available for food. They also need to know how to increase the use of food produced by the participant or food that is already found on trees growing around the house, make wiser selection of foods, compare prices and places to buy foods, and plan meals and snacks. The "Guía Pirámide para Puerto Rico", which is an adaptation of MyPyramid, will be used as the basis of our educational efforts. Behavior changes anticipated include increased consumption of whole grains, fruits, and vegetables; decreased use of beverages that are basically sugar and water; choosing fruits instead of juices; including oils or avocados in their meals; and consuming milk with meals. The home economists will be given a 2-day training to introduce the program. The first day will be dedicated to recognizing attitudes about weight and appearance and accepting the fact that a person can be healthy no matter what their size or income; and the second day will be spent experiencing the learning tasks and developing skills to create their own learning tasks. An exhibition will be developed to encourage people to sign up for the lessons.

**6. Situation and priorities**

The basic issue in the area of nutrition education and behavior is developing a healthy, well-nourished population within the income constraints of each participant. This issue relates to personal satisfaction in one's life, the reduction of the incidence of chronic diseases, and moderating the trends of increased obesity in the population. Current efforts to reduce the incidence of overweight and obesity are based on medical models developed over 50 years ago, and are aimed at weight control rather than health. The adequate health status issue based on nutritious food, adequate physical activity, and accepting one's body as beautiful, not health status based on a specific BMI; concerns individuals, households, communities, and society at large.

In Puerto Rico we do have no statistics concerning the presence of an adequate food supply in households to last the entire month. Studies conducted by the Puerto Rico Department of the Family show that the funds provided by NAP are not sufficient to buy nutritious food for the whole month. In working with low-income populations, it is evident that there is a problem with availability of foods in socially acceptable ways. Households with children in school have fewer problems because the children are able to have one to two meals at school; however, those with small children at home, or which consist of adults or older children who are not in school, may be at high risk for food insecurity.

CDC statistics for Puerto Rico, 1996 (earliest date for which the statistics are available), indicate that the prevalence for overweight was 37.2 (34.6-39.8) with a prevalence of obesity of 16.8 (14.8-18.8). The analogous numbers for 2002 are: overweight 39.2 (37.6-41.5, and obesity 22.0 (20.4-23.5). Persons 18 to 34 have a lower prevalence of overweight and obesity than persons 35 and older. The prevalence of overweight is greater in males than in females, but the prevalence of obesity is similar.

Studies indicate that between 80% and almost 100% of people who lose weight regain it. An informal survey of PRAES county personnel indicates that between 90 and 95% of the people failed to maintain weight loss after two to five years. However, recent work shows that the non-diet approach (Health at Every Size) results in long term improved health in adults although it was not associated with weight loss. Food related factors associated with overweight and obesity include: skipping breakfast, larger portion sizes, larger total amount of food served, high-fat-high-sugar diets, increased snacks, increased fruit juice consumption coupled with lower milk consumption, doing something else while eating, parent-child interactions while the child is eating, eating at fast food establishments, and increased choice in the marketplace. Participation in physical activity was identified as an important factor in 1955, and was recently confirmed in the WIN the Rockies program.

To deal with these problems related to overweight and obesity we have developed the program Healthy: No matter what my size or income, which is based on the idea that a healthy body feels good and looks good, no matter what its size. The basic attitude to be developed is: "I inherited a unique, complex, and attractive body. I will make sure it is as healthy as possible."

## 7. Assumptions made for the Program

The attitudes, assumptions, and motivations of Extension personnel have to be modified:

A person's character is more important than his appearance.

The environment is conducive to weight gain produced by an abundance of calorie dense foods and built in lack of opportunity to engage in physical activity as a part of normal daily activities.

Focus on reducing weight or on weight control does not work.

Obesity/overweight affects all members of society not just those who manifest the problem.

The overweight or obese individual is making the same kind of choices that normal weight individuals do, although they may not do it to the same degree.

The main difference between overweight and normal weight individuals is the hereditary tendency necessary to produce the symptom of overweight or obesity.

Overweight or obese individuals "may" be more sedentary or "may" eat more food than normal weight individuals, but not necessarily.

The focus has to be changed to:

Good health as a state of physical, mental, emotional, and social well-being rather than being a particular size or shape.

Improvement is more important than meeting a specific goal.

Eating a variety of foods is pleasurable.

Enjoyment in eating fruits and vegetables more often.

Listening to hunger and fullness cues.

Establishing an environment in which healthful choices are the easy choices.

Recognizing that references, negative or positive, to weight are not tolerable.

"Clean your plate" may not be healthful.

"Forbidden" or favorite foods can be included.

Recognizing cues to eating that are not food related.

Specific goals are important to know, but, establishing behavior that would lead to those goals is more important than the goal itself.

The problem of overweight and obesity needs to be addressed at a household, school or community level, and not so much at the individual level. The Institute for Community Development of the UPR in Mayagüez will collaborate with the extension service in these efforts. The external environment will continue to have an emphasis on weight loss and condemnation of those who exhibit the problem.

No one wants to admit that they have problems with having enough food for their family. Coping strategies include:

Going to the homes of family members to eat.

Feeding the children, with mothers eating less.

Buying foods that will fill them up, regardless of nutritive value.

Adults learn by being presented practical solutions to perceived problems. These include:

Growing food for their own use, in gardens or in flower pots.

Preparing meals for the people living in their household.

Planning their meals based on rice and beans or pasta, with one to two ounces of meat per person.

Preparing one-dish meals.

Selecting lower cost alternative foods of the same or increased nutritional value.

Comparing similar items before purchasing.

Making a shopping list.

Making use of food specials.

Use of herbs and condiments grown by the person rather than fat, sugar or salt to enhance the flavor and appeal of foods.

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

Change in attitudes, assumptions and motivations, implementing steps to improve the diet/physical activity characteristics of the individual and his or her family; and having sufficient nutritious food in the house to last the entire month. The ideal would be that everyone eat according to the Food Guide Pyramid for Puerto Rico and engage in sufficient aerobic activities, activities that increase muscle strength and promote greater flexibility of the body so that good physical capacity can be developed and maintained. The program focuses on reaching new audiences every year to achieve community-wide acceptance of the premises of the program. Emphasis will be on keeping the goal in mind, and taking small steps towards that goal. For many people reaching the goal will involve major changes in many areas of their lives, and this probably will not happen within the time frame available for reasonable evaluation of a program. However, improvement can be made and measured.

**9. Scope of Program**

- In-State Extension

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other than formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	9.2	0.0	0.0	0.0
2008	9.2	0.0	0.0	0.0
2009	9.5	0.0	0.0	0.0
2010	9.5	0.0	0.0	0.0
2011	9.5	0.0	0.0	0.0

**Outputs for the Program**

**13. Activity (What will be done?)**

Train the home economists regarding basic attitudes, assumptions, and motivations.  
 Train the home economists in adult teaching methodology so that people decide to make changes.  
 Initial evaluation before the beginning of the course, of what the people expect from the course/activity.  
 Courses based on learning tasks.  
 Exhibits/Community activities which emphasize the new focus on "health, no matter what my size or income".

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

Extension	
Direct Method	Indirect Methods
<ul style="list-style-type: none"> <li>● Other 1 (Classes based on Learning Tasks)</li> <li>● Other 2 (Participatory Action Research)</li> </ul>	<ul style="list-style-type: none"> <li>● Public Service Announcement</li> <li>● Other 1 (Exhibitions)</li> </ul>

**15. Description of targeted audience**

Extension professionals, parents, the person that plans/buys/prepares food for the family, low-income families with small children or no children, personnel/students in schools, and community leaders.

**16. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	10000	8000	0	0
2008	10000	8000	0	0
2009	10000	8000	0	0
2010	10000	8000	0	0
2011	10000	8000	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

Number of persons that completed the short course.

2007 Target: 1000  
 2008 Target: 1000  
 2009 Target: 1000  
 2010 Target: 1000  
 2011 Target: 1000

**Output Text**

Number of volunteers that use the curriculum for a course or project.

2007 Target: 25  
 2008 Target: 25  
 2009 Target: 25  
 2010 Target: 25  
 2011 Target: 25

## Outcomes for the Program

### 19. Outcome measures

#### Outcome Text: Awareness created

##### Outcome Text

Number of people who recognize that they are attractive, no matter what they weigh.

##### Outcome Type: Short

2007 Target: 300

2008 Target: 300

2009 Target: 300

2010 Target: 300

2011 Target: 300

##### Outcome Text

Number of people who recognize that they can prepare a meal for their family or for themselves.

##### Outcome Type: Short

2007 Target: 300

2008 Target: 300

2009 Target: 300

2010 Target: 300

2011 Target: 300

##### Outcome Text

Number of people who recognize that they can make more nutritious choices when they eat out.

##### Outcome Type: Short

2007 Target: 400

2008 Target: 400

2009 Target: 400

2010 Target: 400

2011 Target: 400

##### Outcome Text

Number of people who developed the attitude that "It is possible to feed my family with the money that is available."

##### Outcome Type: Short

2007 Target: 100

2008 Target: 100

2009 Target: 100

2010 Target: 100

2011 Target: 100

##### Outcome Text

Number of people who can compliment a person without referring to their size.

**Outcome Type:** Medium

2007 Target: 300  
2008 Target: 300  
2009 Target: 300  
2010 Target: 300  
2011 Target: 300

**Outcome Text**

Number of people who increased the consumption of whole grains.

**Outcome Type:** Medium

2007 Target: 200  
2008 Target: 200  
2009 Target: 200  
2010 Target: 200  
2011 Target: 200

**Outcome Text**

Number of people who increased the consumption of fruits.

**Outcome Type:** Medium

2007 Target: 250  
2008 Target: 250  
2009 Target: 250  
2010 Target: 250  
2011 Target: 250

**Outcome Text**

Number of people who increased the consumption of vegetables.

**Outcome Type:** Medium

2007 Target: 250  
2008 Target: 250  
2009 Target: 250  
2010 Target: 250  
2011 Target: 250

**Outcome Text**

Number of people who decreased the consumption of beverages that are basically sugar and water.

**Outcome Type:** Medium

2007 Target: 350  
2008 Target: 350  
2009 Target: 350  
2010 Target: 350  
2011 Target: 350

**Outcome Text**

Number of people who consume milk with their meals.

**Outcome Type:** Medium

2007 Target: 300  
2008 Target: 300  
2009 Target: 300  
2010 Target: 300  
2011 Target: 300

**Outcome Text**

Number of people who consume oils, nuts or avocados frequently.

**Outcome Type:** Medium

2007 Target: 200  
2008 Target: 200  
2009 Target: 200  
2010 Target: 200  
2011 Target: 200

**Outcome Text**

Number of people that grow food for their own use in gardens or flower pots.

**Outcome Type:** Medium

2007 Target: 200  
2008 Target: 200  
2009 Target: 200  
2010 Target: 200  
2011 Target: 200

**Outcome Text**

Number of people who use fruit that grows in their backyard.

**Outcome Type:** Medium

2007 Target: 200  
2008 Target: 200  
2009 Target: 200  
2010 Target: 200  
2011 Target: 200

**Outcome Text**

Number of people who prepare meals for the people living in their household.

**Outcome Type:** Medium

2007 Target: 300  
2008 Target: 300  
2009 Target: 300  
2010 Target: 300  
2011 Target: 300

**Outcome Text**

Number of people who prepare one-dish meals.

**Outcome Type:** Medium

2007 Target: 225  
2008 Target: 225  
2009 Target: 225  
2010 Target: 225  
2011 Target: 225

**Outcome Text**

Number of people who select lower cost alternative foods of the same or increased nutritional value.

**Outcome Type:** Medium

2007 Target: 225  
2008 Target: 225  
2009 Target: 225  
2010 Target: 225  
2011 Target: 225

**Outcome Text**

Number of people who make a shopping list.

**Outcome Type:** Medium

2007 Target: 225  
2008 Target: 225  
2009 Target: 225  
2010 Target: 225  
2011 Target: 225

**Outcome Text**

Number of people who make use of food specials.

**Outcome Type:** Medium

2007 Target: 225  
2008 Target: 225  
2009 Target: 225  
2010 Target: 225  
2011 Target: 225

**Outcome Text**

Number of people who are proud that they can prepare delicious low cost meals.

**Outcome Type:** Long

2007 Target: 100  
2008 Target: 100  
2009 Target: 100  
2010 Target: 100  
2011 Target: 100

**Outcome Text**

Number of people who plan their meals based on rice and beans or pasta, with one to two ounces of meat or meat substitute per person.

**Outcome Type:** Long

2007 Target: 100  
2008 Target: 100  
2009 Target: 100  
2010 Target: 100  
2011 Target: 100

**Outcome Text**

Number of people who now use herbs and condiments to enhance the flavor and appeal of foods.

**Outcome Type:** Long

2007 Target: 100  
2008 Target: 100  
2009 Target: 100  
2010 Target: 100  
2011 Target: 100

**Outcome Text**

Number of people who now eat according to the recommendations of the Food Guide Pyramid for Puerto Rico.

**Outcome Type:** Long

2007 Target: 50  
2008 Target: 50  
2009 Target: 50  
2010 Target: 50  
2011 Target: 50

**Outcome Text**

Number of people who now have enough food to feed their family the entire month.

**Outcome Type:** Long

2007 Target: 50  
2008 Target: 50  
2009 Target: 50  
2010 Target: 50  
2011 Target: 50

**20. External factors which may affect outcomes**

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

**Description**

Puerto Rico is subject to hurricanes. A major hurricane could completely reorient the government's priorities and make it essential to spend scarce resources on recovery rather than health related programs. Currently Puerto Rico is going through a major financial crisis which may or may not be solved in the near future. This situation is causing a rise in the cost of living with concomitant pressure to reduce the government payroll. The prevalent overweight/obesity intervention model is the medical model based on weight control. This program is based on a completely different paradigm: Health at any Size. It will take a great deal of time for the home economists and the general public to change their attitudes and adopt the new model.

## 21. Evaluation studies planned

- Other

### Description

Initial assessment of the interests and needs of the people who plan to participate in the activity A one page questionnaire with open questions to assess: 1) Whether their attitudes changed because of the participation in the program. 2) What they learned that they can put into immediate practice. 3) Would they recommend the classes to another person? Why or why not? 4) What else they would like to learn. In addition, the home economists will interview a small sample of participants about how the program has affected them (positively or negatively).

## 22. Data Collection Methods

- Sampling
- Whole population
- Unstructured
- Other

### Description

Open questions will be administered using a one-page questionnaire. The home economists will tabulate the response according to the attitudes, skills, and behaviors included in the indicators. These results will be entered into the existing information system of the Planning Office of the Puerto Rico Agriculture Extension Service.

**1. Name of the Planned Program****Management of Rangeland and Forestry Resources****2. Program knowledge areas**

- 133 Pollution Prevention and Mitigation 5 %
- 123 Management and Sustainability of Forest Resources 20 %
- 122 Management and Control of Forest and Range Fires 5 %
- 121 Management of Range Resources 40 %
- 124 Urban Forestry 30 %

**3. Program existence**

- Intermediate (One to five years)

**4. Program duration**

- Long-Term (More than five years)

**5. Brief summary about Planned Program**

One way to promote the management of rangelands is through a collaborative effort with the USDA-NRCS. It will be directed toward the development of educational activities (training, meetings, seminars, follow-up visits and others) geared at implementing the recommended practices to protect the natural resources and the best management practices during farming. Farm demonstrations will be established as educational tools to showcase the desired practices, their benefits, and to stimulate other farmers to adopt the practices. Each farm visit will require a report of the findings and recommendations. Short courses will be offered on improved pasture varieties, fertilization, silage, cover crops, and other related topics. A pre and post test will be administered to measure the knowledge gained. Puerto Rico Agricultural Extension Service (PRAES) programs promote the use of better management practices that seem economically profitable for grazing hay and silage production on agricultural lands. PRAES seeks to promote the management of range lands to increase the grazing capacity, as well as the production of hay and silage, through the implementation of sustainable management practices using minimum tillage. There is great concern with soil erosion and deforestation of our lands and problems associated with the eutrofication and sedimentation of rivers on the island. Each year flooding risks increase causing numerous agricultural losses to the local economy. The development of new green areas, tree conservation, and reforestation are some of the alternatives to enhance, improve and promote wildlife in and around the cities. Reforestation and development of green areas in urban and rural areas by non government entities should be promoted. Rangeland and forestry practices will be improved to prevent the contamination of our natural resources.

**6. Situation and priorities**

Puerto Rico is characterized by a high population density, which demands the update and construction of infrastructure to satisfy the needs of the population. As a result, the land available for agriculture has been reduced. This squandering and urban development threaten our natural resources. The 2002 Census of Agriculture reported 690,687 acres for agricultural uses. Of these 178,663 were improved pastures, 109,597 were nature pastures, and 64,963 abandoned pastures. There is a need for better and more efficient use of our lands for range and pastures production. Farm animal production requires extensive, as well as intensive pasture land for dairy and livestock production. The main industries are dairy and beef cattle. Other emerging agricultural enterprises, such as horseback riding and paso fino horses, depend directly and indirectly of hay and range lands for grazing. Seventy-eight percent (78%) of livestock farmers in PR depend on hay to feed their animals. The agricultural net income for hay and silage during 2004-2005 was \$8.9 million.

Intensive use of agricultural lands, deforestation, eutrofication, and sedimentation of rivers increase flooding risks, threatening lives. Large social organizations are interested in developing urban forest programs to improve the environment in their communities. Workshops and publications are needed to use and promote the protection of our forest and trees.

**7. Assumptions made for the Program****MANAGEMENT OF RANGE RESOURCES:**

Land is in high demand for a variety of uses in Puerto Rico. As a result, natural resources such as land, water, and forest are being reduced in size and quality.

It is often believed that agricultural production is to be blamed for the contamination of the natural resources and their depletion.

If farmers implemented a package of better management practices in their farming operations, they could contribute to the conservation of the natural resources.

**MANAGEMENT AND SUSTAINABILITY OF FOREST RESOURCES:**

Reforestation of steep slope lands can contribute to the conservation of soil and water and the control of sedimentation and erosion.

**URBAN FORESTRY:**

Reforestation projects of non government entities contribute to improve the natural environment of the communities.

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

To improve the recommended practices on range and forest resources to assure enough forage production for livestock and conserve the forest ecosystems.

**9. Scope of Program**

- In-State Extension

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other then formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	6.0	0.0	0.0	0.0
2008	6.0	0.0	0.0	0.0
2009	6.0	0.0	0.0	0.0
2010	6.0	0.0	0.0	0.0
2011	6.0	0.0	0.0	0.0

**Outputs for the Program**

**13. Activity (What will be done?)**

- Conduct workshops and meetings.
- Collaborate with government agencies (DNRA, USDA-NRCS and others).
- Collaborate with our partners in the University of Puerto Rico and other educational institutions.
- Conference/training related to range management.
- Conference/training related to urban forestry.
- Participate in radio programs.
- Offer advice when clientele visit the office.
- Conduct a campaign on the prevention of forest fires.

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

Extension	
Direct Method	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Web sites</li> <li>● Other 1 (Radio Programs)</li> <li>● Other 2 (Exhibitions)</li> </ul>

**15. Description of targeted audience**

County agents, home economists, government personnel, community residents, youth 13-18 years old, farmers, and homeowners.

**16. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	2000	3000	0	0
2008	2500	3500	0	0
2009	3000	4000	0	0
2010	3500	4500	0	0
2011	4000	5000	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

Number of farmers trained in range management.

2007 Target: 300  
 2008 Target: 300  
 2009 Target: 300  
 2010 Target: 300  
 2011 Target: 300

**Output Text**

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

2007 Target: 300  
 2008 Target: 400  
 2009 Target: 500  
 2010 Target: 500  
 2011 Target: 600

**Output Text**

Number of persons trained on forest and rangeland fire prevention.

2007	Target:	75
2008	Target:	100
2009	Target:	120
2010	Target:	150
2011	Target:	150

**Output Text**

Number of persons trained on pollution prevention and mitigation of natural resources.

2007	Target:	200
2008	Target:	250
2009	Target:	300
2010	Target:	350
2011	Target:	400

**Output Text**

Number of agency collaborations established.

2007	Target:	5
2008	Target:	5
2009	Target:	5
2010	Target:	5
2011	Target:	5

**Output Text**

Number of people trained on natural resources and forest conservation.

2007	Target:	300
2008	Target:	400
2009	Target:	500
2010	Target:	500
2011	Target:	600

**Outcomes for the Program**

**19. Outcome measures**

**Outcome Text: Awareness created**

**Outcome Text**

Number of farmers that improved their pastures.

**Outcome Type:** Medium

2007	Target:	100
2008	Target:	120
2009	Target:	130
2010	Target:	140
2011	Target:	150

**Outcome Text**

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

**Outcome Type:** Medium

2007 Target: 150  
2008 Target: 200  
2009 Target: 250  
2010 Target: 250  
2011 Target: 300

**Outcome Text**

Number of reforestation projects established.

**Outcome Type:** Long

2007 Target: 15  
2008 Target: 20  
2009 Target: 20  
2010 Target: 25  
2011 Target: 30

**Outcome Text**

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

**Outcome Type:** Medium

2007 Target: 30  
2008 Target: 40  
2009 Target: 50  
2010 Target: 60  
2011 Target: 60

**Outcome Text**

Number of farmers that adopted the recommended range management practices.

**Outcome Type:** Medium

2007 Target: 150  
2008 Target: 160  
2009 Target: 175  
2010 Target: 185  
2011 Target: 200

**Outcome Text**

Number of acres in improved pastures.

**Outcome Type:** Medium

2007 Target: 1500  
2008 Target: 1500  
2009 Target: 1500  
2010 Target: 1600  
2011 Target: 1600

## 20. External factors which may affect outcomes

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

### Description

Every year Puerto Rico is subjected to and affected by a variety of natural disasters. Hurricanes, long periods of drought, or extensive periods of rain are the most common. Many agricultural facilities can severely be affected for these atmospheric events. These events affect range production and increase the dependency on concentrated cattle feed. Changes in public policy and regulations also cause farmers to change their priorities and to postpone projects. The availability of economic incentives for farmers and non government entities is important in making decisions requiring capital investments. Any change in priorities set by the administration will have an effect on the program outcomes.

## 21. Evaluation studies planned

- Before-After (before and after program)

### Description

Pre/post test will be employed to determine knowledge gained by program participants.

## 22. Data Collection Methods

- Whole population
- On-Site

### Description

The data will be collected through pre- and post- test to compare and determine effectiveness of the educational programs.

## 1. Name of the Planned Program

Animal Protection

## 2. Program knowledge areas

- 315 Animal Welfare/Well-Being and Protection 10 %
- 312 External Parasites and Pests of Animals 25 %
- 313 Internal Parasites in Animals 25 %
- 311 Animal Diseases 40 %

## 3. Program existence

- Intermediate (One to five years)

## 4. Program duration

- Long-Term (More than five years)

## 5. Brief summary about Planned Program

Livestock is the agricultural sector that has contributed the most to Puerto Rico's gross agricultural income. It includes dairy beef, poultry, swine, aquaculture, and small operations such as rabbits, goats, sheep, bees and horses. Of all agricultural activities, it is the sector is most prone to the transmission of diseases to humans. Transportation of persons, equipment, materials, and goods which can take hours or days, increase the risk of transporting diseases from one place to another in a short period of time. This poses a great threat and risk to farm activities involving animals. Farmers should be made aware of the importance of developing a control and prevention program of animal diseases and of following the recommended production practices to reduce the risk of losses in production and low yields. The Puerto Rico Agricultural Extension Service (PRAES) will orient farmers of the importance of maintaining the animals in good health. Practices such as keeping the farm facilities clean, establishing a vaccination program, keeping the animals by age groups, and biosecurity will be promoted between farmers. The implementation of these practices will result in more successful farm operations.

## 6. Situation and priorities

According to statistics of the Department of Agriculture, the livestock sector is the biggest contributor to the agriculture gross income. During fiscal year 2004-2005 it contributed with 48% of the agricultural gross income. The biggest contributors to this sector are dairy and poultry followed by beef, swine, aquaculture, and rabbits. However, given the importance of this sector, not all the farmers are following the guidance to manage their facilities properly. The new trends in commercial treatments between countries make the implementation of bio-security practices indispensable to avoid the spread of diseases. The bio-security program should be improved among those farmers that have them in place and those that are not implementing these bio-security measures should begin to do so. Animal products provide us with food, fiber, medicine, and wildlife. Animal health is an important task of farm business production that needs the support and education of our clientele. Some diseases that can devastate the animal enterprise and affect humans are: foot and mouth disease, avian influenza, exotic Newcastle, bovine "spongiform encephalopathy" (mad cow disease), and swine fever. Through this planned program, PRAES will create awareness of these diseases and will establish partnerships with agencies such as APHIS-Veterinary Services, the Puerto Rico Department of Agriculture-Animal Division, and local animal associations. We will promote the prevention and control of diseases and internal and external parasites at farm level and detect possible highly infectious animal disease agents.

## 7. Assumptions made for the Program

Information about good disease management practices in farm animal and regulations will be available to all farm animals. PRAES will orient the farmers on the importance of adopting a disease control and prevention program and implementing the recommended practices through its educational program. The regulations are established by state federal agencies.

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

Enhance the prevention and control of diseases at farm level to increase animal health, production, and quality.

## 9. Scope of Program

- In-State Extension

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other than formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	7.0	0.0	0.0	0.0
2008	7.0	0.0	0.0	0.0
2009	7.0	0.0	0.0	0.0
2010	7.0	0.0	0.0	0.0
2011	7.0	0.0	0.0	0.0

**Outputs for the Program**

**13. Activity (What will be done?)**

Trainings.  
Establish collaborations with local and federal agencies.

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

Extension	
Direct Method	Indirect Methods
<ul style="list-style-type: none"> <li>● Education Class</li> <li>● Workshop</li> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Web sites</li> <li>● Other 1 (Exhibitions)</li> <li>● Other 2 (Radio Programs)</li> </ul>

**15. Description of targeted audience**

Agricultural producers, extension professionals, community leaders, and other professionals.

**16. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	2400	2000	0	0
2008	3000	2200	0	0
2009	3500	2500	0	0
2010	4000	2500	0	0
2011	4500	2500	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

Number of persons trained in control and prevention of diseases.

2007 Target: 150  
 2008 Target: 200  
 2009 Target: 250  
 2010 Target: 250  
 2011 Target: 250

**Output Text**

Number of persons trained in bio-security program.

2007 Target: 200  
 2008 Target: 250  
 2009 Target: 300  
 2010 Target: 300  
 2011 Target: 300

**Output Text**

Number of persons trained in control and prevention of internal and external parasites.

2007 Target: 200  
 2008 Target: 200  
 2009 Target: 200  
 2010 Target: 200  
 2011 Target: 200

**Output Text**

Number of persons trained in animal welfare and protection.

2007 Target: 0  
2008 Target: 100  
2009 Target: 100  
2010 Target: 100  
2011 Target: 100

**Output Text**

Number of collaborations established.

2007 Target: 20  
2008 Target: 24  
2009 Target: 30  
2010 Target: 34  
2011 Target: 40

**Outcomes for the Program**

**19. Outcome measures**

**Outcome Text: Awareness created**

**Outcome Text**

Number of persons that adopted disease control and prevention practices.

**Outcome Type:** Medium

2007 Target: 250  
2008 Target: 300  
2009 Target: 350  
2010 Target: 350  
2011 Target: 400

**Outcome Text**

Number of persons that reduced the number of diseased animals on their farm.

**Outcome Type:** Medium

2007 Target: 200  
2008 Target: 250  
2009 Target: 300  
2010 Target: 300  
2011 Target: 350

**Outcome Text**

Number of persons that adopted a bio-security program.

**Outcome Type:** Medium

2007 Target: 25  
2008 Target: 30  
2009 Target: 35  
2010 Target: 40  
2011 Target: 45

**Outcome Text**

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

**Outcome Type:** Short

2007 Target: 0  
2008 Target: 70  
2009 Target: 80  
2010 Target: 90  
2011 Target: 100

**Outcome Text**

Number of persons that adopted practices for the control of parasites on their farm.

**Outcome Type:** Medium

2007 Target: 100  
2008 Target: 150  
2009 Target: 200  
2010 Target: 200  
2011 Target: 200

**20. External factors which may affect outcomes**

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

**Description**

Puerto Rico is located in the Caribbean are and is subject to many climate changes. It is affected by natural occurrences such as hurricanes, which cause heavy rains and high winds during hurricane season (June to November) that affect animals and animal production; and long periods of drought during the dry season followed by periods of heavy rains, which often have devastating effects on animals and animal production, and consequently on the economy. Government changes and lack of long term planning, result in an unstable environment in government agencies. This causes changes in their priorities and their performance in general, resulting in changes and disruption in the projects and affecting program outcomes.

**21. Evaluation studies planned**

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

**Description**

Every two years a focal group will be performed in different places around the island. The purpose is to measure what the participant have been doing and to know what they have adopted.

## 22. Data Collection Methods

- Sampling
- Unstructured
- Other

### Description

The collection will be done using as reference the four cardinal points. A sampling of every livestock sector will be taken and questions will be discussed to measure the adoption and to know any needs to perform the adoption.

### **1. Name of the Planned Program**

Community Resources Development

### **2. Program knowledge areas**

- 608 Community Resource Planning and Development 100 %

### **3. Program existence**

- Intermediate (One to five years)

### **4. Program duration**

- Long-Term (More than five years)

### **5. Brief summary about Planned Program**

The poverty level in Puerto Rico is 48.2 % (Census of Population, 2000); which means that the island has a higher number of low-income rural and urban communities in comparison to other states. Most of these communities share common characteristics such as limited and/or unequal access to natural resources, economic, and social development. Other characteristics include limited geographical space, high dropout and unemployment rates, domestic violence, and a long history of environmental and health problems. Therefore, our plan of work should consider the current situation of these communities. A key component is to develop educational programs that focus on empowerment. The educational effort will aim making communities more sustainable. It is important to develop collaborative work to assist them in taking control of their own lives. This will be achieved by promoting participatory methodologies, such as Participatory Action Research by developing tools to gain consciousness of their situation. We will continue our collaboration with other agencies to promote micro-enterprises initiatives as a tool to create community based businesses.

### **6. Situation and priorities**

In December 1997, the Puerto Rico Community Foundation created the Community Economic Development Consortium, which created the basis to promote the communities' economic development in a systematic way. In 2000 the government of Puerto Rico adopted a public policy to promote community organization, socio-economics, and the environment. A small community business (micro-enterprises) usually has less than nine employees. In Puerto Rico, small businesses conform 13.5% of the total businesses, and are mainly located at the municipalities of San Juan, Bayamón, Ponce, and Caguas. Forty percent (40%) of these businesses were dedicated to services, 30.4% to retail sales, 6.8% to finances or real estate, and 22.8% to sales, construction, manufacturing, transportation, and other activities. All personnel working in community development and educational institutions have the responsibility of promoting community self-management to increase self-esteem and reduce government dependence.

### **7. Assumptions made for the Program**

Educating our county agents, home economists, and community leaders will help disseminate the information to the communities.

Working in collaboration with government agencies will help in maximizing the human resources available.

Targeted communities will improve their quality of life.

### **8. Ultimate goal(s) of this Program**

To increase the communities' well-being, quality of life and sustainability through the establishment of community-based businesses.

### **9. Scope of Program**

- In-State Extension

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other than formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	11.5	0.0	0.0	0.0
2008	11.5	0.0	0.0	0.0
2009	11.5	0.0	0.0	0.0
2010	11.5	0.0	0.0	0.0
2011	11.5	0.0	0.0	0.0

**Outputs for the Program**

**13. Activity (What will be done?)**

Conference/training related to micro enterprises and community-based businesses.  
 Individual counseling.  
 Participate in radio programs in order to promote initiatives.  
 Collaboration with the Special Communities Office of the Government of Puerto Rico.

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

Extension	
Direct Method	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Web sites</li> <li>● Other 1 (Radio Programs)</li> <li>● Other 2 (Exhibitions)</li> </ul>

**15. Description of targeted audience**

Extension professionals, community leaders, and other professionals.

**16. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	500	10000	0	0
2008	525	10500	0	0
2009	550	11000	0	0
2010	575	11500	0	0
2011	600	12000	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

Number of persons trained in community-based business.

2007 Target: 75  
 2008 Target: 100  
 2009 Target: 125  
 2010 Target: 150  
 2011 Target: 200

**Outcomes for the Program**

**19. Outcome measures**

**Outcome Text: Awareness created**

**Outcome Text**

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

**Outcome Type:** Medium

2007 Target: 15  
 2008 Target: 25  
 2009 Target: 40  
 2010 Target: 50  
 2011 Target: 65

**Outcome Text**

Number of community-based businesses established.

**Outcome Type:** Long

2007 Target: 0  
2008 Target: 10  
2009 Target: 15  
2010 Target: 20  
2011 Target: 25

**20. External factors which may affect outcomes**

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

**Description**

Puerto Rico's location in the Caribbean area make it object of a variety of natural events, which include hurricanes, heavy winds, droughts, and heavy rainy seasons which affect communities with floods and fires.

Because of the government's inability to solve the problems with its budget, the people have the feeling that we have an unstable economy. As a result, we expect possible changes in the budget assigned to government agencies and instrumentalities, as well as changes in public policies and regulations.

Due to the nature of Puerto Rican politics, sometimes the support needed from mayors in the municipalities may vary if his/her interests are different from those presented by the program. A presented or on-going project can be affected, if for any reason the person responsible for the agency's administration or the community leader change and the people who replace them are not interested in continuing with the educational initiatives established previously.

**21. Evaluation studies planned**

- During (during program)

**Description**

Evaluation studies will be conducted during the program in order to understand the changes that will be occurring in the communities. Periodic visits to the communities will be conducted.

**22. Data Collection Methods**

- Sampling
- Unstructured
- Case Study

**Description**

A sample of five communities, one from each of the PRAES regional districts, will be evaluated. Data will be collected during visits to the communities through observations of the community and unstructured interviews with community leaders, and other community members to understand how they perceive the changes that have occurred to the community and how these have improved the quality of life of the community.

### 1. Name of the Planned Program

Economics, Marketing and Policy

### 2. Program knowledge areas

- 610 Domestic Policy Analysis 10 %
- 604 Marketing and Distribution Practices 20 %
- 602 Business Management, Finance, and Taxation 30 %
- 601 Economics of Agricultural Production and Farm Management 40 %

### 3. Program existence

- Intermediate (One to five years)

### 4. Program duration

- Long-Term (More than five years)

### 5. Brief summary about Planned Program

The planned program Economics, Marketing and Policy consists of educational and technical assistance to farmers and agricultural entrepreneurs on economics of agricultural production and farm management; business management, finance and taxation; marketing and distribution practices, and domestic policy analysis. Agriculture is a business and the farmer is an entrepreneur. The farmers have to make decisions on the use of their resources such as land, labor, capital, and management skills. They need business tools to be successful. Through this planned program the farmers will receive the necessary education and technical assistance to strengthen their abilities as managers and entrepreneurs. The program will provide intensive assistance in keeping records and evaluation of alternatives; tax management approaches; accounting methods; enterprise budgets; credit and income statements; inventory; agricultural risks; marketing strategies, and policies analysis. The farmers need tools and skills to stand up to the increased competition, environmental concerns, new production technologies, and changes in the economy.

### 6. Situation and priorities

PRAES offers education to farmers on Economics, Marketing and Policy. During the past years PRAES has conducted an effective educational program. The farmers received intensive trainings and technical assistance on farm management, finance, taxation, risk, marketing, and agricultural policies. The challenges of the economy make it necessary for PRAES to continue offering farm management education to help alleviate the economic situation faced by the farmers. On the other hand, the farmers and agricultural entrepreneurs need knowledge on diverse areas such as: how to use planning to prepare for the future, how farm managers make decisions, how to choose enterprises, how to integrate production and marketing management, farm records and accounting system, strategies for risk management, and how to obtain and use agricultural credit. Decision-making has always been a challenge to the farmers. Production technology is more dynamic.

### 7. Assumptions made for the Program

Agricultural production is a competitive business. Based on this statement the farmers need be prepared in areas such as of the economics of agricultural Production and farm management; business management, finance and taxation; marketing and distribution practices, and domestic policy analysis. The program is based on the supposition that better educated farmers face new economic challenges with better possibilities of success. Farmers and agricultural entrepreneurs have a strong base to manage their business if they know different strategies. An educational program that offers the opportunity to obtain information about the economics of agricultural production and farm management; business management, finance and taxation; marketing and distribution practices, and domestic policy analysis, increase the possibility to be successful. The farmers who are early adopters of new information can expect increased income.

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

To improve the agricultural business of the farmers and agricultural entrepreneurs through the utilization of tools and skills in economics, marketing and policies.

### 9. Scope of Program

- In-State Extension

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other than formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	5.0	0.0	0.0	0.0
2008	5.0	0.0	0.0	0.0
2009	5.0	0.0	0.0	0.0
2010	5.0	0.0	0.0	0.0
2011	5.0	0.0	0.0	0.0

**Outputs for the Program**

**13. Activity (What will be done?)**

- Farm visits
- Trainings
- Seminars
- Meetings
- Educational material (publications, newsletters, CD)

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

Extension	
Direct Method	Indirect Methods
<ul style="list-style-type: none"> <li>● Education Class</li> <li>● Workshop</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Other 1 (Software)</li> </ul>

**15. Description of targeted audience**

Farmers, agricultural entrepreneurs, Extension professionals.

**16. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	300	600	0	0
2008	300	600	0	0
2009	300	900	0	0
2010	300	900	0	0
2011	300	900	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

Number of trainings, courses and seminars offered.

2007 Target: 10  
 2008 Target: 15  
 2009 Target: 20  
 2010 Target: 20  
 2011 Target: 25

**Output Text**

Number of farmers and agricultural entrepreneurs trained.

2007 Target: 150  
 2008 Target: 225  
 2009 Target: 300  
 2010 Target: 375  
 2011 Target: 400

**Outcomes for the Program**

**19. Outcome measures**

**Outcome Text: Awareness created**

**Outcome Text**

Number of farmers and agricultural entrepreneurs that adopted one or more economic practices.

**Outcome Type:** Medium

2007 Target: 30  
2008 Target: 55  
2009 Target: 75  
2010 Target: 85  
2011 Target: 100

**Outcome Text**

Number of farmers and agricultural entrepreneurs that utilize economic tools to take effective economic decisions to improve their business.

**Outcome Type:** Long

2007 Target: 10  
2008 Target: 15  
2009 Target: 30  
2010 Target: 40  
2011 Target: 50

**20. External factors which may affect outcomes**

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

**Description**

Puerto Rico's location in the Caribbean puts it in the path of hurricanes with high winds and intensive rains. It is also subject to seasons with droughts followed by heavy rains which affect the economy and agricultural production.

The government's economic and budget constraints and changes in public policies affect program priorities.

**21. Evaluation studies planned**

- During (during program)
- Case Study

**Description**

On going evaluations to determine whether or not the program is being implemented as planned will be carried out during the program and to identify project activities that need to be modified, deleted or added. Case studies will be employed to understand how participants have adopted the recommended practices to have a successful agro-business.

**22. Data Collection Methods**

- Sampling
- On-Site
- Unstructured
- Case Study
- Observation

**Description**

A convenience sample of farmers that have adopted the recommended practices will be selected for follow-up and evaluate how these practices have resulted in benefits for their business. Methods for data collection will include unstructured interviews and observations.

**1. Name of the Planned Program**

Animal Production

**2. Program knowledge areas**

- 306 Environmental Stress in Animals 10 %
- 302 Nutrient Utilization in Animals 20 %
- 308 Improved Animal Products (Before Harvest) 15 %
- 305 Animal Physiological Processes 10 %
- 301 Reproductive Performance of Animals 15 %
- 303 Genetic Improvement of Animals 10 %
- 307 Animal Management Systems 20 %

**3. Program existence**

- Intermediate (One to five years)

**4. Program duration**

- Long-Term (More than five years)

**5. Brief summary about Planned Program**

Local animal production is limited by low efficiency of production at the farm level, high costs of production and limited control of imported products. Improving the efficiency of production can allow more opportunity to increase the rentability of the animal production enterprises and advantages in competition with imported products. The aim of the Animal Production program is to assist producers to improve efficiency of production through modern techniques.

**6. Situation and priorities**

The livestock enterprises in Puerto Rico are: dairy and beef cattle, swine, poultry (broiler and laying hens), fish and shrimp, rabbits, goats, and sheep. Together, they represent approximately 48% of the island's gross agricultural income (Statistics of the Puerto Rico Department of Agriculture for FY 2004-2005). During the past four decades, milk production has been the most important agricultural enterprise, but the stability of the industry has been challenged by several factors. Current trends of the industry show a steady decline in the number of farms, as the average herd size has increased correspondingly. At the same time, the number of acres dedicated to forage production at the average dairy has been significantly reduced. Over the past ten years, the total number of acres dedicated to forage production declined by more than 12%. Faced with insufficient land for feed production, farmers are relying increasingly on imported ingredients to feed their lactating cows. This is a major cause for the increasing confinement or semi confinement of dairy cows in the tropics and for the need of comprehensive nutrient management at the farm level to increase efficiency and reduce the threat of soil and water contamination. The steady reduction in fresh milk consumption observed during the past years has exacerbated the economic stability of the milk industry because this is the product that generates the highest income to the farmer.

On the other hand, only 23% of all the meat consumed in Puerto Rico is produced locally. This emphasizes the potential to increase the share of the market. Low efficiency and quality of production at farm level and limited diversification of products to satisfy the needs of consumers are common problems encountered by meat producers. These problems are caused by limited control of imported products, high costs of production per unit of product, especially land and feed. Such problems need to be addressed in order to compete with imported products.

The local animal production system could become non sustainable in the long run faced with the realities of high levels of nutrient excretion, limited amount of land for forage production, and concentrated manure disposition. Eventually, if unattended, such a system can lead to the pollution of streams, estuaries, and groundwater resources. Therefore, it is critical for the long-term sustainability of the system to reduce surplus nutrient excretion and to increase recycling of nutrients on the farm by increasing the efficiency of animal production.

**7. Assumptions made for the Program**

PRAES' experience with educational programs in animal production indicates that the adoption of production practices by farmers depends on several factors: subsidies from government agencies, laws or regulations that force farmers to adopt or establish certain practices, and the ratio of return from their investment. The increase in size of animal operations observed during the past year in Puerto Rico is evidence of the tendency of producers to improve economies of scale. The PRAES Animal Production program has six full-time specialists at the state level and Extension agents in all the local offices. The

success of the program in reaching the target audience depends on the number of agents assigned to work in animal production and the direct work of the agricultural agents with the farmers.

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

To improve the animal production and products through better management practices.

**9. Scope of Program**

- In-State Extension

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other then formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	14.0	0.0	0.0	0.0
2008	14.0	0.0	0.0	0.0
2009	14.0	0.0	0.0	0.0
2010	14.0	0.0	0.0	0.0
2011	14.0	0.0	0.0	0.0

**Outputs for the Program**

**13. Activity (What will be done?)**

Conduct seminars, meetings and workshops.

Establish collaborations with other local and federal agencies and other University partners on research and extension programs.

Write and submit extension and research proposals.

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

Extension	
Direct Method	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● TV Media Programs</li> <li>● Web sites</li> <li>● Other 1 (Exhibitions)</li> </ul>

**15. Description of targeted audience**

Farmers, Extension professionals, government personnel, and private professionals.

**16. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	3000	4000	0	0
2008	3200	4500	0	0
2009	3400	5000	0	0
2010	3600	6000	0	0
2011	4000	7000	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

Number of farmers trained on animal production.

2007 Target: 300  
 2008 Target: 300  
 2009 Target: 300  
 2010 Target: 300  
 2011 Target: 300

**Output Text**

Number of farmers trained on control of environmental stress on animals.

2007 Target: 100  
 2008 Target: 100  
 2009 Target: 100  
 2010 Target: 100  
 2011 Target: 100

**Output Text**

Number of farmers trained on animal products.

2007 Target: 50  
2008 Target: 60  
2009 Target: 70  
2010 Target: 80  
2011 Target: 100

**Output Text**

Number of collaborations established.

2007 Target: 40  
2008 Target: 45  
2009 Target: 50  
2010 Target: 50  
2011 Target: 50

**Outcomes for the Program**

**19. Outcome measures**

**Outcome Text: Awareness created**

**Outcome Text**

Number of persons that improved efficiency of animal production.

**Outcome Type:** Medium

2007 Target: 150  
2008 Target: 160  
2009 Target: 170  
2010 Target: 180  
2011 Target: 200

**Outcome Text**

Number of persons that adopted one or more practices to control heat stress.

**Outcome Type:** Short

2007 Target: 40  
2008 Target: 50  
2009 Target: 40  
2010 Target: 50  
2011 Target: 60

**Outcome Text**

Number of persons that improved the quality of their product.

**Outcome Type:** Long

2007 Target: 30  
2008 Target: 40  
2009 Target: 50  
2010 Target: 60  
2011 Target: 70

**Outcome Text**

Numbers of persons that improved the animal reproduction practices.

**Outcome Type:** Long

2007 Target: 50  
2008 Target: 60  
2009 Target: 70  
2010 Target: 80  
2011 Target: 90

**Outcome Text**

Number of persons that improved the nutrient utilization practices in animals.

**Outcome Type:** Long

2007 Target: 75  
2008 Target: 90  
2009 Target: 100  
2010 Target: 120  
2011 Target: 150

**Outcome Text**

Number of persons that increased animal production after adopting the recommended practices.

**Outcome Type:** Long

2007 Target: 100  
2008 Target: 125  
2009 Target: 140  
2010 Target: 150  
2011 Target: 150

**20. External factors which may affect outcomes**

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

**Description**

Puerto Rico is a tropical island subject to extreme weather conditions such as hurricanes or prolonged periods of heavy rains or droughts. These prolonged periods of too much rain or no rain at all can affect animals and animal production, as well as crops, increasing the dependence on imported ingredients for animal production.

Changes in the public policy and regulations can also affect animal production, making farmers change their priorities. The development of the program depends on the amount of time that the agricultural agents allocate to it. Administrative changes in the priorities can affect program outcomes.

**21. Evaluation studies planned**

- Before-After (before and after program)
- Case Study

### **Description**

A survey among participants prior to initiation of trainings and immediately after their completion will evaluate their knowledge and attitudes about animal production systems. Case studies will be used to evaluate this planned program with the purpose of compiling information about the factors that influence the participants' to adoption of practices.

### **22. Data Collection Methods**

- Sampling
- Case Study
- Observation

### **Description**

The planned program will use qualitative methods including observation and case studies to collect the data.