

# 2014 University of Puerto Rico Extension Plan of Work

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## I. Plan Overview

### 1. 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 Mayaguez, covers the FY 2014-2018. Although we expect budgetary constraints to continue, we have an estimate of 169.6FTE's for the five years covered in this period (an increase of 5.27 FTE's compared to the 164.49 FTE's for FY 2013-2017 plan of work). This increase is due to the recruitment of new personnel to fill the positions of recently retired personnel and positions that had remained vacant due to decreases in budget.

The College of Agricultural Sciences (CAS) will continue working on the Strategic Plan implementing its mission and vision, analyzing values, searching the external and internal environments, establishing strategic direction objectives and the Plan of Action. Extension maintains 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 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.

We expect to make new coalitions during FY 2014-2018. The Planning and Evaluation Office trained its professional personnel on the preparation of their plans of work based on clientele needs and NIFA priorities, supported by up-to-date statistical data and outlook reports and pursuant to federal and state government public policies.

#### **PLANNED PROGRAMS:**

For the FY 2013-2017 Plan of Work we joined the Management of Rangeland and Forestry Resources/Soil, Water, and Air planned program to the Climate Change planned program, which leaves us with 10 planned programs. The planned programs for FY 2014-2018 are as follow (1) Strengthening Youth Life Skills, Leadership and their Community; (2) Plant System; (3) Family Well-being; (4) Animal Systems; (5) Community Resources Development by Means of Fostering Sustainable Communities; (6) Food Safety, (7) Climate Change; (8) Sustainable Energy (9) Global Food Security and Hunger, (10) Childhood Obesity.

The Plant and Animal Systems planned programs continue focusing on strengthening the Food Security emphasis Area. To avoid duplicity when informing indicators the agents are asked to include this emphasis area under the planned program of their main enterprise.

The Vegetable Gardening initiative under the Plant System planned program promotes the

integration of other NIFA initiatives (Childhood Obesity, Global Food Security, and Climate Change), by enhancing the ability of families to grow their own nutritious food while increasing physical activity. This multidisciplinary approach is imperative as food security emerged as one of the major risks of the 21st century.

During the past three years, Puerto Rico's local news have highlighted a global food shortage and an island wide lack of food security. They have stressed how this could affect our continuous flow of food supplies along with natural disasters, strikes, problems with suppliers, war and even terrorism.

Also, the impact of climate changes on agricultural production due to crop vulnerability to new plagues and problems distributing and marketing food and vulnerabilities in the food supply chain, like low local agricultural production, loss of agricultural land and high dependence on imported foods increase food deficit.

Children have access to cheap fast food, and limited access to affordable healthy food such as fruits and vegetables. As a result, childhood obesity is an increasingly critical problem. Puerto Rico's childhood obesity prevalence is close to the Hispanics in New York (i.e, 22%.)

There are many options we could take to help solve these problems, and one simple step is planning a vegetable garden. Research shows that eating more vegetables improves health, reduces obesity, and cuts down on the risk of chronic diseases such as diabetes and cancer. Having a garden helps save on grocery bills when economic times are tough. PRAES will continue its educational efforts to create awareness among the clientele on these subjects and will soon start training meetings with the vegetable gardening curricular guide, which was validated during FY 2013.

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

### **1. Plant System**

The Plant System planned program was budgeted an estimated of 30 FTEs by PRAES for FY 2014 compared to 29.6 for 2013.

The primary commodity crops produced in Puerto Rico are coffee, starchy crops, fruits, vegetables and ornamentals. During 2010-2011, the value of these crops was \$261.86 million (Preliminary data, PR Department of Agriculture), contributing economically to the Island's communities.

In Puerto Rico, the increase in the price of farm inputs, the prolonged fiscal crisis, and the presence of new pests have affected considerably the Island's agriculture. The most important local commodities have been impacted by the introduction of new devastating pests and diseases, such as the coffee berry borer (*Hypothenemus hampei*), the black sigatoka (*Mycosphaerella fijiensis*) in plantains and bananas, and citrus greening (*Huanglongbing*) in citrus fruit orchards.

Extension personnel receive feedback from stakeholders during commodity meetings, workshops, field days, and farm visits that help them to identify major constraints to agricultural production and to establish priorities that are addressed by our Extension program.

The Plant System planned program focuses on the delivery of timely and relevant information and sound agronomic production principles in order to accelerate the adoption of production practices by farmers, increase profitability, and reduce economic and environmental risks. The main goal is to help farmers increase and improve their production through the use of Integrated Crop Management Practices (ICMP) that includes adoption of integrated pest management practices to protect the environment, conserve the natural resources, and contribute to the competitiveness and sustainability of Puerto Rico's agriculture.

### **2. Animal Systems**

The Puerto Rico Agriculture Extension Service (PRAES) budgeted an estimated 18.4 FTEs for the Animal Systems planned program for FY 2014-2018. This is an increase of 1.5 FTE's compared to the 16.9 FTEs planned for FY 2013-2017.

In Puerto Rico, animal production represents a significant component of the agricultural income (47.8%). The sectors that contributed the most, in order of economic relevance, were dairy cattle, poultry, beef cattle, pigs, fish and other aquacultures, rabbits, bees, goats and sheep. Livestock production has

been negatively impacted by challenges such as low reproductive performance, heat stress, poor nutritional management, elevated costs of high energy foods, a decline in the demand for dairy products, as well as current changes in global trends. In order to accommodate to these challenges, a combination of approaches and new directions are needed. Extension will implement diverse outcome activities to support adoption of new practices as a means of adapting to local and global issues. Together with the Agricultural Experiment Station and Faculty Professionals, PRAES will seek solutions to address these challenges ensure that the industry remains profitable and sustainable, while addressing environmental and economic concerns.

PRAES will also work with Experimental Station and Faculty of Agricultural Sciences personnel to develop research with dairy crossbreeding as a means to provide farmers with breeds that can better tolerate heat stress. Furthermore, dairy farmers will be oriented in genetic selection for economic traits such as profit index, total economic index and profitable life index; together as a means to improve health of cattle and therefore lifetime profits. PRAES will also concentrate efforts in identifying cattle farmers with the best reproductive performance. Management practices associated with their ability to obtain high pregnancy rates will be evaluated and a short course will be developed to farmers having poor reproductive efficiency.

### **3. Climate Change**

The Puerto Rico Agriculture Extension Service (PRAES) budgeted an estimated 5.8 FTEs to the Climate Change planned program for 2014-2018. A decrease of 2.6 FTEs as compared to the 8.4 FTEs budgeted for 2013-2017.

Global climate is changing and will continue to change in ways that affect the planning and day-to-day operations of businesses, government agencies, and other organizations. Its manifestations include higher temperatures, altered rainfall patterns, and more frequent or intense extreme events, such as heat waves, droughts, and storms. The world over natural disasters due to changes in climate has become increasingly more evident.

Ineffective land-use planning in Puerto Rico, one of the most densely populated countries in the world, with 9,000 square kilometers and close to 4 million people, and a geographical location that exposes it to natural disasters (hurricanes), have a negative effect on its natural resources such as water and soil. These resources are at stake by their susceptibility to weather changes and the ever increasing demands and pressure to satisfy the needs of a growing human population.

Urban and housing development are also subjects of frequent attention in Puerto Rico, especially as they refer to urban sprawl, degradation of natural resources like forests, wetlands and watersheds, and the reduction of agricultural lands.

With the use of the curricular guide on climate change (the first step of this plan of work), newspapers articles, radio programs, conferences and others, people are getting a better understanding of what is climate change (awareness). Farmers in the central mountain region are recognizing the changes in planting season and the emergence of new pests and diseases, and cattle producers are experimenting with different breeds for beef production that are adapting to the weather by grassing late in the afternoon.

These experiences make farmers more inclined to listen to recommendations by Puerto Rico Agricultural Extension Service (PRAES), if they aim to stay in business. Therefore, PRAES needs to continue efforts of providing assistance to the farmers and the community with information, technologies, and education on how to cope with climate change. We need to engage in developing farmers' leadership to make them more proactive (risk management practices) and involved in decision-making (adaptation practices).

This is an important issue, because most of our agricultural production comes from small-scale farms which are often family owned and operated and contribute little to climate change and yet will be among the most affected.

The second step of this plan of work was conducted during 2012 -capacity building in agricultural agents. The following steps convey the educational effort to the clientele and broaden the education to the State Department of Agriculture and other service agencies. Last year, a group of representatives from agriculture agencies (federal & state), USGS, Weather Services met once to start planning the design of a

strategic plan or effort to develop adaptation practices tailored for the specific needs and characteristics of Puerto Rico. In this meeting, the main concern is the demand for water use and the water resource available in the Island.

Based on a case study format and by agricultural agents' recommendations of observed farmers' progress application of recommended practices/activities to adapt to changes in climate, at least one farm/farmer will be selected by the region to be documented (a total of at least five cases). The methodology will convey farms visits and interviews, besides agricultural agents' records on farm development progress. This will be conducted starting on the fourth period of this plan of work, 2014-15 fiscal year.

#### **4. Sustainable Energy**

For FY 2014-2018 the Puerto Rico Agriculture Extension Service (PRAES) budgeted an estimated 6.5 FTEs for the Sustainable Energy planned program. This is an increase of 0.4 FTE compared to the 6.1 FTEs budgeted for 2013-2017.

The decreases in oil availability, uncertainty in the cost of fuels and its implications in the economic wellbeing of our citizens, have triggered the urgency for energy independence and sustainability.

Puerto Rico, has one of the highest costs of fuel in the United States, however, even though our tropical climate is favorable to the sustainable energy industry, not many projects have passed the planning phase.

The Sustainable Energy planned program seeks to increase knowledge in our clientele of the sustainable energy technologies, energy conservation, opportunities for financing sustainable energy projects and their cost, and environmental benefits.

The sustainable energy planned program intends to increase our clientel's existing knowledge of the sustainable energy technologies, energy conservation, and opportunities to finance sustainable energy projects and their cost and environmental benefits.

#### **5. Global Food Security and Hunger**

For FY 2014-2017 the Puerto Rico Agriculture Extension Service (PRAES) budgeted an estimated 10.4 Ftes to the Global Food Security and Hunger planned program. If we compare this to the 9.5 FTEs budgeted for FY 2013-2017, we see there was a slight increase of 0.9 FTE's.

Food security emerged as one of the major risks of the 21st century (Global Risk Forum, 2008). For Puerto Rico this is more evident due to its condition as an island. Food availability is mainly through imports (80%) due to an extremely low domestic production of less than 20%. Extended supply chains that generated competitive advantage to agribusiness and people increased the vulnerability of Puerto Rico's food system to disruptive risk.

In 2009, only 18.9% of the food and beverages consumed in Puerto Rico were produced on the Island (External Trade Statistics, 2009). Practically all of the cereal, oil, fat, sugar, vegetables, fish, and soup consumed were imported, as were more than 3/4 of fruit, vegetables, and meats. Most imports came from the United States (food miles from the USA farms to PR consumers are an average of more than 2,800 miles, 1,300 are by sea), but Puerto Rico also received food from more than 50 countries around the world. The domestic production consisted mainly of milk, plantains, eggs and coffee.

Although 58% of the people in Puerto Rico have access to appropriate foods for a nutritious diet through transfer income benefits, WIC Plan or School Food Service, consumers need continuous orientation on the utilization of food through an adequate diet, water, sanitation, and health care. The system's stability is threatened by various factors such as climate change and the economic crisis which increases food prices.

Among the vulnerabilities of Puerto Rico's food supply chain are: a low local agricultural production with continued loss of agricultural land, a high dependence on imported foods, oligopolistic food import and transport logistics, the food reserve is not clearly defined, the lack of and adequate food security policy, and the sea routes towards the island match the path of Caribbean hurricane routes. Ensuring Puerto Rico's food security presupposes the elimination or reduction of these vulnerabilities. Although the Government is in charge of solving any crisis and emergency related to food, the private sector still has to

develop innovative strategies to guarantee food security.

PRAES should help farmers, agro entrepreneurs, and the public in general to understand the threats to our food security and to identify strategies to attend these threats. Extension can coordinate the exchange of information between the government, academy, and private sectors to define and adopt strategies. The initiative will promote a business culture among farmers as a means to encourage the development of local capital and small and medium businesses on the island. To accomplish this goal Extension will use different strategies such as youth and child curriculum development, collaboration with the public and private sectors, and the dissemination of information.

The ultimate goal of this planned Program is to increase food security at the national and household levels by: (1) Increasing local food production and competitiveness; (2) Establishing a network of enterprises working as a food supply chain system and not as individual enterprises that negotiate together; (3) Developing home gardens; (4.) Establishing a nutritious and safe food supply for the household.

## **6. Family Well-being**

The Puerto Rico Agriculture Extension Service (PRAES) budgeted an estimated 21.5 FTEs to the Family Well-being planned program for FY 2014-2018. A change in 0.6 FTEs, as compared to FY 2013-17 (20.9 FTEs).

The 2010 U.S. Census counted 3.7 million people living in Puerto Rico, almost entirely of Hispanic origin. More than forty-four (44%) percent of this population lives in poverty.

The composition of Puerto Rican families has changed due to social, political and economic changes which affect their vital function.

According to the 2010 Census for Puerto Rico, the total population 3,725,789 is people. Of this total 327,560 people live alone. This equates to nearly one fourth (23.8%) of all Puerto Rican households (1,376,531). Families whose income head of household is a woman with own children under 18 years old was 150,575 (10.9%); of these families 68% live under the poverty level.

The Consumer Price Index for November 2012 was 115.719, an increase from 113,976 in December 2011. This suggests hard economic times for individuals and families in Puerto Rico are not over yet.

Financial problems can also cause negative effects on individuals and families. According to the Puerto Rico Department of Family, during 2012, 22,000 families had active cases involving children maltreatment--9,948 reported cases of family violence in which 83% were against women. There was also an increase in the number of divorces, pregnant adolescents, single mothers, stepfamilies, grandparents raising grandchildren, and domestic violence.

Due to the present economic situation, financial education has gained interest among consumers. According to Hogarth (2002), well-educated consumers should make better decisions for their families, increasing their economic security and well-being. As a result, financially secure families are better able to contribute to vital, thriving communities, further fostering community economic development.

Health conditions and services to individuals and families also contribute to changes in the vital function of families. Over 42% of the people have one or more risk factors to develop cardiovascular diseases, 62.8% of the people are obese, 13 out of 100 people in Puerto Rico are diagnosed with diabetes, there were 7,929 cases of VIH reported, and the incidence of people with cancer increased

Through family and financial literacy families should develop the appropriate tools for better decision-making process, while simultaneously promoting healthy life styles to clientele and educating individuals and families in family relations, values and related areas to decrease family violence and child maltreatment.

The ultimate goals of this planned program are as follow: (1.) Increase the number of families that support positive relationships among their members. (2.) Increase skills in family members and caregivers to avoid child and elderly maltreatment, neglect and family violence. (3.) Increase the financial well-being of consumers through Knowledge, skills and self-confidence in competencies such as: how consumers' behavior influences decision making, budgeting, debt reduction, credit wise and savings. (4.) Increase the number of persons that follow a healthy lifestyle.

For FY 2014 a post program evaluation will be conducted among a sample of participants of the

Family Relations and Child Development short courses using the focus group methodology. This will be used to understand how families have adopted practices and skills learned through the courses.

Periodic process evaluations during program development will be conducted to observe methodologies applied in the field with the clientele and how these are affecting behavior changes.

### **7. Adult and Childhood Obesity**

For FY 2014-2018 the Childhood Obesity planned program was budgeted 8.5 FTEs, the estimated FTEs for 2013-2017 were 8.40, an increase of 1.5 FTE's.

The science-based practice planned program intends to work in accordance with the goals set by Healthy People 2020, which include a decrease in the percentage of people who are overweight or obese.

To accomplish these goals, the planned program Adult and Childhood Obesity will work on strategies presented by the Department of Health and Human Services' 2010 Dietary Guidelines for Americans, which focus on the promotion of healthy lifestyles, nutrition adequacy and physical activity. These can be targeted by the development of educational initiatives, which will focus three major areas: nutrition knowledge to promote consumption of healthy foods, importance of the incorporation of daily physical activity for weight management, and public policy to promote a holistic view of childhood obesity in the population. The program will concentrate on the development of family and personal strategies that facilitate healthy food choices and active living.

Factors that are related to obesity are: lack of physical activity, skipping meals, large portion sizes, low intake of fruits, vegetables, whole grains and water, and high consumption of sugared drinks, saturated and trans fats, among other practices.

Considering that the cause of obesity is multifactorial, this planned program will be working on the following: physical environment, parental influence, socioeconomic status, and media.

The physical environment, which includes the home, work, school or childcare facilities and in leisure activities, should promote healthy eating and physical activities. The areas to be impacted are: to work with government agencies promoting physical activity programs for the community; strategies for healthy eating at home through easy to prepare, inexpensive culturally competent recipes; involvement of the community in gardening; and the dissemination of educational material throughout community centers, schools and churches.

Socioeconomic changes, such as the increase of single parents with extended working hours, which leads to eating out more, prolonged exposure to childcare centers, and unsupervised children at home, can contribute to more exposure to media, sedentary lives, and the consumption of most of the meals at the childcare centers. This educational program will focus on low cost healthy food and physical activity choices for adults, parents, caregivers, and children. Public policy initiatives intervention will promote educational programs to include employers, community leaders, churches, schools, caregivers, and lunch program workers, advertising through the radio, TV, internet, and newspapers.

This Adult and Childhood Obesity planned program will work together with government agencies and community organizations and alliances through coordinated agreements. These collaborations will prevent duplicity of efforts and will promote the best use of resources and sharing of achievements. It will also allow us to establish agreements to treat this population with a tailored cultural educational model and determine the accomplishment of 2020 Healthy People goals as it reflects the assessment of major determinants of health and wellness, changing public health priorities, and emerging issues related to USA health preparedness and prevention.

This planned program promotes the integration of two other NIFA initiatives: Food Safety and Global Food Security and Hunger by enhancing the ability of families to grow their own nutritious foods while increasing physical activity, as well as preserving nutritious foods by applying food safety recommendations. Furthermore, efforts to disseminate Puerto Rico's Food Basket, will relate to locally grown foods and food security.

Our long-range goal is to reduce the progression of obesity in the local population through community based interventions, providing youth and their families' tools to develop, adopt, and maintain behavioral changes that will set the stage for healthy eating, physical activity, and weight management.

The educational philosophies supporting the educational strategies are cooperative

learning and learning-by-doing, which involve comprehensive and coordinated efforts of all the participants.

The specific aims are to implement educational curricula that include culturally appropriate eating patterns, portion size control, good practices in reading food labels, adequate food preferences, food resource management, meal planning, and food purchase; and to include physical activity choices and gardening, essential for reducing risk of obesity and of chronic disease, with the purpose of improving the health of adults and children.

#### **8. Food Safety**

The Food Safety planned program was budgeted 7.4 FTEs for FY 2014-2018, which remained the same as FY 2013-2017.

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

The Puerto Rico Agricultural Extension Service (PRAES) has the following curriculums on Food Safety: (A) For consumers: The "Families be Food Safe" campaign, which contains 12 lessons divided in 3 units in which home economists can select lessons according to their audience; ( B) For persons in charge of food establishments: The Food Safety Certificate course, and (C) For university personnel and professionals from other government agencies and organizations: Train-the-trainers.

#### **9. Strengthening Youth Life Skills, Leadership and their Community**

The Puerto Rico Agriculture Extension Service (PRAES) budgeted an estimated 34 FTEs to the Strengthening Youth Life Skills, Leadership, and their Community planned program for FY 2014-2018. This is 3.3 FTE's more than FY 2013-2018 (30.7%FTE's)

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

Youth Development is a mayor emphasis area of the Puerto Rico 4-H and Youth Development Program for its long-range educational program. It is designed to provide youth with positive opportunities to learn and interact with peers and adults, provide leadership development, and focus on the enhancement of life skills to prevent negative high risk conduct through research-based educational programs focusing on healthy lifestyles; science, engineering and technology; citizenship and leadership. Different activities and methods such as: camps, competitions, meetings, demonstrations, and workshops will be used, especially, the development of projects as a strategic learning tool. In-service learning experiences will be promoted to give youngsters the opportunity to reflect on and take action concerning 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.

Pre/post evaluation studies will be conducted every other year, in which Extension will measure changes in lifeskills after participatin in 4-H educational activiites. Questionnaires will be administered to a sample of 4-H members.

The methodology will employ two types of questionnaires: pre/post test and retrospective questionnaires based on the National 4-H and Youth Development outcome indicators.

#### **10. Community Resources Development by Means of Fostering Sustainable Communities**

The Community Resources Development by Means of Fostering Sustainable Communities planned program was budgeted an estimated 27 FTE's for 2014-2018, which is the same as FY 2013-2017 (26.9 FTEs).

The Community Resources Development Program (CRD) of the Puerto Rico Agricultural Extension Service (PRAES) has consolidated an effective Community Economic Development and Self-management program that is trying to help address Puerto Rico's most pressing social issues.

To help manage both the agricultural activity and community economic crisis, the sections Empowering Communities and Community Economic Development of CRD continues expanding the initiative started in 2010, with special emphasis on community based agricultural land conservation and the promotion of sustainable low-scale family or community-based agriculture and other economic initiatives.

To achieve these objectives, the CRD strategies will continue focusing beyond training activities centered toward specific careers or job areas and will focus on the identification and development of skills already present in the participants or the communities that might be geared toward activities of economic production, self-employment or the creation of micro enterprises. Accordingly, our program will continue to stress the development of methodological tools that allow participants with various and diverse talents and skills to be able to organize economic activities that will allow them to take advantage of these skills for their benefit and sustenance.

In addition, CRD will continue focusing its efforts in guiding community leaders towards self-management and empowerment. In the communities we serve, there is a prevalence of families with unequal access to economic and social development compared to other groups on the island. The community is the focal point where people feel a sense of personal involvement and take pride in their actions. Accordingly, CRD in Puerto Rico works hard developing a sense of community belonging and increased identity in all its programs. The empowerment 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. That is why we have adopted the Participative Action Research methodology as our principal approach to empower and constructing stronger communities.

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	169.6	0.0	0.0	0.0
2015	169.6	0.0	0.0	0.0
2016	169.6	0.0	0.0	0.0
2017	169.6	0.0	0.0	0.0
2018	169.6	0.0	0.0	0.0

**II. Merit Review Process**

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

- Internal University Panel
- External University Panel



## 2. 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 (the program leader, two specialists--one from the Planning and Evaluation Office and one from the major subject area), a researcher from the Agricultural Experiment Station and other faculty members, and external non-University members (representatives of the major government agencies or organizations that work with similar audiences). External Members to the different committees include representatives from government agencies at the regional or state level, such as: the Department of the Family, the Department of Education, the Department of Agriculture, the Mayor's Office, the Governor's Office for Youth Issues, the Rural Development Corporation, the Farmers' Association, Farm Service Agency, Consumer Department, Head Start, Police Department, as well as representatives from non-governmental organizations, the religious sector and the private sector, among others. Each committee meets at least twice during the fiscal year 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 in our programs. A written report is prepared at the end of each fiscal year by the program leader, in accordance with the committee members. The report, which describes how the committee's recommendations will be addressed, is presented to the committee. The committee's recommendations are incorporated in the Plan of Work.

## III. Evaluation of Multis & Joint Activities

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

Critical issues will be identified from several sources. They will be namely identified through the Stakeholder Input Process conducted at the municipal level through the local advisory committees. For the agricultural programs, critical issues will also be identified through joint activities between the Puerto Rico Agriculture Extension Service and Agricultural Experiment Station conducted for different commodities. At the state level, other stakeholder input activities, such as focus groups and surveys, will take place periodically in coordination with program leaders to complement the process conducted at the local level. Issues of strategic importance will also be collected through collaborative and multidisciplinary efforts between the internal and the external linkages.

The identification of these critical issues is the basis for the revision and design of the planned programs. Continuous revisions of these issues will take place through periodic meetings with staff teams in charge of the Planned Programs in order to evaluate how these issues have been addressed. For new issues, educational strategies to attend those critical issues will be identified.

Educational strategies defined to address critical issues include, but are not limited to, the development of new and updated materials on the new topics and the establishment of special projects.

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

PRAES planned programs are mainly designed to address the needs of various under-represented populations, particularly low income women, children, youth and families at risk, and small farmers, as well as homeless people. We continue to focus various educational efforts to attend the particular needs of the increasing population of adolescent mothers with planned programs in the areas of family, health, and resource management. PRAES has also placed special attention to the needs of the ever increasing elderly population within the Family Well-being planned program, where a new curriculum has been developed. Particular under-served and under-represented populations targeted by PRAES are the mentally challenged, as well as the jailed population that is soon to be out in the free community. In agriculture, two special projects continue to address the needs of the small farmers and women in agriculture. Collaborative efforts with other state agencies have facilitated our strategies to reach these under-represented populations, as they refer some of these audiences to PRAES because of their high priority needs.

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

Planned programs describe the expected outcomes through the outcome indicator measures, which are focused on changes in action. It is expected that as people increasingly adopt the recommended practices, this will eventually result in improved social, economic, environmental, and civic conditions. As for the five new priorities, emphasis will be placed on improving outcome measures, and data collection to describe changes in condition as programs mature. Impacts of the planned programs will be described in the impact statements. Again, these will focus on changes at the higher levels, action and condition.

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

Planned programs are designed to address the needs of our populations. Educational techniques will be constantly evaluated to adapt to the skill levels of the participants and their educational needs, therefore, resulting in increased program effectiveness. Process evaluations, including methodologies, such as focus groups, interviews and on-site observations will be conducted periodically to evaluate strengths and weaknesses of the planned programs. Multi-institutional and integrated activities will contribute to achieve the efficiency of the planned programs.

# **IV. Stakeholder Input**

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

- Targeted invitation to traditional stakeholder individuals

### **Brief explanation.**

Stakeholders for the input process are mainly traditional participants or clientele of our programs who are members of the Local Advisory Committees. This clientele have vast experience in the four major Extension programs and include farmers, homemakers, youth, and key community leaders. Representatives of state agencies that work with similar clientele, who are also members of the local advisory committees, 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 mostly local advisory committee members.

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

**1. Methods for collecting Stakeholder Input**

- Meeting with traditional Stakeholder individuals
- Other (Focus group)

**Brief explanation.**

Input from stakeholders is collected at the local advisory committees meetings. Stakeholders are asked about the most critical issues affecting the different areas in our educational programs, including: agriculture, families, 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 and other participants of our educational programs. 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, which collects and analyzes the data.

**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. Data collected from the stakeholders will also be sent to the specialists, according to the area of needs.

Needs related to the area of agriculture will be collected in a report to be sent to PRAES specialists that participate in the commodity joint meetings with the Agricultural Experiment Station. When there are issues which need to be emphasized, the programs are redirected to address these issues. New emerging issues are

identified through these processes and analyzed according to the staff and resources available to address them; when needed, recommendations will be set for hiring staff. At the local level, input offered by the stakeholders is used to set priorities for their local plan of work.

## V. Planned Program Table of Content

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

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

### **Program # 1**

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

Plant System

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

The primary commodity crops produced in Puerto Rico are coffee, banana, plantain, starchy crops, fruits, vegetables and ornamentals. During 2009-2010, the value of these crops was \$325.81 million (Preliminary data, PR Department of Agriculture), contributing economically to the Island's communities.

In Puerto Rico, the increase in the price of farm inputs, the prolonged fiscal crisis, and the presence of new pests have affected considerably the Island's agriculture. The most important local commodities have been impacted by the introduction of new devastating pests and diseases, such as the coffee berry borer (*Hypothenemus hampei*), the black sigatoka (*Mycosphaerella fijiensis*) in plantains and bananas, and citrus greening (Huanglongbing) in citrus fruit orchards.

Extension personnel receive feedback from stakeholders during commodity meetings, workshops, field days, and farm visits that help them to identify major constraints to agricultural production and to establish priorities that are addressed by our Extension program.

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

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

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

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

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

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

## 1. Program Knowledge Areas and Percentage

<b>KA Code</b>	<b>Knowledge Area</b>	<b>%1862 Extension</b>	<b>%1890 Extension</b>	<b>%1862 Research</b>	<b>%1890 Research</b>
204	Plant Product Quality and Utility (Preharvest)	11%			
205	Plant Management Systems	13%			
211	Insects, Mites, and Other Arthropods Affecting Plants	13%			
212	Pathogens and Nematodes Affecting Plants	10%			
216	Integrated Pest Management Systems	13%			
403	Waste Disposal, Recycling, and Reuse	8%			
405	Drainage and Irrigation Systems and Facilities	8%			
601	Economics of Agricultural Production and Farm Management	8%			
602	Business Management, Finance, and Taxation	8%			
604	Marketing and Distribution Practices	8%			
	<b>Total</b>	100%			

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

## 1. Situation and priorities

The gross agricultural income for FY 2010-2011 was \$789,795 million (Preliminary data Puerto Rico Department of Agriculture), a decrease of \$32,044 million for FY 2009-2010. The crop value also shows a decrease of \$63.95 million (from \$325.81 million in FY 2009-210 to \$261.86 million in FY 2010-2011).

Around 85% of the food consumed in Puerto Rico is imported. Recent increases in transportation costs, distribution, and food at the point of production outside Puerto Rico have made us more vulnerable to the disruption in the food supply chain. More data is needed on imports to enable those involved in research, education, and outreach to better prepare Puerto Ricans to produce, process, and prepare fresh, local foods.

Most of the Island's farms are small or medium sized and owner operated. The main crop production problems confronted by farmers are product quality and deficient crop cultivation practices. Also, the lands available for agriculture are scarce, as a result of the high population density, which puts other demands on the use of lands other than farming. Many of the important crops are located in mountainous areas where cultivation and management are difficult, and are confronted with low soil fertility and erosion.

Nevertheless, farmers are more aware of the public's growing concerns about pesticide residues in food and contamination of surface and groundwater supplies and are adopting Integrated Pest Management (IPM) practices to grow healthy crops and minimize pesticide use.

As economic conditions worsen many people in Puerto Rico are turning to vegetable gardening to

supplement their family's diet. Extension's outreach objectives emphasize vegetable gardening through the use of a new Vegetable Gardening curriculum that integrates production of vegetables and herbs, food security, compost preparation, climate change, nutrition and IPM. An Extension agent will be in charge of establishing cooperative alliances with other agencies in Puerto Rico to have more impact and reduce duplication of efforts on educating the population about the needs of vegetable gardens to have food security.

Extension agents and other agricultural educators will train homeowners and other people interested in home gardening production and IPM. Educational resources will be developed to help homeowners to prepare a sustainable home garden assisted by Extension personnel. The Vegetable Gardening Festival, held annually at the UPR Research Station facilities in the Municipality of Gurabo since 1997 and a Demonstrative Vegetable Garden in the Agricultural Experimental Station at Rio Piedras, will serve as a way to educate people about the importance of producing our own food and to disseminate information to the public.

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

## **2. Scope of the Program**

- In-State Extension

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

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

Puerto Rico grows a great diversity of valuable crops that constitute a major source of healthy locally grown production, which in turn contribute to the local and regional economies. It is important to motivate the farmers to become competitive, with better and more effective crop production practices, in order to increase the production, quality, and utility of their products.

- Farmers can expect to increase their income with better management practices, the development and implementation of IPM programs, good operation of irrigation systems, educational programs to gather information about agricultural production economics, and marketing and farm management.

- Farmers who are early adopters of new information can make different product uses (value added) and have essential high quality products to sell to niche markets like hotels, restaurants, and cruise lines, which pay high prices for better quality products.

- To achieve program outcomes it is very important that Extensionists, researchers, agronomists of the Department of Agriculture and other agencies related to agriculture work together to address the farmer's problems and promote their interest in adopting efficient and innovative practices to improve production.

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

The ultimate goal is to improve product quality and increase production and competitiveness through the use of the most effective management practices, integrated pest management options, irrigation systems, better practices in drainage and soil conservation, and tools and skills in economics, marketing and policies.



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

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	30.0	0.0	0.0	0.0
2015	30.0	0.0	0.0	0.0
2016	30.0	0.0	0.0	0.0
2017	30.0	0.0	0.0	0.0
2018	30.0	0.0	0.0	0.0

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

**1. Activity for the Program**

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

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

**Extension**

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>• Education Class</li> <li>• 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>• TV Media Programs</li> <li>• Web sites other than eXtension</li> <li>• Other 1 (Radio Programs)</li> <li>• Other 2 (Exhibits)</li> </ul>

**3. Description of targeted audience**

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

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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

### **1. Output Measure**

- Number of producers trained in integrated coffee management.
- Number of producers trained in banana and plantain management.
- Number of producers trained in integrated starchy crops management.
- Number of producers trained in integrated vegetable management.
- Number of producers trained in integrated tropical fruits management.
- Number of producers trained in integrated citrus management.
- Number of persons trained in vegetable gardening.
- Number of collaborations established to improve outreach in vegetable gardening.
- Number of educational activities offered about vegetable gardening.

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

O. No	Outcome Name
1	Number of farmers that adopted one or more recommended practices for integrated coffee management.
2	Number of producers that increased production and quality of coffee.
3	Number of producers that adopted one or more recommended practices for integrated plantain and banana management.
4	Number of producers that increased production in plantain.
5	Number of producers that adopted one or more recommended practices for vegetable management.
6	Number of producers that increased production in vegetable crops.
7	Number of producers that adopted one or more recommended practices for citrus management.
8	Number of producers that increased production in citrus.
9	Number of producers that acquired knowledge after completing a course in vegetable gardening.
10	Number of persons that established a vegetable garden after completing a course in vegetable gardening.

**Outcome # 1**

**1. Outcome Target**

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

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

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

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

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

- 1862 Extension

**Outcome # 2**

**1. Outcome Target**

Number of producers that increased production and quality of coffee.

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

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

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

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

- 1862 Extension

**Outcome # 3**

**1. Outcome Target**

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

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

### **3. Associated Knowledge Area(s)**

- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems

### **4. Associated Institute Type(s)**

- 1862 Extension

### **Outcome # 4**

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

Number of producers that increased production in plantain.

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

### **3. Associated Knowledge Area(s)**

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

### **4. Associated Institute Type(s)**

- 1862 Extension

### **Outcome # 5**

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

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

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

### **3. Associated Knowledge Area(s)**

- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants

#### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 6**

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

Number of producers that increased production in vegetable crops.

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

##### **3. Associated Knowledge Area(s)**

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

##### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 7**

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

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

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

##### **3. Associated Knowledge Area(s)**

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

##### **4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 8**

**1. Outcome Target**

Number of producers that increased production in citrus.

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

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

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

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

- 1862 Extension

**Outcome # 9**

**1. Outcome Target**

Number of producers that acquired knowledge after completing a course in vegetable gardening.

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

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

- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems

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

- 1862 Extension

**Outcome # 10**

**1. Outcome Target**

Number of persons that established a vegetable garden after completing a course in vegetable

gardening.

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

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

- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems

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

- 1862 Extension

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

**1. 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
- Populations changes (immigration, new cultural groupings, etc.)

**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 affect production, product quality, irrigation systems, structures and IMP programs. These events also increase the dependence on imported products. Also, the government's economic and budget constraints and changes in public policies affect program priorities and outcomes.

**V(K). Planned Program - Planned Evaluation Studies**

**Description of Planned Evaluation Studies**

A pre and post test will be administered during fiscal year 2014 to persons trained in vegetable gardening to determine their knowledge before and after completing a course in vegetable gardening.





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

### **Program # 2**

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

Animal Systems

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

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

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

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

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

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

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

## 1. Program Knowledge Areas and Percentage

<b>KA Code</b>	<b>Knowledge Area</b>	<b>%1862 Extension</b>	<b>%1890 Extension</b>	<b>%1862 Research</b>	<b>%1890 Research</b>
102	Soil, Plant, Water, Nutrient Relationships	10%			
132	Weather and Climate	5%			
133	Pollution Prevention and Mitigation	5%			
301	Reproductive Performance of Animals	15%			
302	Nutrient Utilization in Animals	10%			
303	Genetic Improvement of Animals	10%			
306	Environmental Stress in Animals	10%			
311	Animal Diseases	5%			
313	Internal Parasites in Animals	5%			
315	Animal Welfare/Well-Being and Protection	10%			
401	Structures, Facilities, and General Purpose Farm Supplies	5%			
405	Drainage and Irrigation Systems and Facilities	5%			
601	Economics of Agricultural Production and Farm Management	5%			
	<b>Total</b>	100%			

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

## 1. Situation and priorities

Current changes in global trends have negatively impacted livestock production worldwide. In Puerto Rico, for instance, elevated prices of high energy foods has forced many dairy farmers to find alternative ways to feed livestock, such as substitute crops and grazing. However, degradation of established pastures (due to feeding in full confinement), low quality of native forages and elevated prices of fertilizers have decreased efficiency in the dairy industry. Moreover, dairy and beef cattle producers are experiencing challenges associated with low fertility, elevated energy costs, decreased demand for their products, and poor animal identification systems. Poultry farmers are experiencing challenges related with poor nutritional management, lack of diagnostic laboratories as well as new environmental and safety regulations, among others.

Puerto Rico Agriculture Extension Service (PRAES) personnel will provide assessment and visit farmers in relation to practices to evaluate soil characteristics and pastures management for better utilization of fertilizers. Additionally, current research conducted by the Puerto Rico Experiment Station about the incorporation of alternative crops (e.g., legumes) into established pastures as a means to improve nutrition in cattle will be evaluated and, together with PRAES, the data will be provided to cattle farmers.

PRAES will also work with Experimental Station and Faculty of Agricultural Sciences personnel to develop research with dairy crossbreeding as a means to provide farmers with breeds that can better tolerate heat stress. Furthermore, dairy farmers will be oriented in genetic selection for economic traits such as profit index, total economic index and profitable life index; together as a means to improve health of cattle and therefore lifetime profits. PRAES will also concentrate efforts in identifying cattle farmers with the best reproductive performance. Management practices associated with their ability to obtain high pregnancy rates will be evaluated and a short course will be developed to farmers having poor reproductive efficiency.

In addition, PRAES personnel will work to improve communication with animal rights organizations as the first step toward the development of a bond with each other. They will also offer consultation to livestock farmers about practices recommended by animal rights organizations. Together with the farmers they will adopt those practices that result in improvements to animal welfare and that are feasible to achieve.

Farmers with inefficient equipment (product harvesting equipment, lighting, motors, etc.) will be identified and will be oriented on replacement of these with energy-efficient technology.

Dairy goat herds in Puerto Rico are increasing and are becoming a significant source of milk intended for cheese production. Using proper infrastructure designs and efficient equipment early during their establishment is essential to ensure a profitable operation. The poultry specialist and specialists in nutrition will work together to evaluate nutrition practices currently used by poultry farmers and develop recommendations to increase efficacy of nutrient utilization as a means to improve farm profits.

## **2. Scope of the Program**

- Integrated Research and Extension

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

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

Experience with educational programs indicates that adoption of animal production practices by farmers depends on several factors such as, subsidies from government agencies, laws or regulations that force farmers to adopt or establish certain practices, and/or the ratio of return from their investment. There is also a supposition that better-educated farmers are more apt to resolve economic challenges with better possibilities of success. According to our experience, farmers in Puerto Rico tend to more readily adopt management practices that have been shown to work with other farmers.

By recommending management practices that have been proven to work with other farmers, the number of farmers adapting these will be greater relative to those practices recommended from experimental research.

Animal welfare should be seen by farmers as an approach to improve animal health, product quality, and human perception toward livestock production, which should improve perception of the animal industry in Puerto Rico and therefore increase demand for their products.

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

- To improve animal production traits, such as reproduction, welfare, and health through orientations using management practices adopted from other farmers and applied research.
- Enhance prevention and control of diseases at farm level to increase animal health, production, and quality.
- Ensure proper establishment of new dairy goat herds.
- Increase demand for livestock products by promoting and educating the population of Puerto Rico.

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

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	18.4	0.0	0.0	0.0
2015	18.4	0.0	0.0	0.0
2016	18.4	0.0	0.0	0.0
2017	18.4	0.0	0.0	0.0
2018	18.4	0.0	0.0	0.0

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

**1. Activity for the Program**

- Conduct seminars, meetings, trainings and workshops
- Farm visits
- Educational material (publications, newsletters, CDs)
- Develop proposals to find external resources as a means to conduct applied research to address the current needs in livestock production
- Offer counseling and orientation
- Work in collaboration with communication media
- Establish collaborations with government agencies (e.g., 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)
- Improve collaboration with our partners at the University of Puerto Rico and other educational institutions
- Develop educational material consisting of model plans and educational material (publications, newsletters, CDs)

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

Extension	
Direct Methods	Indirect Methods

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>● Education Class</li><li>● Workshop</li><li>● Group Discussion</li><li>● One-on-One Intervention</li><li>● Demonstrations</li></ul> | <ul style="list-style-type: none"><li>● Public Service Announcement</li><li>● Billboards</li><li>● Newsletters</li><li>● Web sites other than eXtension</li><li>● Other 1 (Radio Programs)</li><li>● Other 2 (Publicat, Exhibitions, Software)</li></ul> |
|--|--|

### 3. Description of targeted audience

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

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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
    - Direct Adult Contacts
    - Indirect Adult Contacts
    - Direct Youth Contacts
    - Indirect Youth Contact
  - Number of patents submitted
  - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

### **1. Output Measure**

- Number of farmers trained in recommended bio-security practices as a means to mitigate diseases and increase animal production.
- Number of farmers trained in practices in animal welfare and protection.
- Number of farmers trained in recommended practices in recordkeeping, disease control and prevention, and feed utilization.
- Number of dairy-beef farmers trained in recommended practices that are efficient against internal parasites in Puerto Rico.
- Number of farmers trained in the effects of climate change on livestock production.
- Number of farmers trained in the implementation of alternative crops/forages as a means to improve nutrient utilization in livestock production.
- Number of farmers trained in recommended economic practices associated with efficiency in livestock production.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

O. No	Outcome Name
1	Number of farmers that adopted a bio-security program.
2	Number of farmers that adopted practices in animal welfare and protection.
3	Number of farmers that increased animal production after adopting the recommended recordkeeping, disease control and prevention, and feed utilization practices.
4	Number of farmers that adopted practices for the control of parasites on their farms.
5	Number of farmers that adopted one or more practices to control heat stress.
6	Number of persons that improved the nutrient utilization practices in animals.
7	Number of farmers and agricultural entrepreneurs that used economic tools to make effective economic decisions to improve their business.



**Outcome # 1**

**1. Outcome Target**

Number of farmers that adopted a bio-security program.

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

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

- 311 - Animal Diseases
- 313 - Internal Parasites in Animals
- 315 - Animal Welfare/Well-Being and Protection

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

- 1862 Extension

**Outcome # 2**

**1. Outcome Target**

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

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

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

- 133 - Pollution Prevention and Mitigation
- 302 - Nutrient Utilization in Animals
- 306 - Environmental Stress in Animals
- 311 - Animal Diseases
- 313 - Internal Parasites in Animals
- 315 - Animal Welfare/Well-Being and Protection

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

- 1862 Extension

**Outcome # 3**

**1. Outcome Target**

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

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

### **3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 306 - Environmental Stress in Animals
- 311 - Animal Diseases
- 313 - Internal Parasites in Animals
- 315 - Animal Welfare/Well-Being and Protection

### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 4**

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

Number of farmers that adopted practices for the control of parasites on their farms.

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

##### **3. Associated Knowledge Area(s)**

- 303 - Genetic Improvement of Animals
- 311 - Animal Diseases
- 313 - Internal Parasites in Animals
- 315 - Animal Welfare/Well-Being and Protection

##### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 5**

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

Number of farmers that adopted one or more practices to control heat stress.

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

##### **3. Associated Knowledge Area(s)**

- 303 - Genetic Improvement of Animals

- 306 - Environmental Stress in Animals
- 315 - Animal Welfare/Well-Being and Protection
- 401 - Structures, Facilities, and General Purpose Farm Supplies

#### **4. Associated Institute Type(s)**

- 1862 Extension

### **Outcome # 6**

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

Number of persons that improved the nutrient utilization practices in animals.

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

#### **3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 306 - Environmental Stress in Animals
- 313 - Internal Parasites in Animals
- 315 - Animal Welfare/Well-Being and Protection
- 405 - Drainage and Irrigation Systems and Facilities
- 601 - Economics of Agricultural Production and Farm Management

#### **4. Associated Institute Type(s)**

- 1862 Extension

### **Outcome # 7**

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

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

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

#### **3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management

#### **4. Associated Institute Type(s)**

- 1862 Extension

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

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

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

#### **Description**

Alteration in government priorities can cause an unpredictable environment in government agencies, resulting in a challenge to meet planned program outcome goals. The general feeling that the economy is weak is another factor that makes people put off investing in the improvement of infrastructure in their farms. When the general feeling is that the economy is strong, people tend to be more aggressive. Also, changes in public policies and regulations cause farmers to change their priorities and 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.

### **V(K). Planned Program - Planned Evaluation Studies**

#### **Description of Planned Evaluation Studies**

Using existing monthly records (e.g., Dairy Herd Improvement), farm records and/or observations collected by PRAES personnel to evaluate changes in production levels and health parameters pre and post implementation of the recommended practices.

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

### **Program # 3**

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

Family Well-being

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

The 2010 U.S. Census counted 3.7 million people living in Puerto Rico, almost entirely of Hispanic origin. More than forty-four (44%) percent of this population lives in poverty.

The increase in population, as well as social, political, and economic changes impact Puerto Rican families and affect their vital function. The family structure in Puerto Rico has changed with important implications for children and youth. Changes in economic and financial issues impact individuals and families leading to negative effects on the emotional stability of individuals, the elderly and families. This also leads to the instability of couples relationships, parental responsibilities, and mental and physical health, among others.

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

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

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

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

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

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

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

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

## 1. Program Knowledge Areas and Percentage

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

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

## 1. Situation and priorities

The composition of Puerto Rican families has changed due to social, political and economic changes which affect their vital function.

According to the 2010 Census for Puerto Rico, the total population 3,725,789 is people. Of this total 327,560 people live alone. This equates to nearly one fourth (23.8%) of all Puerto Rican households (1,376,531). Families whose income head of household is a woman with own children under 18 years old was 150,575 (10.9%); of these families 68% live under the poverty level.

The Consumer Price Index for November 2012 was 115.719, an increase from 113,976 in December 2011. This suggests hard economic times for individuals and families in Puerto Rico are not over yet.

Financial problems can also cause negative effects on individuals and families. According to the Puerto Rico Department of Family, during 2012, 22,000 families had active cases involving children maltreatment--9,948 reported cases of family violence in which 83% were against women. There was also an increase in the number of divorces, pregnant adolescents, single mothers, stepfamilies, grandparents raising grandchildren, and domestic violence.

Due to the present economic situation, financial education has gained interest among consumers. According to Hogarth (2002), well-educated consumers should make better decisions for their families, increasing their economic security and well-being. As a result, financially secure families are better able to contribute to vital, thriving communities, further fostering community economic development.

Health conditions and services to individuals and families also contribute to changes in the vital function of families. Over 42% of the people have one or more risk factors to develop cardiovascular diseases, 62.8% of the people are obese, 13 out of 100 people in Puerto Rico are diagnosed with diabetes, there were 7,929 cases of VIH reported, and the incidence of people with cancer increased

Through family and financial literacy families should develop the appropriate tools for better decision-making process, while simultaneously promoting healthy life styles to clientele and educating individuals and families in family relations, values and related areas to decrease family violence and child maltreatment.

**2. Scope of the Program**

- In-State Extension

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

**1. Assumptions made for the Program**

- 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.
  - Early exposure to financial concepts may increase comfort and familiarity with financial matters, thereby, removing psychological barriers that impede proper decision-making (Barthein, Garret and Maki (2001).
  - Programs that enable households to identify savings rules that are manageable and easy to follow, will help households build wealth (Youn, Montalto and Hanna, 2006)
  - Educating parents to deal properly with any future economic, emotional, or familiar challenge contributes to attenuate the adverse effects of economic hardship.
  - Educate clientele to adopt practices and gained knowledge in healthy life styles.

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

- Increase the number of families that support positive relationships among their members.
- Increase skills in family members and caregivers to avoid child and elderly maltreatment, neglect and family violence.
  - Increase the financial well-being of consumers through Knowledge, skills and self-confidence in competencies such as: how consumers' behavior influences decision making, budgeting, debt reduction, credit wise and savings.
  - Increase the number of persons that follow a healthy lifestyle.

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

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	21.4	0.0	0.0	0.0
2015	21.4	0.0	0.0	0.0
2016	21.4	0.0	0.0	0.0

Year	Extension		Research	
	1862	1890	1862	1890
2017	21.4	0.0	0.0	0.0
2018	21.4	0.0	0.0	0.0

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

**1. Activity for the Program**

- Participate in radio/TV Programs
- Educational Campaign
- Curriculum and educational materials development.
- Provide Training
- Conduct Workshops meetings and short courses.
- Establishment of collaborations
- Counseling
- Exhibitions (Billboards in malls and public places with informative brochures and other educational material).

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

**Extension**

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

**3. Description of targeted audience**

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



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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

### **1. Output Measure**

- Number of persons that completed courses in parenting and related areas.
- Number of persons that completed courses in aging aspects.
- Number of persons that completed the Consumer Education course.
- Number of persons that completed individual and family resource management course.
- Number of persons that completed non-formal health education and health promotion programs.

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

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

**Outcome # 1**

**1. Outcome Target**

Number of persons that reported improved parenting skills.

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

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

- 607 - Consumer Economics
- 724 - Healthy Lifestyle
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being

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

- 1862 Extension

**Outcome # 2**

**1. Outcome Target**

Number of persons that gained knowledge in aging aspects.

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

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

- 802 - Human Development and Family Well-Being

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

- 1862 Extension

**Outcome # 3**

**1. Outcome Target**

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

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

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

- 801 - Individual and Family Resource Management

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

- 1862 Extension

**Outcome # 4**

**1. Outcome Target**

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

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

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

- 724 - Healthy Lifestyle

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

- 1862 Extension

**Outcome # 5**

**1. Outcome Target**

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

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

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

- 607 - Consumer Economics

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

- 1862 Extension

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

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

- Economy
- Public Policy changes
- Competing Programmatic Challenges

**Description**

Achievement of goals could be affected by external elements, economy crisis, availability of competitive federal and/or external funds, and/or changes in public policy.

## **V(K). Planned Program - Planned Evaluation Studies**

### **Description of Planned Evaluation Studies**

For FY 2014 a post program evaluation will be conducted among a sample of participants of the Family Relations and Child Development short courses using the focus group methodology. This will be used to understand how families have adopted practices and skills learned through the courses.

Periodic process evaluations during program development will be conducted to observe methodologies applied in the field with the clientele and how these are affecting behavior changes.

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

### **Program # 4**

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

Food Safety

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

As the number of food service establishments continues to grow and as consumers are faced with new challenges (i.e. time, economy) during food handling, food contamination becomes a continue health thread. There are approximately 26,000 food service establishments in Puerto Rico plus many others in the informal economy. The Puertorrican people enjoy meals away from home, therefore food safety implies a major health issue in our population, making this a long-term program. Through our educational efforts, Puerto Rico Agricultural Extension Service (PRAES) attends annually around 13% of the food service establishments on the island.

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

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

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

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

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

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

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

1. Program Knowledge Areas and Percentage

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

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

**1. Situation and priorities**

CDC (Center for Disease and Prevention) estimates that each year roughly 1 in 6 Americans (or 48 million people) gets sick, 128,000 are hospitalized, and 3,000 die of foodborne diseases. Reducing foodborne illness by just 10% would keep 5 million Americans from getting sick each year and preventing a single fatal case of E. coli O157 infection would save an estimated \$7 million. Ensuring safe food is an important public health priority. During 2009 CDC reported 21 cases of Hepatitis Type A, 596 cases of Salmonella, 15 cases of Shiguella, 2 cases of Listeria, and 0 cases of E. Coli O157:H7.

The ideal retail food program performance indicator should be the level of foodborne illness, but the occurrence of these illnesses is grossly underreported (FDA (2004). Preliminary data of the Morbidity and Mortality Weekly Report, April 2008 reported that a long-term decline in foodborne illness appears to be stalling. This makes the incidence of foodborne illness an unreliable program measurement. On the other hand, research reveal that American consumers are more knowledgeable about food safety, but may have erroneous ideas of which handling practices are effective to reduce foodborne illnesses at a home environment (<http://fsis.gov/OA/rePRAESrch>). Among restaurants, the major difference between those with foodborne disease outbreaks and those with non-outbreaks is the presence of a certified kitchen manager, (Hedberg, C. W., et al., 2006). It was found that food workers are more likely to wash their hands when they are trained in food safety (Green, et al., 2007). Following the Food Code's recommended cooking temperatures ensures that food reaches a temperature high enough to kill pathogens.

PRAES' priorities are to offer the Food Safety Certification Course (FSCC) to persons in charge of retail food establishments and to continue offering formal education to professionals that teach or enforce compliance regulations.

**2. Scope of the Program**

- In-State Extension

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

**1. Assumptions made for the Program**

- Educating our PRAES agents and community leaders will help disseminate the information to the communities and individuals
- Working in different partnerships will help in the development of programs aimed at the promotion of health and the prevention of diseases.

- Individuals that enroll or shows up for a course or program are more willing and motivated to learn and adopt changes.
- The ability to learn is fundamental to the nature of humans, but there are individual differences.
- Food safety education, will increase participants knowledge and promote positive attitudes towards food safety practices.
- Positive attitudes will most likely enhance the adoption of safe food handling behavior.

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

To improve food safety handling practices among individuals that prepare and serve food through the control, reduction or elimination of contamination risks.

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

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	7.4	0.0	0.0	0.0
2015	7.4	0.0	0.0	0.0
2016	7.4	0.0	0.0	0.0
2017	7.4	0.0	0.0	0.0
2018	7.4	0.0	0.0	0.0

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

**1. Activity for the Program**

- Work in collaboration with the communication media.
  - Continue working in partnership with other agencies to develop educational programs.
  - Offer Safe Food Handling Curriculum to consumers. This curriculum includes Food safety for pregnant women, food safety around the year, and food safety during emergencies.
  - Exhibits, information centers, radio shows, among others.
  - Offer Food Safety Course to Food Establishment managers.
- PRAES and personnel of other agencies
- Trainings: Emphasis on institutions that serve At-Risk Population in the Food Code regulations, Hazard Analysis and Critical Control Points, Food Defense, and others.
  - Prepare materials for safe food handling in home vegetable gardens.

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

Extension	
Direct Methods	Indirect Methods



<ul style="list-style-type: none"><li>• Education Class</li><li>• Workshop</li><li>• Group Discussion</li><li>• One-on-One Intervention</li></ul>	<ul style="list-style-type: none"><li>• Other 1 (Publications, exhibits)</li><li>• Other 2 (Radio Spots)</li></ul>
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### 3. Description of targeted audience

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

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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

### V(H). State Defined Outputs

#### 1. Output Measure

- Number of consumers completing one Food Safety educational curriculum for consumers.
  - Number of persons in charge of food establishments completing Food Safety Course.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

O. No	Outcome Name
1	Number of consumers that adopted one or more food handling practices.
2	Number of participants that approved the certification exam.
3	Number of participants that adopted three or more of eight selected food handling practices recommended by the Food Code to control, reduce or eliminate contamination risks.

**Outcome # 1**

**1. Outcome Target**

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

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

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

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

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

- 1862 Extension

**Outcome # 2**

**1. Outcome Target**

Number of participants that approved the certification exam.

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

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

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

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

- 1862 Extension

**Outcome # 3**

**1. Outcome Target**

Number of participants that adopted three or more of eight selected food handling practices recommended by the Food Code to control, reduce or eliminate contamination risks.

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

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

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

#### **4. Associated Institute Type(s)**

- 1862 Extension

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

#### **1. 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's location in the Caribbean makes it the object of a variety of natural events, which include hurricanes, heavy winds, droughts, and heavy rainy seasons that can cause floods. A major natural disaster such as a hurricane could completely reorient the government's priorities and make it essential to spend the already scarce resources on recovery rather than health related programs. On the other hand, individuals will be caught up in trying to reestablish their businesses, homes, and assisting their families' needs.

Puerto Rico, as in many other places, is going through a major financial crisis, which may or may not be solved in the near future. We expect changes in the amount of money assigned to our government's budget. This will have a domino effect on agencies and instrumentalities, as well as public policies and regulations.

On occasions, the support needed from the Municipal governments may vary if their interests are different from the ones established by our program; especially when part of the program is based on a different paradigm. It could take time for individuals, including our personnel, to change their attitudes and adopt a new model.

### **V(K). Planned Program - Planned Evaluation Studies**

#### **Description of Planned Evaluation Studies**

Annual evaluations will be conducted post program using the methodology of exams to determine knowledge gained by the persons in charge of food establishments after completing the Food Safety course. The exam will be administered on-site to each of the participants at the end of the course. The results will be presented in outcome #2 - Number of participants that approved the certification exam.

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

### **Program # 5**

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

Strengthening Youth Life Skills, Leadership and their Community

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

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

In Puerto Rico the use and abuse of substances is a major social-medical problem of great impact in the adolescent and young adult population. An estimated three quarters of Puerto Rican students have consumed some alcohol in their life time and one third of them have used cigarettes. 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.

Youth Development is a mayor emphasis area of the Puerto Rico 4-H and Youth Development Program for its long-range educational program. It is designed to provide youth with positive opportunities to learn and interact with peers and adults, provide leadership development, and focus on the enhancement of life skills to prevent negative high risk conduct through research-based educational programs focusing on healthy lifestyles; science, engineering and technology; citizenship and leadership. Different activities and methods such as: camps, competitions, meetings, demonstrations, and workshops will be used, especially, the development of projects as a strategic learning tool. In-service learning experiences will be promoted to give youngsters the opportunity to reflect on and take action concerning 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.

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

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

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

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

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

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
806	Youth Development	100%			
	<b>Total</b>	100%			

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

**1. Situation and priorities**

The social impacts of the excessive use of alcohol are numerous and harmful: family dysfunction, domestic violence, and mental health problems among others. In Puerto Rico, alcohol is the substance most used among young people 7th to 10th grade, (VIII Youth Consultation Survey, 2012).

Results of the study, in which 275,263 students were interviewed during 2010-2011 and 2011-2012, show that 132,319 (48.6%) said they had consumed alcoholic beverages, other than just a few sips, 120,220 had consumed liquor during the year previous to the survey and 93,643 admitted they had been drinking recently.

Results also showed that 55,845 of the underage students interviewed began drinking alcoholic beverages such as beer, rum, gin or breezers, among others, during the year previous to study and the incidence of new users was higher among females (30.2%) than among males (26.9%).

For the first time in 23 years marijuana surpassed cigarette usage in this population. According to experts, In previous studies made during the 1990's, cigarette usage had been in second place in risky behaviour among teens. However, this line is now occupied by controlled substances, headed by marijuana.

Marijuana showed the highest increase, duplicating its prevalence from 6.1% during 2005-2007 to 12.4% during 2010-2012. Ironically, 81.9% of those interviewed admitted to having extensive knowledge of the dangers of using illicit drugs.

We have also seen and experienced the impact of domestic violence, drug dealing, increased incidence of violent crimes, the shortcomings of our public education with higher dropout rates, the poor quality and lack of accessibility to mental health services, among others; which have impacted negatively on the well-being of Puerto Ricans.

According to Canino, et al. (2004) 19.8% of children and young people met the Diagnostic and Statistics Manual of Mental Disorders-DSM IV criteria. This represents 116,373 children according to the 2000 Census. Of these, only half (49.6%; 57,721) receive any type of service (Kennel, et al., 2004). The most prevalent disorders were attention-deficit/hyperactivity disorder (8.0%) and oppositional defiant disorder (5.5%).

**2. Scope of the Program**

- In-State Extension

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

**1. 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 experiences learning-to-know, learning-to-make, learning-to-be and learning-to-live, according to John Dewey's philosophy, have been extensively used by the 4-H program "Learning-by-doing".

•There are 603 adult volunteers and 203 youth volunteers offering support to the 4-H Program working with youngsters in different activities (2012).

•Life skills prepare people to be successful in life. The goal is that every person learn the necessary skills to succeed.

•Life skills are tools that help people 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 youth needs.

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

Increase the number of youngsters that have improved their life skills for a positive youth development.

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

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	34.0	0.0	0.0	0.0
2015	34.0	0.0	0.0	0.0
2016	34.0	0.0	0.0	0.0
2017	34.0	0.0	0.0	0.0
2018	34.0	0.0	0.0	0.0

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

**1. Activity for the Program**

- Conferences or workshops training in life skills, leadership, and community services.
- Camping and outdoor activities.
- Curriculum developed in life skills, leadership and community service.
- Participate in mass communication to promote 4-H as a positive organization for youth.
- Projects where youth and adults volunteers can develop skills that will enable them to make a positive contribution to society.

- Competitive activities/events.
- Non-competitive activities/events.

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

<b>Extension</b>	
<b>Direct Methods</b>	<b>Indirect Methods</b>
<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 other than eXtension</li> </ul>

**3. Description of targeted audience**

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

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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

**1. Output Measure**

- Number of children/ youth who participated in life skills and subject matter educational programs designed to teach basic life skills.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.



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

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

**Outcome # 1**

**1. Outcome Target**

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

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

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

- 806 - Youth Development

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

- 1862 Extension

**Outcome # 2**

**1. Outcome Target**

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

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

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

- 806 - Youth Development

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

- 1862 Extension

**Outcome # 3**

**1. Outcome Target**

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

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

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

- 806 - Youth Development

#### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 4**

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

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

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

##### **3. Associated Knowledge Area(s)**

- 806 - Youth Development

#### **4. Associated Institute Type(s)**

- 1862 Extension

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

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

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

#### **Description**

The Island's location in the Caribbean area puts it in the path of tropical hurricanes with heavy winds and heavy rains which cause floods. The people feel that we have an unstable economy. Changes in the budget assigned to government agencies and changes in public policy due to the situation of the economy are expected.

### **V(K). Planned Program - Planned Evaluation Studies**

#### **Description of Planned Evaluation Studies**

Pre/post evaluation studies will be conducted every other year, in which Extension will measure changes in lifeskills after participatin in 4-H educational activiites. Questionnaires will be administered to a sample of 4-H members.

The methodology will employ two types of questionnaires: pre/post test and retrospective questionnaires based on the National 4-H and Youth Development outcome indicators.



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

### **Program # 6**

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

Community Resources Development by Means of Fostering Sustainable Communities

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

The Community Resources Development Program (CRD) of the Puerto Rico Agricultural Extension Service (PRAES), has consolidated an effective Community Economic Development and Self-management program that is trying to help address Puerto Rico's most pressing social issues.

Aggregate figures are disheartening. Unemployment rates in 2012 reached 16.3%, a 38% increase from those registered in 2005. The amount of total unemployed people increased in 33.5% from 139,300 in 2005 to 209,500. All these despite a shrinkage in the labor force of Puerto Rico of 124,800 people (9%), from 1,382,100 in 2005 to 1,257,300 in 2012. Agricultural production for fiscal year 2012 was a skimp component of the Puerto Rican economy with a 1.3% of the GNP (Government Development Bank, 2013).

To help manage both the agricultural activity and community economic crisis, the sections Empowering Communities and Community Economic Development of CRD continues expanding the initiative started in 2010, with special emphasis on community based agricultural land conservation and the promotion of sustainable low-scale family or community-based agriculture and other economic initiatives. To achieve these objectives, the CRD strategies will continue focusing beyond training activities centered toward specific careers or job areas and will focus on the identification and development of skills already present in the participants or the communities that might be geared toward activities of economic production, self-employment or the creation of micro enterprises. Accordingly, our program will continue to stress the development of methodological tools that allow participants with various and diverse talents and skills to be able to organize economic activities that will allow them to take advantage of these skills for their benefit and sustenance.

In addition, CRD will continue focusing its efforts in guiding community leaders towards self-management and empowerment. In the communities we serve, there is a prevalence of families with unequal access to economic and social development compared to other groups on the island. The community is the focal point where people feel a sense of personal involvement and take pride in their actions. Accordingly, CRD in Puerto Rico works hard developing a sense of community belonging and increased identity in all its programs. The empowerment 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. That is why we have adopted the Participative Action Research methodology as our principal approach to empower and constructing stronger communities.

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

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

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

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

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

1. Program Knowledge Areas and Percentage

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

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

1. Situation and priorities

Puerto Rico continues experiencing a sustained poverty level rate close to 50%. The public debt per capita is at \$7,837, while the per capita income is \$13,675, for a debt income ratio of 57.3% (Figures for the U.S. are \$4,606, \$51,302, and 9%). Unemployment rates were at 16.3% during 2012. Labor force participation plunged even deeper to 39.7% of the labor force (compared to 64% in the US), a 30-year low. Puerto Rico remains the only U.S. jurisdiction where there are more people of the "working age" group out of the labor market than working (Government Development Bank, 2013; Puerto Rico Department of Labor, 2013). A hiring freeze across all government agencies is still enforced in the government sector without any foreseeable alternative for employment in the private sector. As the previous figures make evident, Puerto Rico's government led economic restructuring plan ended its' role as the principal promoter for the creation of jobs and generator of economic activity.

The rate of communities, both urban and rural, that experience long-term spells of poverty and inequality far surpass those in the U.S. Also, Puerto Rico is experiencing an uncontrolled process of social decomposition with unmanageable criminality, domestic violence, school dropouts, suicides, drug addiction, and alcoholism rates. In view of this, our plan of work continues focusing on holistic educational strategies to promote self-employment and community oriented initiatives as to foster sustainability, self-reliance and empowerment. A participant oriented methodology (Participatory Action Research) is already in place, in which participants continue taking an active role in defining problems and aspirations, seeking possible solutions, implementing strategies, and evaluating the results (Foote, 1991; Greenwood, 1998; Macpherson (et.al.), 2005).

2. Scope of the Program

- In-State Extension

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

1. Assumptions made for the Program

- Holistic training of the field agents, home economists, and community leaders will help disseminate

information to the communities that will foster social change.

- In order to make an adult education program successful, we must integrate the participants to all aspects of the educational process (i.e., definition of the problems and aspirations, development of possible solutions, implementation and evaluation).
- Meaningful long-term changes in behavior and attitude take time to accomplish.
- Communities possess the human, cultural and material resources needed for their social and economic development.
- Sustainable, self-employment and economic development are possible if people possess basic social and entrepreneurial tools that will let them to take advantage of their existing skills and existing opportunities in their communities.
- The work of those who have the ministerial duty to serve the communities will be more effective and fruitful if they form strategic alliances that would maximize both institutional and human resources.
- Popular knowledge is as essential and valuable as technical knowledge; both complement each other, both should be promoted and respected to achieve a meaningful improvement in the quality of life of the communities.
- To obtain a positive outcome in the program development, 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 implementation of the program.

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

To increase the communities' quality of life and sustainability through the establishment of collaborative, community oriented, and community based economic initiatives and enterprises.

To improve the social, economic and environmental quality for individuals and families by increasing the number of community projects focused on developing empowered and self-managed communities.

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

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	27.0	0.0	0.0	0.0
2015	27.0	0.0	0.0	0.0
2016	27.0	0.0	0.0	0.0
2017	27.0	0.0	0.0	0.0
2018	27.0	0.0	0.0	0.0

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

**1. Activity for the Program**

- Use of Economic Development "tool box" material that will empower community participants to take advantage of the endless amount of possibilities for community oriented economic initiatives

- Community assemblies, gatherings, and other meetings to establish rapport and explore needs and aspirations
- Conference/training in areas of social investment, marketing, market study and analysis, self-employment opportunities identification, community based business and empowerment
- Participative Action Research strategies such as "reading the streets", participant observation, ethnographies, life histories, focus groups, informal interviews, and reflexive diaries
  - Establishment of strategic alliances with government agencies, non-government organizations and community institutions to collaborate in the promotion of community based economic initiatives
- Development of radio programs with the participation of community members and field personnel to promote community based economic initiatives
- Develop educational material such as curriculum and modules
- Establishment of community coalitions with volunteer organizations, community services organizations, institutions, and other agencies
- Seminars with community services institutions that offer assistance in case of disaster or emergency, including volunteer organizations, non-profit groups and government agencies.

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

**Extension**

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>• Education Class</li> <li>• Workshop</li> <li>• Group Discussion</li> <li>• One-on-One Intervention</li> <li>• Demonstrations</li> <li>• Other 1 (Community assemblies, meetings)</li> <li>• Other 2 (Participative Action Research)</li> </ul>	<ul style="list-style-type: none"> <li>• Web sites other than eXtension</li> <li>• Other 1 (Radio Programs)</li> <li>• Other 2 (Publications, Exhibitions)</li> </ul>

**3. Description of targeted audience**

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



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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

### **1. Output Measure**

- Number of persons trained in community-based business.
- Number of leaders trained in community organization and empowerment (at least four workshops).
- Number of leaders trained in emergency and disaster situations (at least four workshops).

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

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

**Outcome # 1**

**1. Outcome Target**

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

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

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

- 608 - Community Resource Planning and Development

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

- 1862 Extension

**Outcome # 2**

**1. Outcome Target**

Number of community-based businesses established.

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

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

- 608 - Community Resource Planning and Development

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

- 1862 Extension

**Outcome # 3**

**1. Outcome Target**

Number of community projects established to benefit the community.

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

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

- 608 - Community Resource Planning and Development
- 805 - Community Institutions, Health, and Social Services

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

- 1862 Extension

**Outcome # 4**

**1. Outcome Target**

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

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

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

- 608 - Community Resource Planning and Development
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

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

- 1862 Extension

**Outcome # 5**

**1. Outcome Target**

Number of communities that developed an emergency and safety plan.

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

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

- 608 - Community Resource Planning and Development

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

- 1862 Extension

**Outcome # 6**

**1. Outcome Target**

Number of families that developed an emergency and safety plan.

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

### **3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

### **4. Associated Institute Type(s)**

- 1862 Extension

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

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

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

#### **Description**

Natural Disasters: Due to the geographic location of Puerto Rico, the island is subject to the possibility of tropical weather extremes such as hurricanes, drought or flooding, as well as telluric movements such as earthquakes and tsunamis.

Economy: Puerto Rico is entering a seventh-year in a row negative growth economic spiral. Significant Federal Government cuts are foreseeable in the near future, exacerbating the already stricken economic situation.

Appropriations Change: The projected reduction in the federal government's budget is expected to affect both the amount of economic resources, human capital and, as a result the capacity to develop community projects, economic growth, with a serious effect in state earnings and revenue collection.

Public Policy Changes and Competing Public Priorities: Puerto Rico has a new government in office, which usually represents a complete break from previous government initiatives. Due to the transition period, new economic initiatives are not expected to yield any result in the short run.

## **V(K). Planned Program - Planned Evaluation Studies**

### **Description of Planned Evaluation Studies**

Evaluation studies will be conducted during the program development in order to understand the changes occurring in the communities. Several methodologies will be employed to measure knowledge acquisition. A retrospective pre-post questionnaire will be administered as part of the Community Entrepreneurship Tool Box workshop series. Case studies or focus groups will be carried out to illustrate norms that could serve to establish a program model or to illustrate anomalous outcomes that could help establish idiosyncratic or particular aspects to the community development initiative. These case studies will also help document the implementation of new abilities, skills and behaviors to have an in depth understanding of personal and community entrepreneurial transformation, as well as of the development of emergency and disaster plans.



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

### **Program # 7**

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

Climate Change

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

Global climate is changing and will continue to change in ways that affect the planning and day-to-day operations of businesses, government agencies, and other organizations. Its manifestations include higher temperatures, altered rainfall patterns, and more frequent or intense extreme events, such as heat waves, droughts, and storms. The world over natural disasters due to changes in climate have become increasingly more evident.

In the United States events may go from flooding to severe droughts, consequently, agricultural production is expected to be at its record lows in such commodities as beef, corn, cotton, and soy.

Puerto Rico, on the other hand, has been experiencing milder climate with few extreme weather related events as compared to 2010 and 2012, which are the two rainiest years in our recorded history (National Weather Service). Soil erosion, caused by rainfall and inadequate land management practices and urbanism, however is still one of the most serious environmental and public health problems. Overall, soil is lost from land areas 10 to 40 times faster than the rate of soil renewal, endangering future human food security and environmental quality.

Ineffective land-use planning in Puerto Rico, one of the most densely populated countries in the world, with 9,000 square kilometers and close to 4 million people, and a geographical location that exposes it to natural disasters (hurricanes), have a negative effect on its natural resources such as water and soil. These resources are at stake by their susceptibility to weather changes and the ever increasing demands and pressure to satisfy the needs of a growing human population.

Urban and housing development are also subjects of frequent attention in Puerto Rico, especially as they refer to urban sprawl, degradation of natural resources like forests, wetlands and watersheds, and the reduction of agricultural lands.

With the use of the curricular guide on climate change (the first step of this plan of work), newspapers articles, radio programs, conferences and others, people are getting a better understanding of what is climate change (awareness). Farmers in the central mountain region are recognizing the changes in planting season and the emergence of new pests and diseases, and cattle producers are experimenting with different breeds for beef production that are adapting to the weather by grassing late in the afternoon.

These experiences make farmers more inclined to listen to recommendations by Puerto Rico Agricultural Extension Service (PRAES), if they aim to stay in business. Therefore, PRAES needs to continue efforts of providing assistance to the farmers and the community with information, technologies, and education on how to cope with climate change. We need to engage in developing farmers' leadership to make them more proactive (risk management practices) and involved in decision-making (adaptation practices).

This is an important issue, because most of our agricultural production comes from small-scale farms which are often family owned and operated and contribute little to climate change and yet will be

among the most affected.

The second step of this plan of work was conducted during 2012 -capacity building in agricultural agents. The following steps convey the educational effort to the clientele and broaden the education to the State Department of Agriculture and other service agencies. Last year, a group of representatives from agriculture agencies (federal & state), USGS, Weather Services met once to start planning the design of a strategic plan or effort to develop adaptation practices tailored for the specific needs and characteristics of Puerto Rico. In this meeting, the main concern is the demand for water use and the water resource available in the Island.

This effort needs to convey issues on land-use and the preservation of agricultural land, strategies such as collaborations, development of decision-making skills, and involvement in public policy to ensure the long-term success of the program.

**3. Program existence :** New (One year or less)

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

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

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

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

1. Program Knowledge Areas and Percentage

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

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

**1. Situation and priorities**

In the past Puerto Rico has experienced drought, floods, hurricanes, mudslides, and other weather related events. On average, the normal precipitation fluctuates between 55 and 80 inches, but we often experience drought at a small scale. Examples of such events occurred in 1964-67, when 30% of the economy was affected. This particular 3-year event affected the Southern Region while in 1994 the Northern Metropolitan area was the most affected. Drought effects are greatly felt on the economic activity in Puerto Rico. For instance, of the \$300 million loss due to the drought, \$165 million were from agriculture.

Most of the water reservoirs on the Island are on average 75% filled with sediment (evidence of soil erosion problems), thus reducing their storage capabilities.



During the months of January through April, when the precipitation rate is low, brush fires are most evident, mostly intentionally. Although they are widespread around the Island, a study conducted in 2001 showed that brush fires are most common in the southern part of the Island; which is dryer, with grasslands, and with vegetables, beef and poultry as the main agricultural products. Such practices aggravate the problem of soil erosion, sedimentation and pollution in our water bodies.

There is a natural interaction between soil-water-air (CO<sub>2</sub> cycle). Practices, such as agroforestry, can help reduce greenhouse gas concentrations in small farms, help improve soil composition, prevent soil erosion, improve water infiltration through the soil, and replenish underground water, besides providing value-added wood products and recreation (biodiversity).

Another problem of great concern is solid waste. Besides its high generation (greater than in the US), there is the aggravating circumstance that the life expectancy of the landfills is well over due and the Island's dimensions and critical ecosystems provide virtually no safe area or space where to build new ones. Recycling is still the fastest and cheapest alternative.

Twenty-seven per cent (27%) of the solid waste that gets into the landfills is organic; its decomposition process generates methane, which contributes 20 times more CO<sub>2</sub> to GHG. We need to work on recycling-incorporating such organic "waste" to the soil or encouraging more composting, alternative uses, and markets.

All levels of government have roles to play in addressing climate change. Some aspects of the climate problem could be addressed at the local level, such as greenhouse gas reduction, by implementing smart growth and adapting to climate impacts. Priorities will be set for water and soil, where sustainable practices will be strongly emphasized. Community volunteers and youth could be trained for water monitoring to create a baseline data to assess progress

## **2. Scope of the Program**

- In-State Extension

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

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

From a temporal perspective, adaptation to climate risks can be viewed at three levels, including responses to: current variability (which also reflect learning from past adaptations to historical climates), observed medium and long-term trends in climate, and anticipatory planning in response to model-based scenarios of long-term climate change. The responses across the three levels are often intertwined, and indeed might form a continuum.

There are several ways that the Extension system can help farmers and communities deal with climate change. These include:

Adaptation and contingency measures for what cannot be prevented (i.e., providing advice on how to deal with droughts, floods, and others). Adaptation to current climate variability can also increase resilience to long-term climate change. In a number of cases, however, anthropogenic climate change is likely to also require forward-looking investment and planning responses that go beyond short-term responses to current climate variability.

There are also several agronomical systems which provide for a sustainable production and other environmental benefits recommended by the Food and Agriculture Organization (FAO), USDA and other

international institutions. Among these: agroforestry, precision agriculture, organic agriculture, and conservation.

Mitigation of climate change, which includes links to new markets, information about new regulatory structures, and new government priorities and policies. Extension can help with adaptation and mitigation through technologies and management information; capacity development; and facilitating, brokering and implementing policies and programs.

Technical training to enhance community leaders' and farmer's abilities for planning, problem solving, critical thinking, prioritizing, negotiating, building consensus and leadership skills, working with multiple stakeholders and being proactive.

Introduction of locally appropriate technologies and management techniques that enable community and farmers to adapt to climate change (i.e., rain water harvesting, water storage for irrigation).

Implementation of BMPs to control the amount of runoff water and to prevent water pollution. Education in risk management and encourage the use of insurance to minimize lost.

Stimulating the implementation of environmentally sound practices, sustainable agriculture to remain viable and hopefully, profitable.

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

- 1. Enhance resilience and response capacity to extreme weather events while maintaining productivity and quality of life
- 2. Protect vital resources (soil and water) by implementing and adopting recommended preventive measures (BMP's)

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

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	5.8	0.0	0.0	0.0
2015	5.8	0.0	0.0	0.0
2016	5.8	0.0	0.0	0.0
2017	5.8	0.0	0.0	0.0
2018	5.8	0.0	0.0	0.0

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

**1. Activity for the Program**

- Capacity building workshops
- Technical training meetings
- Mass media use to disseminate information
- Collaboration with local, state and federal government agencies

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

<b>Extension</b>	
<b>Direct Methods</b>	<b>Indirect Methods</b>
<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 (Volunteers)</li> <li>• Other 2 (Seminars)</li> </ul>	<ul style="list-style-type: none"> <li>• Public Service Announcement</li> <li>• Newsletters</li> <li>• TV Media Programs</li> <li>• Web sites other than eXtension</li> <li>• Other 1 (Exhibits)</li> <li>• Other 2 (Radio Programs)</li> </ul>

**3. Description of targeted audience**

Farmers, communities, government professionals, county Extension personnel, leaders, volunteers, youth

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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
    - Direct Adult Contacts
    - Indirect Adult Contacts
    - Direct Youth Contacts
    - Indirect Youth Contact
  - Number of patents submitted
  - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

### **1. Output Measure**

- Number of people who received capacity development (workshops, seminars, conferences) on climate change.
  - Number of people who received capacity development (workshops, seminars, conferences) on water quality, watershed protection, and maintenance.
  - Number of people who received capacity development (workshops, seminars, conferences) on water collection, storage and re-use for agricultural purposes.
  - Number of people who received capacity development in agroforestry, soil erosion, and storm water runoff control.
  - Number of people who received capacity development on soil erosion and water environmental regulations.
  - Number of persons who received capacity development on prevention of brush fires and pasture management.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

<b>O. No</b>	<b>Outcome Name</b>
1	Number of people who adopted recommended practices for the adaptation or mitigation of climate change in their farms.
2	Number of people who established watershed protection practices.
3	Number of people who adopted practices to improve water collection, storage, and reuse efficiency.
4	Number of people who adopted agroforestry practices.
5	Number of people who adopted/implemented soil erosion control measures.
6	Number of people who comply with environmental soil erosion and water requirements.
7	Number of people who adopted one or more practices to prevent brush fires and forest fires.

**Outcome # 1**

**1. Outcome Target**

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

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

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

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

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

- 1862 Extension

**Outcome # 2**

**1. Outcome Target**

Number of people who established watershed protection practices.

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

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

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

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

- 1862 Extension

**Outcome # 3**

**1. Outcome Target**

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

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

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

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water

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

- 1862 Extension

**Outcome # 4**

**1. Outcome Target**

Number of people who adopted agroforestry practices.

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

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

- 112 - Watershed Protection and Management
- 125 - Agroforestry

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

- 1862 Extension

**Outcome # 5**

**1. Outcome Target**

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

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

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

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 125 - Agroforestry

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

- 1862 Extension

**Outcome # 6**

**1. Outcome Target**

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

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

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

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

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

- 1862 Extension

**Outcome # 7**

**1. Outcome Target**

Number of people who adopted one or more practices to prevent brush fires and forest fires.

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

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

- 112 - Watershed Protection and Management
- 125 - Agroforestry

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

- 1862 Extension

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

**1. 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**

Due to Puerto Rico's geographical location, it is constantly exposed to the effects of natural disasters that are expected to become extreme (for example: hurricanes, precipitation, floods, droughts, earthquakes). Besides, IPCC reported that Islands and tropics will be the most affected by the climate change.

Natural resources such as water and soil, will be expected to negatively affect and, hence, the livelihood of its inhabitants. People and agricultural production are at stake by first, its susceptibility to weather changes; secondly, by the high demand and pressure set by an ever increasing demand to satisfy the needs of a growing human population. This population is also increasingly dependent on imported products and goods. Also, any changes in the world markets are greatly felt on the economic activity in Puerto Rico.

The government has very important roles to play in addressing climate change, mostly in the way that public policy is implemented.

## **V(K). Planned Program - Planned Evaluation Studies**

### **Description of Planned Evaluation Studies**

Starting on the fourth period of this plan of work FY 2014-2015 a of case study will be employed to evaluate the application of recommended practices/activities to adopt to changes in climate. At least one farm/farmer per region will be selected to be documented. The methodology will convey farm visits and interviews besides agricultural agents' records on farm development progress.

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

**Program # 8**

**1. Name of the Planned Program**

Sustainable Energy

**2. Brief summary about Planned Program**

The decreases in oil availability, uncertainty in the cost of fuels and its implications in the economic wellbeing of our citizens, have triggered the urgency for energy independence and sustainability.

Puerto Rico, has one of the highest costs of fuel in the United States, however, even though our tropical climate is favorable to the sustainable energy industry, not many projects have passed the planning phase.

The Sustainable Energy planned program seeks to increase knowledge in our clientele of the sustainable energy technologies, energy conservation, opportunities for financing sustainable energy projects and their cost, and environmental benefits.

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

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

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

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

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

1. Program Knowledge Areas and Percentage

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

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

**1. Situation and priorities**

The dependence on fossil fuels has affected the economic well-being of the citizens of Puerto Rico during the past decades. At a cost that fluctuates between 15 and 28 cents per kilowatt of electricity, the cost of producing goods in the industrial sector is extremely high. Potential local and foreign investors are often discouraged from establishing their business on the Island due to these costs. For the average household, the electric bill takes a big chunk out of the family income, as a result, personal comfort and the

use of basic consumer appliances often need to be limited to be able to pay for utility bills.

The local government has been partially successful at motivating people to invest in sustainable energy technologies like solar heaters by offering tax incentives. However, the federal governments' \$200.00 economic incentive to change to more efficient appliances had little acceptance during this first year; also a recent effort to trade-in old vehicles for newer, more efficient ones by offering economic incentives was cited by the local press as being short of meeting expectancies. On the other hand, new legislation that requires the local electric utility (Puerto Rico Electric Power Authority) to buy surplus electric power produced by their clients "net metering", has been criticized for requiring high capital investments and being too complicated to be understood by the average client.

Research results from the Puerto Rico Agricultural Experiment Station (using dairy waste and sugar cane), that date back to the 1980's, show that this type of project can be successful under Puerto Rico's climate conditions. A demonstration project using biodiesel in the maintenance of vehicles in the Municipality of Caguas is showing excellent preliminary results and poultry waste hydrolyzed with slaughterhouse wastewater to produce biogas in Aibonito improved water quality and produced organic fertilizer.

Our experience with some of the most technically oriented clients in the Puerto Rico Agriculture Extension Service, shows that they wish to learn about technologies like biogas production, solar power, "green roofs" and net metering, but are timid in making capital investments without big government incentives. The technologies are too complicated to be understood by the average citizen and require high initial investments. Our clientele needs orientation in all aspects of energy sustainability--from the most basic concepts of energy audits and conservation to the use and demonstration of the technologies.

The sustainable energy planned program intends to increase our clientele's existing knowledge of the sustainable energy technologies, energy conservation, and opportunities to finance sustainable energy projects and their cost and environmental benefits.

## **2. Scope of the Program**

- In-State Extension

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

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

We have found that our clients are motivated by one or more of the following: economic incentives, laws and regulations that require them to make improvements, and a high rate of return in their investment (cost effectiveness). We assume that the economic incentives available for sustainable energy projects will be offered and improved. In addition, we assumed that there environmental groups will pressure for cleaner, "green" energy and that the finance institutions will be willing to finance new projects.

PRAES specialists have been working on proposals and 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 and home economists.

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

The ultimate goals of this program are to increase the existing knowledge of our clientele of the sustainable energy technologies, energy conservation, opportunities to finance sustainable energy projects, and their cost and environmental benefits.

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

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	6.5	0.0	0.0	0.0
2015	6.5	0.0	0.0	0.0
2016	6.5	0.0	0.0	0.0
2017	6.5	0.0	0.0	0.0
2018	6.5	0.0	0.0	0.0

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

**1. Activity for the Program**

- Include in our workshops and meetings aspects of sustainable energy with emphasis on structures, waste management and irrigation equipment, and energy conservation.
- Establish collaborations with government agencies (Puerto Rico Electric Power Authority; Environmental Quality Board; Departments of Agriculture, Environmental and Natural Resources, and Education; Puerto Rico Aqueducts and Sewage Authority; USEPA; USDA; NRCS; and others) and with our partners in the University of Puerto Rico and other educational institutions.
- Design and make plans that include and promote energy sustainability and efficiency in structures, waste management systems and irrigation systems (new facilities or improvement to existing facilities).

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

**Extension**

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>• Education Class</li> <li>• 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>• TV Media Programs</li> <li>• Web sites other than eXtension</li> <li>• Other 1 (Radio Programs)</li> <li>• Other 2 (Exhibits)</li> </ul>

**3. Description of targeted audience**

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

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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

### **1. Output Measure**

- Number of workshops and meetings offered which include aspects of alternative energy systems and efficiency.
  - Number of collaborators from government agencies, partners in the University of Puerto Rico, and other educational institutions.
  - Number of clients that participated in workshops and meetings offered, which include aspects on energy sustainability and efficiency.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

O. No	Outcome Name
1	Number of government agencies and partners in the University of Puerto Rico and other educational institutions that collaborate in projects that promote energy sustainability and efficiency.
2	Number of clients that made changes in their facilities or established high efficiency equipment that promote energy conservation, environmental benefits, and lower their energy costs.
3	Number of facilities that made changes to promote energy conservation, environmental benefits, and lower their energy costs.

### **Outcome # 1**

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

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

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

#### **3. Associated Knowledge Area(s)**

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

#### **4. Associated Institute Type(s)**

- 1862 Extension

### **Outcome # 2**

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

Number of clients that made changes in their facilities or established high efficiency equipment that promote energy conservation, environmental benefits, and lower their energy costs.

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

#### **3. Associated Knowledge Area(s)**

- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 402 - Engineering Systems and Equipment

#### **4. Associated Institute Type(s)**

- 1862 Extension

### **Outcome # 3**

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

Number of facilities that made changes to promote energy conservation, environmental benefits, and lower their energy costs.

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

#### **3. Associated Knowledge Area(s)**

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

#### **4. Associated Institute Type(s)**

- 1862 Extension

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

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

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

#### **Description**

In a tropical island setting, priorities can drastically be affected by natural disasters. Tropical hurricanes are the most common. Many facilities can be affected and under these circumstances the number one priority for our clients is to get back on their feet as quick as possible and energy sustainability will be secondary.

A general feeling that the economy is weak is another factor that precludes people from investing in improving their infrastructures. When the general feeling is that the economy is strong, people tend to be more aggressive. Changes in public policies also make people change priorities and postpone projects. The availability of economic incentives is decisive in making final decisions that require capital investments.

Our program depends on the amount of time that the PRAES county agents and home economists can allocate to it. Any changes in priorities set by the administration will have an effect on the program's outcome.

### **V(K). Planned Program - Planned Evaluation Studies**

#### **Description of Planned Evaluation Studies**

Post program evaluation will be conducted through surveys to determine adoption of practices and changes made in alternative energy systems and efficiency.



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

### **Program # 9**

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

Global Food Security and Hunger

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

Food security emerged as one of the major risks of the 21st century (Global Risk Forum, 2008). For Puerto Rico this is more evident due to its condition as an island. Food availability is mainly through imports (80%) due to an extremely low domestic production of less than 20%. Extended supply chains that generated competitive advantage to agribusiness and people increased the vulnerability of Puerto Rico's food system to disruptive risk.

In 2009, only 18.9% of the food and beverages consumed in Puerto Rico were produced on the Island (External Trade Statistics, 2009). Practically all of the cereal, oil, fat, sugar, vegetables, fish, and soup consumed were imported, as were more than 3/4 of fruit, vegetables, and meats. Most imports came from the United States (food miles from the USA farms to PR consumers are an average of more than 2,800 miles, 1,300 are by sea), but Puerto Rico also received food from more than 50 countries around the world. The domestic production consisted mainly of milk, plantains, eggs and coffee.

Although 58% of the people in Puerto Rico have access to appropriate foods for a nutritious diet through transfer income benefits, WIC Plan or School Food Service, consumers need continuous orientation on the utilization of food through an adequate diet, water, sanitation, and health care. The system's stability is threatened by various factors such as climate change and the economic crisis which increases food prices.

Among the vulnerabilities of Puerto Rico's food supply chain are: a low local agricultural production with continued loss of agricultural land, a high dependence on imported foods, oligopolistic food import and transport logistics, the food reserve is not clearly defined, the lack of and adequate food security policy, and the sea routes towards the island match the path of Caribbean hurricane routes. Ensuring Puerto Rico's food security presupposes the elimination or reduction of these vulnerabilities. Although the Government is in charge of solving any crisis and emergency related to food, the private sector still has to develop innovative strategies to guarantee food security.

The PRAES should help farmers, agro entrepreneurs, and the public in general to understand the threats to our food security and to identify strategies to attend these threats. Extension can coordinate the exchange of information between the government, academy, and private sectors to define and adopt strategies. The initiative will promote a business culture among farmers as a means to encourage the development of local capital and small and medium businesses on the island. To accomplish this goal Extension will use different strategies such as youth and child curriculum development, collaboration with the public and private sectors, and the dissemination of information.

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

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

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

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

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

## 1. Program Knowledge Areas and Percentage

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

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

## 1. Situation and priorities

Food security emerged as one of the major risks of the 21st century (Global Risk Forum, 2008). Extended supply chains that generated competitive advantage to agribusiness and people increased vulnerability of the food global system to disruptive risk. According to FAO, food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO, Seguridad Alimentaria. Informe de políticas, 2006). In 2011, the world lived another food crisis. Global water crisis, land degradation, dependence on fossil fuel, price setting, and climate change are some of the risks that can affect food security. During 2010 and 2011, Puerto Rico local news highlighted a global food shortage and an islandwide lack of food security.

In 2008, the total value of agricultural production in the Island was less than 1% of the Gross Domestic Products. In 2007, there were 15,745 farms on the Island, a decline of an 11% compared to 2002, and the average farms size was 39.1 acres. The farmers' average age was 58.2 years old and more than one third were over 65 years old (Census of Agriculture, 2007).

During 2009, only 18.9% of the food and beverages consumed in Puerto Rico were produced on the Island (External Trade Statistics, 2009, preliminary data). Practically all the cereal, oil and fat, sugar, vegetables, fish and soup consumed were imported as were more than 3/4 of fruit, vegetables, and meat. Most imports were from the United States, but Puerto Rico received food from more than 50 countries around the world. Local production consisted mainly of milk, plantain, eggs and coffee.

Some of the vulnerabilities of Puerto Rico's food supply chain are: the Island doesn't have an adequate food security policy, the local agricultural production is low with a continued loss of agricultural land, a high

dependence on imported food equivalent to more than 80% of our food consumption, monopolistic or oligopolistic food import and transport logistics, and sea routes towards the island match the path of hurricanes routes in the Caribbean.

It should be noted, nonetheless, that within the Caribbean region Puerto Rico does not have a high vulnerability index because of its fairly advanced economic development and receives federal funds in case of emergency from FEMA or Homeland Security. However, the food supply chains' stability can be impacted by extreme weather events such as hurricanes (the season runs from June 1 to November 30), which could devastate crops and cause severe damage to animal production and transportation logistics, as the island is located in one of the climate change hot zones identified by Intergovernmental Panel on Climate Change (2007), where severe changes--like an increase in the intensity and frequency of hurricanes--are expected. According to some estimates, if operations at port are halted for any reason, provisions to feed the population of almost four million people will be used up in 15 days, Puerto Rico being one of the most densely populated countries in the world with a high dependence on transfer incomes.

Ensuring Puerto Rico's food security presupposes the elimination or reduction of its vulnerabilities. Although the Government is in charge of solving any crisis and emergency related to food, the private sector still has to develop innovative strategies to adapt to and handle food supply chain risks.

In December 2009 the national Food Security initiative contact person finished her Ph.D. degree. Her dissertation was based on Food Supply Chain Vulnerability. As part of her literature review, she read FAO, IPCC, World Economic Forum, Latino American Economic Commission, and other documents related with the food crisis and risk management. One of her contributions was the development of a protocol to attend the disruption on the food supply chain and one of her conclusions was that the public and private sector need to work together on this matter. On January 2011, she presented the College of Agricultural Sciences, UPR-Mayagüez Campus, position on Food Security Proposal Policy.

## **2. Scope of the Program**

- In-State Extension

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

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

Due to continuous food supplies, many people in Puerto Rico assume that there are no problems with our food security, as they are unaware that these are mainly imported (more than 80 %) and that a lot of people use transfer income and other government programs to acquire their food. The food reserve, the food miles, and the threats to the food supply chain are also unknown.

In the management of food security the Agricultural Extension Service should help farmers, agro entrepreneurs and public in general to understand the threats to our food security and to identify strategies to attend these threats. The exchange of information between the government, the academy, and the private sectors is required for the definition and adoption of strategies. The initiative will promote a business culture among farmers as a way to encourage the development of local capital and small and medium businesses in the island. Because food security is a multi- sector issue we are working with both the government and the private sector, as they need to coordinate work together. Some of the strategies promoted are: an increase in local agricultural production, the development of risk management plans, monitoring the food supply chain's vulnerability and risks, the promotion of a food security public policy, and the establishment of public/private partnerships to attend this situation.

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

Increase food security at the national and household levels by:

1. Increasing local food production and competitiveness
2. Establishing a network of enterprises working as a food supply chain system and not as individual enterprises that negotiate together.
3. Developing home gardens
4. Establishing a nutritious and safe food supply for the household.

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

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	10.4	0.0	0.0	0.0
2015	10.4	0.0	0.0	0.0
2016	10.4	0.0	0.0	0.0
2017	10.4	0.0	0.0	0.0
2018	10.4	0.0	0.0	0.0

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

**1. Activity for the Program**

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

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

**Extension**

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Education Class</li> <li>● 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 other than eXtension</li> <li>● Other 1 (Radio Programs)</li> </ul>

**3. Description of targeted audience**

County Extension professionals, farmers, agro entrepreneurs, government professionals, housewives, and youth.

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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

#### **1. Output Measure**

- Number of agricultural enterprises feasibility studies.
  - Number of youth participating in food system educational program.
  - Number of adults participating in food system knowledge and skill enhancement programs.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

O. No	Outcome Name
1	Number of individuals that increased their knowledge about international trade and development.
2	Number of public policy issues related with national food security that were reviewed or proposed.
3	Number of farmers that adopted one or more recommended post-harvest practices.
4	Number of fallow "cuerdas"(acres) sowed or prepared for animal production or other agricultural production.
5	Number of consumers that adopted the food basket as a guide for food security at the household level.
6	Number of home gardens established.
7	Number of acres in conservation tillage or other BMP.
8	Number of new or improved value-added products that can be sold by producers (and other members of the food supply chain).
9	Number of marketing agreements established between local farmers and distributors or other components of the food supply chain.
10	Number of producers (and other members of the food supply chain) that have increased revenue.
11	Number of first detectors trained in early detection and rapid response of plant pests, animal pests, and diseases.
12	Number of communities trained in agricultural disaster preparedness.
13	Number of communities that have written agriculture and food considerations into disaster preparedness plans or procedures.
14	Number of networks prepared to mitigate biological and abiotic disruptions.
15	Number of youth that improved knowledge of food systems.
16	Number of adults improved knowledge of food systems.
17	Number of food councils and institutes created to promote practical food systems policies.
18	Number of research and extension advisory councils and boards.
19	Number of communities that retained farm lands due to educational interventions.
20	Number of food security extension publications and presentations.

**Outcome # 1**

**1. Outcome Target**

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

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

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

- 131 - Alternative Uses of Land
- 606 - International Trade and Development
- 704 - Nutrition and Hunger in the Population

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

- 1862 Extension

**Outcome # 2**

**1. Outcome Target**

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

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

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

- 131 - Alternative Uses of Land
- 610 - Domestic Policy Analysis
- 704 - Nutrition and Hunger in the Population

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

- 1862 Extension

**Outcome # 3**

**1. Outcome Target**

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

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

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

- 131 - Alternative Uses of Land

- 501 - New and Improved Food Processing Technologies

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

- 1862 Extension

**Outcome # 4**

**1. Outcome Target**

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

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

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

- 131 - Alternative Uses of Land
- 307 - Animal Management Systems

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

- 1862 Extension

**Outcome # 5**

**1. Outcome Target**

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

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

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

- 131 - Alternative Uses of Land
- 704 - Nutrition and Hunger in the Population

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

- 1862 Extension

**Outcome # 6**

**1. Outcome Target**

Number of home gardens established.



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

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

- 131 - Alternative Uses of Land
- 704 - Nutrition and Hunger in the Population

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

- 1862 Extension

**Outcome # 7**

**1. Outcome Target**

Number of acres in conservation tillage or other BMP.

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

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

- 205 - Plant Management Systems
- 307 - Animal Management Systems

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

- 1862 Extension

**Outcome # 8**

**1. Outcome Target**

Number of new or improved value-added products that can be sold by producers (and other members of the food supply chain).

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

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

- 501 - New and Improved Food Processing Technologies

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

- 1862 Extension

**Outcome # 9**

**1. Outcome Target**

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

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

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

- 501 - New and Improved Food Processing Technologies
- 603 - Market Economics

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

- 1862 Extension

**Outcome # 10**

**1. Outcome Target**

Number of producers (and other members of the food supply chain) that have increased revenue.

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

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

- 603 - Market Economics

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

- 1862 Extension

**Outcome # 11**

**1. Outcome Target**

Number of first detectors trained in early detection and rapid response of plant pests, animal pests, and diseases.

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

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

- 205 - Plant Management Systems
- 307 - Animal Management Systems

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

- 1862 Extension

**Outcome # 12**

**1. Outcome Target**

Number of communities trained in agricultural disaster preparedness.

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

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

- 704 - Nutrition and Hunger in the Population

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

- 1862 Extension

**Outcome # 13**

**1. Outcome Target**

Number of communities that have written agriculture and food considerations into disaster preparedness plans or procedures.

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

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

- 610 - Domestic Policy Analysis

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

- 1862 Extension

**Outcome # 14**

**1. Outcome Target**

Number of networks prepared to mitigate biological and abiotic disruptions.

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

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

- 610 - Domestic Policy Analysis

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

- 1862 Extension

**Outcome # 15**

**1. Outcome Target**

Number of youth that improved knowledge of food systems.

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

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

- 704 - Nutrition and Hunger in the Population

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

- 1862 Extension

**Outcome # 16**

**1. Outcome Target**

Number of adults improved knowledge of food systems.

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

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

- 704 - Nutrition and Hunger in the Population

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

- 1862 Extension

**Outcome # 17**

**1. Outcome Target**

Number of food councils and institutes created to promote practical food systems policies.

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

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

- 610 - Domestic Policy Analysis

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

- 1862 Extension

**Outcome # 18**

**1. Outcome Target**

Number of research and extension advisory councils and boards.

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

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

- 610 - Domestic Policy Analysis

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

- 1862 Extension

**Outcome # 19**

**1. Outcome Target**

Number of communities that retained farm lands due to educational interventions.

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

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

- 131 - Alternative Uses of Land

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

- 1862 Extension

**Outcome # 20**

**1. Outcome Target**

Number of food security extension publications and presentations.

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

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

- 606 - International Trade and Development

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

- 1862 Extension

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

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

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

**Description**

Puerto Rico is identified by the IPCC as a hot zone due to threats posed by climate changes like droughts, increase in the sea level, and extreme weather.

This being an election year, Public Policy could suffer changes in case of a change in government.

**V(K). Planned Program - Planned Evaluation Studies**

**Description of Planned Evaluation Studies**

To determine the success of this planned program, data will be collected that measures progress towards the goals. This will be reported in Outcomes # 2, 4, 9, 10, 17, 18, and 19. During FY 2014 case studies will be conducted to evaluate how individuals and communities are increasing food security.

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

### **Program # 10**

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

Adult and Childhood Obesity

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

The science-based practice planned program intends to work in accordance with the goals set by Healthy People 2020, which include a decrease in the percentage of people who are overweight or obese.

To accomplish these goals, the planned program Adult and Childhood Obesity will work on strategies presented by the Department of Health and Human Services' 2010 Dietary Guidelines for Americans, which focus on the promotion of healthy lifestyles, nutrition adequacy and physical activity. These can be targeted by the development of educational initiatives, which will focus three major areas: nutrition knowledge to promote consumption of healthy foods, importance of the incorporation of daily physical activity for weight management, and public policy to promote a holistic view of childhood obesity in the population. The program will concentrate on the development of family and personal strategies that facilitate healthy food choices and active living.

Factors that are related to obesity are: lack of physical activity, skipping meals, large portion sizes, low intake of fruits, vegetables, whole grains and water, and high consumption of sugared drinks, saturated and trans fats, among other practices.

Considering that the cause of obesity is multifactorial, this planned program will be working on the following: physical environment, parental influence, socioeconomic status, and media.

The physical environment, which includes the home, work, school or childcare facilities and in leisure activities, should promote healthy eating and physical activities. The areas to be impacted are: to work with government agencies promoting physical activity programs for the community; strategies for healthy eating at home through easy to prepare, inexpensive culturally competent recipes; involvement of the community in gardening; and the dissemination of educational material throughout community centers, schools and churches.

Socioeconomic changes, such as the increase of single parents with extended working hours, which leads to eating out more, prolonged exposure to childcare centers, and unsupervised children at home, can contribute to more exposure to media, sedentary lives, and the consumption of most of the meals at the childcare centers. This educational program will focus on low cost healthy food and physical activity choices for adults, parents, caregivers, and children. Public policy initiatives intervention will promote educational programs to include employers, community leaders, churches, schools, caregivers, and lunch program workers, advertising through the radio, TV, internet, and newspapers.

This Adult and Childhood Obesity planned program will work together with government agencies and community organizations and alliances through coordinated agreements. These collaborations will prevent duplicity of efforts and will promote the best use of resources and sharing of achievements. It will also allow us to establish agreements to treat this population with a tailored cultural educational model and determine the accomplishment of 2020 Healthy People goals as it reflects the assessment of major determinants of health and wellness, changing public health priorities, and emerging issues related to USA health preparedness and prevention.

This planned program promotes the integration of two other NIFA initiatives: Food Safety and Global Food

Security and Hunger by enhancing the ability of families to grow their own nutritious foods while increasing physical activity, as well as preserving nutritious foods by applying food safety recommendations.

Furthermore, efforts to disseminate Puerto Rico's Food Basket, will relate to locally grown foods and food security.

Our long-range goal is to reduce the progression of obesity in the local population through community based interventions, providing youth and their families' tools to develop, adopt, and maintain behavioral changes that will set the stage for healthy eating, physical activity, and weight management. The educational philosophies supporting the educational strategies are cooperative learning and learning-by-doing, which involve comprehensive and coordinated efforts of all the participants.

The specific aims are to implement educational curricula that include culturally appropriate eating patterns, portion size control, good practices in reading food labels, adequate food preferences, food resource management, meal planning, and food purchase; and to include physical activity choices and gardening, essential for reducing risk of obesity and of chronic disease, with the purpose of improving the health of adults and children.

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

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

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

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

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

1. Program Knowledge Areas and Percentage

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

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

**1. Situation and priorities**

According to the Center of Disease Control (2011), obesity rates triplicated in the past 30 years, where 65% of the adults are overweight or obese. In United States, childhood obesity doubled in children from 6-11 years and tripled in adolescents, accounting for 17% of the young population to be ranked as overweight or obese (NHANES 2009-10). The total cost for obesity in the United States is around \$117 billion

World Health Organization (WHO) estimated that over 1 billion people globally are currently overweight, 300 million people are clinically obese, and the number of overweight children under the age of five is estimated to be over 42 million. More than 2.5 million deaths annually are weight related and this could rise to 5 million by 2020. The USA forecasts to spend 19% of GDP on health care by 2014, up from 15% in 2003.



One of seven low-income preschool children is obese (Pediatric Nutrition Surveillance System). Among preschool children aged 2-5, obesity increased from 5.0 to 10.4% between 1976-1980 and 2007-2008, and from 6.5 to 19.6% among children aged 6-11. Among adolescents aged 12-19, obesity increased from 5.0 to 18.1% during the same period.

Obesity rates in Puerto Rico are similar to the United States, 65% of the total adult population is overweight or obese. According to the 2010 report of the Trust for America's Health: "F as Fat", Puerto Rico ranked as the obese state in the Nation. According to data from the PR Department of Health, 35% of adults and 27% of children in Puerto Rico are obese.

The Behavioral Risk Factor Surveillance System (2011) reported that only 28% of the adults in Puerto Rico engage in 30 minutes of physical activity five days a week and 82% consume less fruit and vegetables per day, which do not meet the recommendations from 2010 DGA. Moreover, a study from Rivera Soto et al., (2012) revealed that, although 38% of elementary school children (n=250) were obese, only 20% of the parents classified them as such, demonstrating the need of nutrition education in this area. Obesity risks include heart disease, diabetes, and sleep disorders.

The Health and Balance report from the Institute of Medicine (IOM) encourages to develop strategies to develop effective initiatives followed by a consistent evaluation method for sustainability. The Recommended Community Strategies and Measures to Prevent Obesity in the U.S. propose the community based strategies that change obesogenic environments. Changes might be having access to healthy food and promoting the free practice of physical activities, the development of public policy for healthier environments in schools, day care centers, and communities offering equal opportunity for all citizens, avoiding inequality by gender, socioeconomic status, race and ethnicity.

## **2. Scope of the Program**

- In-State Extension

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

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

- Adults and children are consuming less fruits and vegetables than the federal recommendations
- Decline in healthy snacks and breakfast consumption in children
- Adults and children have sedentary lifestyles
- Constraints in parent time result in a reduction in prepared home-cooked meals, or even to serve family dinner
  - Electronic technologies and media are conducive to sedentary forms of socializing and recreation
  - Increased cost of food promote the purchase of unhealthy but less expensive meals
  - Cultural beliefs of adults can affect weight perception of obese children

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

Reduce the prevalence of adult and childhood obesity through improved nutrition, physical activity and healthy lifestyles.

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

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	8.5	0.0	0.0	0.0
2015	8.5	0.0	0.0	0.0
2016	8.5	0.0	0.0	0.0
2017	8.5	0.0	0.0	0.0
2018	8.5	0.0	0.0	0.0

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

**1. Activity for the Program**

- Develop joint action at community level to promote and implement physical activity programs and nutrition education for adults, parents, caregivers and kids.
- Teach about the importance of healthy practices at work and breakfast, lunch, and snacks in schools and other institutions to comply with communication 2-2007-2008 that rules expenditure and consumption of food and beverages minimum nutritional value.
- Teach participants about portion size control, adequate meal patterns, supermarket tours, meal planning, shopping lists to ensure healthy food choices within a budget
- Demonstrate easy, healthy food recipes to encourage the consumption of fruit, vegetables and whole grain foods
- Encourage the importance of gardening to increase physical activity and the consumption of fruit, vegetables and healthy foods
- Demonstrate the importance of reducing refined sugars and saturated fats to prevent obesity and the development of chronic diseases

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>• Education Class</li> <li>• 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> </ul>

**3. Description of targeted audience**

Children/youth and their families, caregivers, and adults.

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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
    - Direct Adult Contacts
    - Indirect Adult Contacts
    - Direct Youth Contacts
    - Indirect Youth Contact
  - Number of patents submitted
  - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

### **1. Output Measure**

- Number of children and youth that completed non-formal nutrition and physical activity education courses.
  - Number of adults, parents and caregivers that completed non-formal nutrition and physical activity education courses.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

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

O. No	Outcome Name
1	Number of children and youth that reported eating more healthy foods.
2	Number of adults/caregivers that reported eating more of healthy foods.
3	Number of adults, parents, caregivers, children, and youth that reported eating less of foods/food components which are commonly eaten in excess, by reducing enlarged portion sizes.
4	Number of adults, parents, caregivers, children and youth that reported increasing their physical activity.
5	Number of adults, parents, caregivers, children and youth that reported engaging daily in 60 minutes or more of physical activity.
6	Number of adults, parents, caregivers, children, and youth who learned about the importance of gardening to promote physical activity and improve nutrition.
7	Number of adults, parents, caregivers, children, and youth who increased the consumption of 5 or more fruit and vegetables per day.
8	Number of adults, parents, caregivers, children, and youth who ate breakfast.
9	Number of adults, parents, caregivers, children, and youth who made healthy food choices after learning to read the food labels.

**Outcome # 1**

**1. Outcome Target**

Number of children and youth that reported eating more healthy foods.

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

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

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

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

- 1862 Extension

**Outcome # 2**

**1. Outcome Target**

Number of adults/caregivers that reported eating more of healthy foods.

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

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

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

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

- 1862 Extension

**Outcome # 3**

**1. Outcome Target**

Number of adults, parents, caregivers, children, and youth that reported eating less of foods/food components which are commonly eaten in excess, by reducing enlarged portion sizes.

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

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

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

#### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 4**

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

Number of adults, parents, caregivers, children and youth that reported increasing their physical activity.

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

##### **3. Associated Knowledge Area(s)**

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

#### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 5**

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

Number of adults, parents, caregivers, children and youth that reported engaging daily in 60 minutes or more of physical activity.

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

##### **3. Associated Knowledge Area(s)**

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

#### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 6**

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

Number of adults, parents, caregivers, children, and youth who learned about the importance of gardening to promote physical activity and improve nutrition.

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

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

- 704 - Nutrition and Hunger in the Population

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

- 1862 Extension

**Outcome # 7**

**1. Outcome Target**

Number of adults, parents, caregivers, children, and youth who increased the consumption of 5 or more fruit and vegetables per day.

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

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

- 704 - Nutrition and Hunger in the Population

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

- 1862 Extension

**Outcome # 8**

**1. Outcome Target**

Number of adults, parents, caregivers, children, and youth who ate breakfast.

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

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

- 704 - Nutrition and Hunger in the Population

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

- 1862 Extension

**Outcome # 9**

**1. Outcome Target**

Number of adults, parents, caregivers, children, and youth who made healthy food choices after learning to read the food labels.

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

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

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

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

- 1862 Extension

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

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

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

**Description**

Puerto Rico's location in the Caribbean area makes it the object of natural events, which include hurricanes, heavy winds, droughts, and heavy rainy seasons that can cause floods. Puerto Rico is also in earthquake risk zone, as was demonstrated in the case of Haiti. A major natural disaster could completely reorient the government's priorities and make it essential to spend scarce resources on recovery rather than health related programs. On the other hand, individuals will be caught up in trying to reestablish their business, homes and assisting their families' needs.

Puerto Rico is passing through a major financial crisis, which may not be solved in the near future. We have a reduced government budget. This has a domino effect on agencies and instrumentalities, as well as public policies and regulations.

Sometimes the support needed from the Municipal Government may vary if its interests are different from the ones established by our Program. Moreover, this project could be affected if policy and regulations change. We would then have to adjust the program's goals and strategies to whatever is established in order to comply and meet with the new assumptions.

**V(K). Planned Program - Planned Evaluation Studies**

**Description of Planned Evaluation Studies**

We will conduct pre/post questionnaires to evaluate knowledge and behavior changes in food consumption and physical activity among a selected sample of youngsters (12 years and older) that participated in PRAES non formal education courses on nutrition and physical activity, as well as for



adults. The questionnaire will be validated and pilot tested. We anticipate annual administration of these questionnaires to develop continuous surveillance and adoption of culturally and economically appropriate education programs.