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PUERTO RICO: ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

OVERVIEW

This accomplishment report covers the period from October 1, 2001 to September 30, 2002. During this period the Puerto Rico Agricultural Extension Service (PRAES) used a total of 181.47 FTE's.

PRAES joined efforts with local governments throughout the 78 municipalities of the island of Puerto Rico.

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

GOAL 1: An agricultural system that is highly competitive in the global economy accounted for 78.48 FTE's.

The Puerto Rico Agricultural Reform that started two years ago is still in the development process. It has taken time and economic resources to achieve the goals established by the Department of Agriculture in cooperation with PRAES. The reform includes the livestock, starchy crops, and vegetable enterprises. This process will take time because the farmers are afraid of new organizational structures.

PRAES is collaborating with the Department of Agriculture to develop an educational program to promote local production and consumption through lunch programs. The products that compose the menu are beef, poultry, starchy vegetables, fruits, dairy products, and eggs.

The Agricultural Reform will contribute $128.3 million to infrastructure and $42 million to fields. This reform will create 6,000 new jobs and increase the participation of local products in the market.

The dairy sector holds the first position by income of all the agricultural sectors. Through the continued technical support of PRAES personnel to the dairy cattle commodity, the Grade A classification was maintained. Ninety-eight per cent (98%) of 380 dairy farms meet the parameters for somatic cells and bacterial count.

Five hundred and thirteen (513) (49%) of 1,047 beef farmers adopted the recommended production practices, 53 improved their facilities and 128 increased their herd size.

Two hundred and twenty-eight (228) farmers adopted the recommended forage production practices. Fifty-eight (58) farmers planted 2,384 acres of pastures.

Of 1,854 coffee producers oriented, 1,021 (55%) adopted the recommended production practices. Two thousand three hundred and forty-five (2,345) acres were planted of coffee. Two hundred and forty-four (244) increased their production per acre.

Seven hundred and twenty-one (721) (42%), of 1,721 vegetable producers oriented, adopted the recommended production practices; and 860 (60%), of 1,427 farmers oriented about hydroponic systems, adopted the recommended practices.

One hundred and fourteen (114) 46%) producers of grains and legumes adopted the recommended production practices and seven increased their income.

Four thousand one hundred and forty-five (4,145) farmers adopted the recommended production practices in starchy crops. Six thousand eight hundred and eighty-five (6,885) acres were planted of starchy crops; 4,329 of plantains, 1,012 of bananas, and 1,544 of starchy root crops.

In the fruit commodity, 3,048 farmers were trained; of these, 1,474 adopted the recommended production and post harvesting practices. Seventy-nine (79) farmers increased the added value to their fruit products. Two thousand three hundred and forty-four (2,344) acres were planted of different fruits.

One hundred and forty-five (145) poultry producers were oriented in the recommended production practices; of these 29 adopted the recommended production practices and 29 improved their farm facilities.

Two hundred and seventy-three (273) swine producers adopted the recommended production practices, 77 increased their income, and 86 improved their facilities.

Thirty-four (34) farmers adopted the recommended sugarcane production practices out of a total of 70 farmers oriented.

Sixteen thousand and nine (16,009) persons were oriented by Extension personnel on the suitable practices for a high efficiency production in all crops.

GOAL 2: A safe and secure food and fiber system accounted for a total of 5.81 FTE's.

The PRAES developed ongoing food safety programs at different levels with a from-the-farm-to-the-table approach. There is multi-county cooperation and Extension

personnel is cooperating and disseminating research results to its clientele. The seafood and meat HACCP regulations and the Good Agricultural Practices (GAP) guidelines are recent examples where the agency has started to provide training to the agronomists and farmers.

A train-the-trainers training on GAP in fruits and vegetables was held with the participation of PRAES, the Department of Agriculture, the Faculty of Agriculture, and the Agricultural Research Station.

Forty (40) conferences were presented in a joint effort with FSIS and FDA professionals. Two hundred and fifty (250) farmers, wholesalers, and retailers attended the 2-day conference.

One thousand six hundred and ninety-three (1,693) persons in charge of food establishments approved the course requirements, attended the 12 lessons, approved certification tests with scores over 70%, started to use a method to control food temperature/time, and auto-evaluated practices using a pre-post evaluation form.

Food safety education for consumers was carried in the four PRAES base programs and in other programs through the Puerto Rico Partnership for Food Safety Education. Eight thousand six hundred and two (8,602) consumers completed non-formal education programs on food safety; of these 4,324 adopted one or more recommended food safety behaviors and practices.

During this period 2,425 farmers adopted one or more IPM practices, 600 farmers in coffee, 400 in fruits, 1,300 in starchy crops, bananas and plantains, and 125 in vegetables.

PRAES agronomists visited 380 dairy farmers to offer technical orientation on how to maintain bacteria counts under 100,000 units of colonies per milliliter and somatic cells under 750,000 cell/ml; they were also oriented on how to reduce antibiotic residues in milk. Of these, 372 (98%) dairy farmers reached somatic cell counts below 750,000 cells/ml and 81% of these 372 farmers reached bacteria counts below 100,000.

Based on a report of the Department of Agriculture, Puerto Rico imports 69% of the food from the United States. With a food backup supply of only 12 days, food security on the island could be affected in case of a national emergency (war, mayor disaster, change in public policies, etc.) and the subsequent reduction of exports to the island.

During this fiscal year, 90 children and youth attended the 5-lesson course designed to help them understand the importance of assuring food supplies in Puerto Rico. Sixty-nine (69) of the 90 youth that completed the course, planted one or more vegetables or herbs.

Two thousand eight hundred and fifty-two (2,852) participants recipients of the nutrition assistance program (NAP) of the Puerto Rico Department of the Family attended a 6-session short-course to improve supermarket strategies, use of resources to obtain food, and improve nutrition.

One thousand eight hundred and eighty-seven (1,887) NAP participants completed the course, 1,640 planned to change one or more practices and 700 reported that they had managed to change one or more practices six months later. One hundred and eight (108) volunteers spent 1,329 hours in support of the program.

GOAL 3: A healthy well-nourished population accounted for a total of 21.38 FTE's (this does not include EFNEP, as it is a 3(d) funded program).

During this fiscal year, the Nutrition, Diet, and Health program continued working to improve the well-being of individuals and communities through non-formal nutrition or health education and promotion programs. The project *"Resaltando tu Apariencia Persona – RAP"* (Enhancing Your Personal Appearance*),* was developed. Its goal is to improve the skills in personal hygiene through nine lessons. Fifty-nine (59) PRAES agents were trained, thereafter, forwarding the project to 915 children and youth and 72 volunteer leaders. Of these, 728 children and youth reported having modified attitudes and practices related to personal hygiene and the development of a personal care program.

A total of 2,242 adults completed non-formal education programs on topics related to health promotion and health education. Of these, 786 reported reducing their risk levels upon completion of one or more recommended practices after completing the programs.

In the area of indoor air quality, 1,199 individuals learned about indoor air contamination through short courses, seminars and home assessments. Of these, approximately 478 learned about the different air contaminants and methods for the mitigation and elimination.

PRAES, in partnership with the Puerto Rico Health Fraud Prevention Commission, developed a fraud prevention program targeting individuals infected and affected by HIV/AIDS, adults, and elderly people. Six hundred (600) participants reported knowledge gained, and behavior and attitude changed related to health fraud prevention.

A 6-session short course is used to improve nutritional practices among participants in NAP. During FY 2001-2002, 139 new short courses were offered, 2,852 people participated in these courses, 1,887 completed the courses. Six months after completing the course 700 persons reported having adopted or changed adopted one or more practices. One hundred and eight (108) volunteers were recruited, a total of 1,329 volunteer hours were dedicated. In addition, 21,865 persons participated in community

activities designed to help them change dietary habits. Mass media reached an additional 46,971 persons.

There are 3,210 families and 4,334 youth enrolled in EFNEP in Puerto Rico. Of the families enrolled, 3,151 graduated, 1,914 received food checks, and 1,126 participated in the WIC program. Two hundred and forty-nine (249) pregnant EFNEP mothers were oriented on the importance of breastfeeding and adequate prenatal care for healthier babies. One hundred and sixty seven (167) babies were born to EFNEP mothers, three died during their first month of life. Sixty four (64) EFNEP mothers breastfed their babies.

As a result of the nutrition education experience, 96.6% (4,187) persons reported that they are eating a variety of food and are making good use of their allowance to obtain nutritious food.

Four hundred and eighty-three (483) volunteers helped in some stages of the program. Of these, 228 worked with youth and 255 with adults. Two thousand six hundred and fifty-five (2,655) volunteer hours were dedicated to youth and 4,344 volunteer hours to families; representing an economic impact of $13,939 and $22,806 that were saved by the use of volunteers, respectively.

GOAL 4: To achieve greater harmony (balance) between agriculture and the environment accounts for 8.31 FTE's.

The PRAES water quality program continued its informal education and information dissemination on farm waste management and or rural aqueducts. Most of this educational process was geared to farmers to achieve compliance with environmental regulations on existing, as well as new building facilities for animals in confinement and for processing plants. Education and information on water quality is provided to homeowners, communities and the general public.

Two hundred and twenty-seven (227) persons received orientation on irrigation systems, 40 of these established irrigation systems in their farms following the recommendations.

Educational efforts on sustainable agriculture have been implemented in Puerto Rico since 1997. PRAES works closely with Sustainable Agriculture Research and Education (SARE) through proposals that allow the planning and coordination of educational activities to train agricultural personnel and farmers. A conference and demonstration training meeting was conducted on ecological coffee processing plants with environmentally friendly equipment in which 125 farmers and professionals participated. Of 831 persons trained on sustainable agricultural practices, 369 adopted the recommended practices. Forty (40) volunteers were trainers to farmers groups, dedicating 444 hours: a savings of $2,331.

PRAES has been working for almost four years on the Forest Health Project in collaboration with Forestry Services. The project is part of IPM for forest pest management, including both prevention and control strategies. Another agreement with the Forest Service conveyed a $10,000 scholarship opportunity for 15 UPR students (10 undergraduate and 5 graduate) to expose them to other study areas and to get acquainted with a broader scope of professionals within forestry.

Seven hundred (700) persons received publications about insects and diseases of importance in urban forests. One publication was prepared on the identification and management of pests of importance for the forests of Puerto Rico.

The proposal Forest Health and Integrated Pest Management was extended until September 2003 to develop a Forest Health Webpage.

Six (6) greenhouses of the Department of Natural Resources and Environment produced shrubs and trees for urban reforestation and adopted three IPM practices. The plant diagnostic clinic processed 50 samples of trees or woody ornamentals with a direct impact of at least $40,000 saved because of the correct diagnose of the pest.

In 1975 the State Department of Agriculture (SDA) and PRAES developed a plan to certify pesticides users; since then, 12,000 commercial applicators and 45,000 farmers and farm workers have been certified as pesticides applicators. During fiscal year 2001-2002, 1,863 private applicators and 693 commercial applicators received training.

GOAL 5: To enhance opportunities and the quality of life among families and communities accounted for a total of 67.47 FTE's.

During fiscal year 2001-2002, the efforts of PRAES and the local government were combined to educate families in financial management, family budget, parenting skills, child development, consumer education, community development, family resource management, home-based business education, value of household work, energy conservation, and youth development life skills. Limited income families and rural communities were assisted on how to develop themselves in order to increase their family income and to encourage healthy behavior in individuals, families, and communities to achieve better lifestyles to be "Healthy People and Healthy Communities".

Extension Agents trained parents, families, and childcare providers in parenting skills and child development at childcare centers. These educational efforts in non-formal programs consisted of seven lessons (Values Family Education Curriculum).

Two thousand five hundred and three (2,503) families adopted parenting skills and 1,273 parents changed attitudes toward responsible parenting and assertive family communication. Two hundred and twenty-two (222) persons working in childcare centers were trained on child development. One hundred and eighty-eight (188) children increased their self-esteem and developed study skills through special projects.

Extension Agents and volunteer leaders continue developing educational home-based programs to help families use their own resources and start home-based businesses to increase family income. Eight (8) persons were certified as artisans and 38 became self employed. Two hundred and ninety-eight (298) persons adopted practices. Eighty nine thousand (89,000) persons were benefit from radio and T.V. programs.

One hundred and thirty-four (134) families prepared and administered a budget and 388 adopted home management practices and changed their behavior.

PRAES, as part of the College of Agricultural Sciences-University of Puerto Rico, serves as a link between the University and the community. Its goal is to increase the quality of life of the communities at risk with special emphasis on the rural and sub-urban areas. Among CRD's most significant achievements are the following: 220 committees were organized to give support to families and promote the increase of the family value system; 461 volunteer leaders were trained in leadership, community development and others; and 192 communities established recycling projects.

During this fiscal year, 1,725 farmers were oriented on farm safety.

Base Programs

The Four-H Youth Development base program continued focusing on youth at risk with an increase in activities, competitiveness and projects. Fiscal year 2001-2002 accounted for 32.04 FTE's in this area.

The staff and volunteers of the 4-H program promoted the adoption of healthy lifestyles and skills that allow youth to make adequate decisions. During this period a total of 45,137 youth were reached through 4-H clubs, EFNEP youth and special projects. One thousand four hundred and eleven (1,411) leaders were trained and 3,914 youth and children participated in the trainings offered by leaders helping them to develop skills in after school programs.

Four-H competitions continue to be an effective method to reach youth enrolled in the program. Ten (10) competitions were celebrated at regional and state levels.

A total of 1,411 youth and adult volunteers offered 12,042 volunteer hours that represent an economic impact of $63,220.50 to the program.

During this fiscal year we continued with the project Enhancing your personal Appearance (in Spanish *"Resaltando la Apariencia Personal" - RAP)*, which targeted students grades 7 to 12. The goal of the project is to develop skills about personal hygiene and offer other information to meet the young people's individual needs. Fifty nine (59) PRAES agents were trained, thereafter forwarding the project to 915 children and youth and 72 volunteer leaders. Other projects or curriculum developed are,

Postponing Sexual Activity ("Posponiendo la Actividad Sexual), Vieques Kids and Science Education (VKSE), and a curriculum on self-esteem.

In order to get sponsorship for 4-H program efforts, coalitions with the private sector were implemented. Special recognition was given to Molinos de Puerto Rico and the Cooperative of Employees of Agricultural Agencies, which sponsored a 4-H contest and made it possible for 10 Four-H members, winners of competitions, to travel to the National 4-H Congress.

The Community Resource Development Program (CRD) accounted for 11.86 FTE's during FY 2001-2002.

CRD focused work on rural, urban and suburban areas that are in continuous development. The problems and needs of the communities in these areas are many and variable ranging from better facilities and resources, effective and efficient trade systems, and prevention of school desertion, to salubrity, among others.

During this fiscal year 1,570 volunteers were registered in CRD committees in 62 local communities.

CRD trained 461 leaders on how to develop and organize a community. Nine hundred and four (904) community leaders were trained on leadership and development of community projects. Seventy six (76) community projects were developed. Two hundred and seventy-seven (277) small farmers were organized in groups. One hundred and thirteen (113) families improved their economic situation. One hundred and ninety-two (192) communities established recycling projects.

The Fourth Home Garden Festival was celebrated at Gurabo. The activity consisted of conferences and exhibitions, and awards to volunteer leaders.

GOAL 1 AN AGRICULTURAL SYSTEM THAT IS HIGHLY COMPETITIVE IN THE GLOBAL ECONOMY

OVERVIEW

The Puerto Rico Agricultural Reform that started two years ago is still in the development process. It has taken time and economic resources to achieve the goals established by the Department of Agriculture in cooperation with the Puerto Rico Agricultural Extension Service (PRAES). The reform includes the livestock, starchy crops and vegetables enterprises.

The Agricultural Reform is intended to create a three-level structure. The first level is integrated by farmers of the same agricultural sector members of the agricultural commodity. The main purpose of this commodity group is to organize the production in accordance with the supply and quality. The second level is for classification purposes. Agricultural products are graded and packed according to market and consumer demand at facilities owned by the farmers. This process adds value to the products and increases farmers' income. The third level is for processing facilities. The production surplus and non-marketable products will be used to produce a variety of byproducts partially or ready-to-eat. The main goal is to organize the producers in commodity groups to establish a hierarchy structure, which is the first step to organize each sector, including harvesting periods and marketing. This process will take time because the farmers are afraid of new organizational structures.

PRAES is collaborating with the Department of Agriculture to develop an educational program to promote local production and consumption through school lunch programs. The products that compose part of the menu are beef, poultry, starchy vegetables, fruits, dairy products, and eggs.

The Agricultural Reform is intended to increase agricultural production by 20% in a four-year period and inject $128.3 millions in the infrastructure and $42 millions in the field. It is expected to create 6,000 new jobs and increase the participation in local market products.

The success of this program will depend on the facilities constructed, post harvest practices, the technology used for increasing production, and the implementation of Extension recommended production practices. The implementation of the recommended should result in an increase in efficiency.

The Land Authority privatized the pineapple processing plant and the sugar processing factories. However, although the pineapple processing plant is successful, sugar operations have not achieved the expected success. The 2002 sugar season was marginal due to old planting fields and administrative conflicts. Sugar for consumption is imported to supply the local demand.

In livestock sector the main broiler processing plant is suffering a transformation due to operational problems sanitary practices and lack of funding to operate the business. USDA Officials closed the processing plant twice in a period of three months for not implementing the recommended practices.

PRAES worked to increase production, consumption, and competition with imported goods in the following agricultural activities: ornamentals, vegetables, starchy crops, coffee, fruit (oranges, pineapple, coffee, avocado, passion fruits, and West Indian cherry), livestock, aquaculture, and cassava. This program is oriented to increase availability of products such as coffee, oranges, starchy crops, and vegetables. A total of 14,026 acres were planted. In the livestock sector a total of 2,384 acres of forages were established, 209 facilities were improved, and 201 waste disposal systems were improved.

It is expected that the farmers will be able to organize and increase their profits and market participation with adequate coordination.

I. KEY THEME – AGRICULTURAL COMPETITIVENESS

A. The Puerto Rican agricultural sector includes crops and livestock. The crops reported are coffee, sugarcane, vegetables, starchy vegetables, fruit, grains, and legumes.

Intensive training in recommended sustainable coffee propagation, production and post harvest practices were emphasized. One thousand eight hundred and fifty-four (1,854) coffee farmers were trained in production, propagation and handling of green coffee beans.

The government privatized the sugarcane sector to make the operations more efficient and self-sufficient. The 2002 sugarcane season was marginal. Seventy (70) sugarcane producers were oriented in production and farm management practices.

The starchy crop sector increased production due to pest resistant varieties used and the adoption of better harvesting and post harvesting techniques. Four thousand one hundred and forty-five (4,145) farmers were trained in recommended starchy crop practices to make them more efficient.

The fruit sector is the most diverse and with growing capacity. The fruit demand and farmer's interest in the sector have increased. The biggest effort was with the recommended production practices. Three thousand and forty-eight (3,048) farmers were trained on the latest quality, post harvesting, and disease prevention production practices.

The vegetable sector is also growing rapidly among farmers. A total of 1,721 farmers were trained in the recommended production practices and 1,427 were trained in hydroponics systems.

The production of grains and legumes has been growing in the northern and southern parts of the island. A group of farmers has shown interest in planting in the mountain region. Two hundred and fifty (250) farmers were trained in the recommended production practices.

A train-the-trainer workshop was offered to agricultural agents by FDA and JIFSAN on good agricultural practices.

The livestock sector includes poultry, swine, beef, forage, and dairy. The poultry sector includes layers and broilers. The layer sector has gained participation in the local market. Local producers supply 31% of the demand. On the other hand, the broiler sector is in the process of restructuring. One hundred and forty-five (145) farmers were trained in the recommended production practices, business administration, and farm safety.

The swine sector decreased production because farmers did not meet the environmental laws. The per capita consumption increased mainly due to imports at low prices. Five hundred and seventy-eight (578) swine producers were oriented in the recommended production practices.

The beef sector is still facing a continuous competition from imports, which decrease participation in the local market. One thousand and forty-seven (1,047) beef farmers were trained in the recommended production practices.

The forage sector increased mainly due to dairy activities to reduce dependency on concentrated feed. Six hundred and seventy-seven (677) farmers were oriented in the recommended production practices.

The dairy sector holds the first position by income of all agricultural activities. The continued technical support by Extension personnel has contributed to maintaining the Grade A classification. Ninety-eight per cent (98%) of 380 dairy farmers meet the parameters for somatic cells and bacterial count.

The group of other livestock is composed by small farmers like goats, sheep, honeybees, rabbits, and horses. Extension personnel are working with this group to make them more profitable. Six hundred and sixty-seven (667) persons were trained in the recommended production practices.

Sixteen thousand and nine (16,009) persons were oriented by Extension personnel on the suitable practices for a high efficiency production in all crops.

B. Impact – Of 1,854 coffee producers oriented, 1,021 (55%) adopted the recommended production practices. Two thousand three hundred and forty-five (2,345) acres were planted of coffee. Two hundred and forty-four (244) increased their production per acre.

Thirty-four (34) farmers adopted the recommended sugarcane production practices out of a total of 70 farmers oriented.

Four thousand one hundred and forty-five (4,145) farmers adopted the recommended production practices in starchy crops. Six thousand eight hundred and eighty-five (6,885) acres were planted of starchy crops: 4,329 of plantains, 1,012 of bananas, and 1,544 of starchy root crops.

One thousand four hundred and seventy-four (1,474) fruit producers adopted the recommended production practices and post-harvesting. Seventy-nine (79) farmers increased their add value to their crops. Two thousand three hundred forty-four (2,344) acres were planted of different fruits.

Of all vegetable farmers oriented, 721 (42%) adopted the recommended production practices and 860 (60%) adopted the recommended hydroponics practices.

One hundred and fourteen (114) producers (46%) of grains and legumes adopted the recommended production practices and seven increased their income.

A total of 145 poultry producers were oriented regarding poultry production; of these, 29 adopted the recommended practices, 29 improved farm facilities, six identified changes in their business, and three implemented risk management techniques.

Two hundred and seventy-three (273) swine producers adopted the recommended production practices, 77 increased their income, and 86 improved their facilities.

Five hundred and thirteen 513 (49%) beef producers adopted the recommended production practices, 53 improved their facilities, and 128 increased their herd size.

Two hundred and twenty-eight 228 farmers adopted the recommended forage production practices. Fifty-eight (58) farmers planted 2,384 acres of pastures.

Three hundred and seventy-three (373) dairy producers adopted the recommended dairy production practices, 96 dairy facilities were improved, and 62 waste disposal systems were improved. Of 97 farmers registered in the

dairy herd improvement program, 67% improved their efficiency in production by cow.

A total of 283 livestock producers (goats, sheep, honeybees, rabbits and horses) adopted the recommended production practices.

C. Source of Federal Funds – Smith Lever 3(b), 3(c) Funds

C. Scope of Impact – State specific

II. KEY THEMES – AQUACULTURE

A. The aquaculture sector is growing and is in the process of production organization. There is a high demand for these products. Consumers paid a high price for shrimp and fish. This sector is being promoted through educational activities and printed material. Two hundred and twenty-five (225) farmers were oriented in management and business financing.

B. Impact – A total of 69 farmers improved their facilities. Twenty (20) farmers adopted the recommended practices in farm safety. Nine (9) farmers increased their income.

C. Source of Federal Funds – Smith Lever 3(b), 3(c) Funds

D. Scope of Impact –State Specific

III. KEY THEMES: ORNAMENTAL/GREEN AGRICULTURE

A. There is great demand in the ornamentals sector. However, it has experienced a deceleration due to low activities in the construction sector. The lack of organization among producers has created a market disruption and overstock. Two hundred and fifty-two (252) ornamentals producers were trained in the recommended production practices.

B. Impact – A total of 64 ornamental producers adopted the recommended production practices. Twenty-one (21) persons established their own business and 25 increased their income.

C. Source of Federal Funds – Smith Lever 3(b), 3 (c) Funds

D. Scope of Impact – State Specific

KEY PROGRAM COMPONENT(S)

In order to face the challenges related to production, marketing, and safety PRAES developed and offered several activities to the public. One of the methods is through trainings on various topics, such as the use of safety equipment, personal protective equipment, proper use of pesticides, health and occupational safety laws, and safe use of agricultural machinery. These trainings are offered to agronomists, farmers, and crop producers. Different means of communication used are radio, newspapers, brochures, and electronic mail. In addition, demonstration farms and field tests are also established.

Another strategy to help face agricultural challenges is to develop technical guides in management and marketing practices. The College of Agricultural Sciences coordinates and develops research activities, and is responsible to implement the program and divulge research results. For marketing purposes, product classification and packaging techniques were established.

Several ideas were developed to ensure the quality of products is enhanced. One of them entails the utilization of genetically improved plants to increase yields and make them resistant to pests and diseases. A weed control program was also established, along with an effort to emphasize soil and environment protection. Furthermore, superior breeders are being imported to introduce superior traits. New structural designs for breeding farms are being used to improve efficiency and management. Seminars are offered to improve product quality, involving both government and private sectors.

INTERNAL AND EXTERNAL LINKAGES

Internal

Personnel of the College of Agricultural Sciences, the PRAES, the Agricultural Experiment Station, and the Sea Grant Program help with trainings, research, and information sharing.

External

The Puerto Rico Department of Agriculture helps with technical assistance and incentive programs; the Natural Resources and Conservation Service helps in the implementation of practices to save the natural resources and the environment; and the Department of Labor is a key contributor in divulging information regarding labor laws and the importance of safety at the work place.

The Farm Service Agency is sponsoring the Small Farmers' Outreach Training and Technical Assistance Program. It intends to educate the small farmers on farm management.

The private sector contributes as part of this educational effort; among these are various associations, food importers and distributors, as well as food processors and farmers. The United States Department of Agriculture is also part of this challenge by contributing its technical knowledge and research information.

Several proposals were submitted to the Southern Agriculture Research and Education (SARE), on livestock management disposal, to Rangeland Research Grant Program, and to McIntire Stennis for germplasm storage and production. Other external collaborators are the Department of Animal Industry of the University of Florida, the Caribbean Basin Administrative Group (CBAG), and the National Science Foundation.

TARGET AUDIENCES

The target audiences are farmers, farm personnel, agricultural entrepreneurs, packers, 4-H members, members of agricultural and professional associations, people from the private sector, and personnel from agencies such as the Department of Agriculture, the Natural Resources and Conservation Service, and the College of Agricultural Sciences.

EVALUATION

Question 1: What were the reactions of participants toward the training?

Question 2: What is the level of attitude, skills and aspirations of participants regarding the adoption of adequate agricultural practices?

Question 3: What is the level of adoption of agricultural practices among participants of non-formal education training?

Evaluation Source: Published Data of Extension Annual Achievement (2001-2002).

Starchy Crops

Question 1: A total of 4,145 farmers were trained, and 6,885 acres of starchy crops were established.

Question 3: Two thousand six hundred and thirty two (2,632) farmers increased their agricultural production. One thousand and sixty-five (1,065) farmers adopted recommended farming practices and 115 persons increased their income as a result of adopting agricultural management practices. Seventy (70) persons increased their value added of agricultural products.

Fruit

Question 1: Three thousand and forty-eight (3,048) farmers were trained. Two thousand three hundred forty four (2,344) acres were established. Seventy-eight (78) farmers were trained regarding value added.

Question 3: Four hundred and fifteen (415) farmers increased their agricultural production per acre. Three hundred and eleven (311) farmers adopted post-harvest practices in fruits. Two hundred and six (206) farmers adopted pest and disease control practices.

Vegetables

Question 1: One thousand seven hundred and twenty-one (1,721) farmers received orientation in recommended vegetables production practices. One thousand four hundred and twenty-seven (1,427) persons received training in hydroponics.

Question 2: Two hundred and forty-six (246) persons increased their knowledge regarding value added of agricultural products.

Question 3: Seven hundred and twenty-one (721) farmers adopted the recommended vegetables production practices, for an adoption rate of 42%. Eight hundred and sixty (860) persons adopted the recommended practices for hydroponics projects, for an adoption rate of 60%.

Grains and Legume

Question 1: Two hundred and fifty (250) farmers were trained in recommended practices of grains and legumes production. Seven (7) persons were trained in the concept of managing change in agriculture. Seven (7) persons received orientation in the concept of value added in agriculture.

Question 3: One hundred and fourteen (114) farmers out of 250 adopted recommended grains and legume production practices, which represents a 46% rate of adoption. Three (3) farmers increased the agricultural value added of their products.

Coffee

Question 1: A total of 1,854 farmers were trained.

Question 2: One hundred and sixty-four (164) farmers acquired knowledge in business administration.

Question 3: Two hundred and forty-four (244) farmers increased their coffee production per acre. Ninety-six (96) farmers improved their coffee quality and 45 increased their income.

Sugarcane

Question 1: A total of 70 farmers received training in recommended sugarcane production practices.

Question 3: Thirty-four (34) farmers adopted recommended management practices. Twelve (12) farmers increased their income.

Aquaculture

Question 1. A total of 225 farmers were trained in aquaculture, and 575 persons received orientation and educational material.

Question 3: Sixty-nine (69) farmers established or improved their facilities. A total of 20 farmers adopted farm safety practices.

Poultry Production

Question 1: Eighteen (18) farmers were trained in recommended management practices to improve egg production and 33 farmers to improve meat production.

Question 3: Eight (8) farmers adopted recommended management practices for egg production and 12 farmers for meat.

Swine Production

Question 1: A total of 578 swine producers were trained in the recommended swine production practices.

Question 3: Two hundred and seventy-three (273) farmers adopted the recommended production practices. One hundred and one (101) farmers increased their production. Seventy-seven (77) farmers increased their net income and improved their marketing systems. One hundred and twenty-one (121) swine producers improved their waste disposal management systems.

Other Livestock (Goats, Sheep, Honeybees, Rabbits and Horses)

Question 1: Six hundred and sixty-seven (667) persons were trained in the recommended production practices for the five enterprises

Question 3: Two hundred and eighty-three (283) persons adopted the recommended management practices for the five enterprises. The adoption rate was 42%.

Beef Production

Question 1: A total of 1,158 beef producers were trained in recommended beef production practices.

Question 2: One hundred and sixty-five (165) farmers planned to adopt the recommended beef production practices.

Question 3: Two hundred and ninety (290) farmers adopted the recommended practices, for an adoption rate of 25%.

Forage

Question 1: Six hundred and seventy-seven (677) forage producers were trained in recommended forage production practices.

Question 3: Two thousand three hundred and eighty-four (2,384) acres were planted to forage. Two hundred and twenty-eight (228) farmers adopted the recommended forage practices, for an adoption rate of 34%.

Ornamental/Green Agriculture

Question 1: Two hundred and fifty-two (252) ornamentals producers were trained in the recommended production practices and 35 farmers received training in tree production techniques. One hundred and eighty-four (184) persons were oriented in ornamental nurseries.

Question 2: A total of 77 persons planned to establish their own nurseries.

Question 3: Nine (9) persons established their own nurseries. A total of 14 persons increased their income. Fifty-eight (58) farmers adopted production techniques in ornamentals. Six (6) farmers adopted production techniques in tree production.

Dairy Production

Question 1: Three hundred and eighty (380) dairy farmers were trained in the recommended dairy quality practices.

Question 3: Two hundred and ninety-two (292) farmers adopted the recommended dairy quality practices.

OBJECTIVES, PERFORMANCE GOALS AND OUT PUT AND INPUT INDICATORS

OBJECTIVE 1
To produce new and value-added agricultural products and commodities.

PERFORMANCE GOAL 2
To annually increase agricultural producer awareness, understanding, and information regarding the production of new and value-added commodities and products in U.S. agriculture in which CSREES partners and cooperators play and active research, education, or extension role.

INDICATOR 1

A. The total number of persons completing non-formal education programs on production of new and value-added commodities and products. (output)
B. The total number of these persons who actually adopt one or more recommended practices or technologies within six months after completing one or more of these programs. (outcome)

Year	Indicator 1A (Output)		Indicator 1B (Outcome)	
	Target	Actual	Target	Actual
2000	1286	1080	235	134[1]
2001	1316	1714	243	253
2002	1343	1202	252	128[1]
2003	1372	0	257	0
2004	1374	0	261	0

[1]The low amount of people adopting the recommended practices is due to market changes and imports of the products.

OBJECTIVE 2
To increase the global competitiveness of the U.S. agricultural production system.

PERFORMANCE GOAL 2
To increase agricultural producer awareness, understanding, and information on improving the productivity and global competitiveness of the U.S. agricultural production system in which CSREES partners and cooperators play and active research, education, or extension role.

INDICATOR 1

A. The total number of persons completing non-formal education programs to improve the productivity and global competitiveness of the U.S. agricultural production system. (output)
B. The total number of these persons who actually adopt one or more new production techniques or strategies within six months of completing one or more of these programs. (outcome)

Year	Indicator 1A (Output)		Indicator 1B (Outcome)	
	Target	Actual	Target	Actual
2000	20066	22747	11216	9873
2001	20461	22845	11517	11792
2002	20828	22076	11955	11784
2003	21106	0	12264	0
2004	21403	0	12621	0

OBJECTIVE 4
To improve decision-making on public policies related to the productivity and global competitiveness of the U.S. agricultural production system.

PERFORMANCE GOAL 2
To annually increase the effectiveness of constituent and citizen participation on public policy issues affecting the productivity and global competitiveness of the U.S. agricultural production system.

INDICATOR 1

A. The total number of persons annually completing non-formal education programs on topics related to public policy issues affecting the productivity and global competitiveness of the U.S. agricultural production system. (output)
B. The total number of those persons who make use of such knowledge within six months of completing one or more of these programs. (outcome)

Year	Indicator 1A (Output)		Indicator 1B (Outcome)	
	Target	Actual	Target	Actual
2000	986	762	400	149[1]
2001	978	492[1]	406	189[1]
2002	1007	419[1]	418	106[1]
2003	1000	0	423	0
2004	1015	0	424	0

[1]The adoption of new practices are more difficult to implement due to factors like new environmental laws, climate, economical impact in farmers, families and global economy competition.

PROGRAM DURATION

Long Term (5 years)

ALLOCATED RESOURCES

Fiscal Year	Resources			
	State	Federal	Others Federal	Total
2000		$2,196,388.17	$75,070.00	$2,271.458.17
2001		$2,560,027.20		$2,560,027.20
2002		$3,065,790.62		$3,065,790.62
2003				
2004				

ESTIMATED FTE COMMITMENT

Year	Professional			Professional		
	1862	1890	Other	1862	1890	Other
2000	79.99					
2001	78.86					
2002	78.48					
2003						
2004						

EDUCATION AND OUTREACH PROGRAMS

PRAES has developed two agricultural programs in the crop and livestock area. These programs are composed by two major commodities: 1) crops which include coffee, sugarcane, starchy vegetables, fruit, grains and legumes, and ornamental plants; and 2) livestock which includes honey bees, aquaculture, poultry, goats and sheep, horses, swine, rabbits, beef, dairy cattle, and forage.

Extension county agents, through the educational and outreach programs transfer new technology developed by the Agricultural Experiment Station to farmers and the general public. They use mass media communications, farms, demonstrations, leaflets, brochures, and short courses to disseminate the information to the public.

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GOAL 2 - A SAFE AND SECURE FOOD AND FIBER SYSTEM

OVERVIEW

Food Security – In Puerto Rico agriculture represents only 0.67% of the internal gross product (Economic Report to the Governor 1996). In 1998, the total farmland was estimated in 865,478 *cuerdas*. Puerto Rico is one of the most densely populated countries in the world with a population of 3,808,610 persons (2000 Census) and 3,435 square miles of land: 1,112 persons per square mile. Based on the report of the Puerto Rico Department of Agriculture (1992) the island imports 69% of the food from the United States. With a food backup supply of only 12 days, food security in Puerto Rico could be affected in case of a National emergency (war, mayor disaster, change in public policies etc.) and the subsequent reduction of exports to the Island, which could result in a hunger crisis. However, as food supplies in stores are adequate, consumers are virtually unaware of the problem; and the government and the people are not prepared to face such crisis.

It is indispensable that local food production be increased in a competitive manner; this includes government planning to preserve agricultural land. Awareness must be created within the government at state and local levels, as well as with public and private entities, of the urgent need of increasing agricultural production for the stability and development of Puerto Rico. It is especially important to get this message across to children who in the future will be the most affected if our agriculture continues diminishing.

Affordability – Puerto Rico benefits from USDA federal food and nutrition assistance programs (Nutrition Assistance Program-NAP, Child Nutrition Programs, School Lunch and Breakfast Programs, the Supplemental Nutrition Program, WIC, and others) to assure children and low-income families access to a healthy diet. During the first six months of fiscal year 2001-2002, a monthly average of 1,049,030 people (27.5% of total population) received an average of $97.58 a month per person from the NAP to buy food. According to the Census Bureau (1999), 61% of the children in Puerto Rico live in households with incomes below the poverty level. Thus, it becomes imperative for families to receive adequate education regarding the use of affordable and nutritionally appropriate foods by using the Puerto Rico Food Pyramid as a basis for their selection.

According to the Puerto Rico Department of the Family, the money available to low-income families is minimal to provide an adequate diet. In October of 1998, PRAES initiated a project with a food security affordability component to help low-income families become more conscious of food security by improving their use of available funds. These people attended a 6-session course dealing directly with the issues of food affordability including menu planning, food selection and purchasing practices, as well as the use of locally grown foods.

Food Safety: Farmers, Wholesalers, Retailers – The Puerto Rico Agricultural Extension Service (PRAES) developed ongoing food safety programs at different levels with a

from-the-farm-to-the-table approach. There are multi-county cooperation and Extension personnel cooperating and disseminating research results to clientele. The seafood and meat HACCP regulations and the Good Agricultural Practices guidelines are recent examples where the agency has started to provide training to the agronomists and farmers. PRAES, as part of the College of Agriculture of the University of Puerto Rico at Mayagüez, participated in a memorandum of understanding with the US Department of Health and Human Services, the Food and Drug Administration, and the US Department of Agriculture Food Safety and Inspection Service to establish a framework for the Parties to collaborate on mutually agreed upon activities in the scientific and regulatory areas.

Food Safety: Integrated Pest Management – Integrated Pest Management (IPM) is defined as a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health and environmental risks. IPM systems can help restore the environment and provide alternatives on more effective pest control to improve yield, quality, and safety of food and fiber. IPM is a key component of sustainable agriculture that induces producers to innovate and adopt new, more environmentally compatible technologies. Pest control represents approximately 34% of crop production costs to farmers and losses due to pests continue 30 to 75% with current pest control strategies. In addition, new pests that reduce profitability continually challenge farmers.

IPM strategies emphasize areas of impact such as safe pesticide use in the farm and control of pests in homes and food service establishments. According to FDA evaluation on food safety standards, 80% of the establishments have poor compliance with pest management strategies. Therefore, IPM emphasizes areas of impact such as households, food service establishments and others.

Food Safety: Mastitis Prevention Program – The milk industry in Puerto Rico includes 380 dairy farmers. Although they are in full compliance with FDA/IMS Sanitary Standards, mastitis is still a concern at the farm level where management and climatic elements sometimes play an important role in the development of the disease. Statistics for 2001-2002 of the Puerto Rico DHIA (Dairy Herd Improvement Association) and Puerto Rico Dairy Health Project show that 98% of the dairy herds reached somatic cell counts below 750,000 cells/ml., and bacteria counts below 100,000/ml; of these, 80% reached somatic cell counts below 400,000 cells/ml., and 81% reached bacteria counts below 30,000/ml.

Food Safety: Consumers – PRAES strengthened coordination with eight state and federal agencies through the Partnership for Food Safety Education initiated in 1998 to develop and support food safety education for consumers including the *Fight BAC!* campaign. The Puerto Rico Partnership for Food Safety Education organized the proclamation activity and carried out mass media activities during September, the National Food Safety Month and throughout the year. During this fiscal year the *Fight BAC!* campaign focused on *SAFE FOOD in an emergency*. Thousands of consumers were benefited through

courses, radio and TV programs, press articles, exhibitions, posters, brochures, and other educational materials.

The project "The Future Chef" consists of a 5-lesson course (one of which is "Fight BAC!"), and local and state competency. This project is designed to initiate children and youth in the art of healthy and safety food preparation in which participants can learn and practice safe food handling procedures. There are two curriculums: one for children under 8 years old and the other for children 9 years old and over.

Food Safety: Persons in charge of Food Establishments – Puerto Rican food establishments had a great food employee's turn over without food safety training. Continuous training of HACCP-type systems should assist restaurants and other food-service institutions in improving their food-safety practices. PRAES has worked in partnership with the Puerto Rico Department of Health Food Establishment Hygiene Program to offer the Food Safety and HACCP certification course to persons in charge of food establishments. The main reference of this course is the FDA Food Code (2001); the 1997 edition, which was translated into Spanish as part of the project No. *96 - EFSQ - 1 – 4171*, was updated in 1999. This Code was adopted and approved as the Food Hygiene Regulation No. 6090 of the Puerto Rico Department of Health on February 2000. As part of this regulation, all persons in charge of food establishments must approve a Food Safety Certification Course.

I. KEY THEME – FOOD SECURITY OF SUPPLIES

A. Ninety (90) children and youth attended the 5-lesson course designed to help them understand the importance to assure food supply in Puerto Rico.

B. Impact – Of the 90 youth that completed the course: 69 planted one or more vegetables or herbs, 52 became aware of the impact of urban expansion on agriculture, 32 tried foods that they previously had not eaten, 17 were successful in their plantings, and 20 expressed concerns about the security of foods for the island.

C. Source of Federal Funds: Smith Lever 3(b), 3(c) Funds.

D. Scope of Impact: State Specific

II. KEY THEME – FOOD SECURITY: AFFORDABILITY

A. Two thousand eight hundred and fifty-two (2,852) participants receiving nutrition assistance of the Puerto Rico Department of the Family attended a 6-session short course to improve supermarket strategies, the use of resources for obtaining food, and improve nutrition.

B. Impact – One thousand eight hundred and eighty-seven (1,887) NAP participants completed the course, 1,640 planned to change one or more practices, and 700 reported that they had managed to change one or more practices six months later. One hundred and eight (108) volunteers spend 1,329 hours in support of the program. The total number of persons evaluated who reported a change in behavior in the use of supermarket strategies and the use of resources for obtaining foods are:

- 423 improved their planning of meals and snacks
- 401 followed the plan they developed
- 543 selected alternatives that are more economical and of the same nutritional value
- 394 used food harvested in Puerto Rico
- 537 now make a shopping list
- 632 improved their use of supermarket specials
- 607 now compare prices before they buy
- 627 read the label on food containers to help them make choices

On an FTE basis the home economists increased their impact in terms of number of NAP recipients for these courses in the following way: an increase in the number registered of 107%, an increase in the number who completed the course per FTE of 119%, an increase in the number who planned to adopt of 106%, and an increase in the number who reported adoption of new practices of 155%.

C. Source of Federal Funds: Smith Lever 3(b), 3(c) Funds.

D. Scope of Impact: State Specific

III. KEY THEME – FOOD SAFETY: FARMERS, WHOLESALERS, AND RETAILERS

A. Training on good agricultural practices (GAP) in fruits and vegetables was held from March 11-15, 2002 with the participation of 30 persons from PRAES, nine from the Puerto Rico Department of Agriculture, and nine from the Faculty of Agriculture and the Agricultural Research Station.

The PRAES meat, egg, and poultry specialists participated in the organization of the First Puerto Rico Animal and Egg Production Food Safety Production Conference.

B. Impact – Forty (40) conferences were presented in a joint effort with FSIS and FDA professionals. Two hundred and fifty (250) farmers, wholesalers, and retailers attended the 2-day Conference. The proceedings are underway.

The PRAES personnel offered two trainings on GAP for fruits and Vegetables. The meat and poultry specialists helped seven farmers to develop good farm production practices and developed a short course to inform meat, poultry, and egg producers, processors, wholesalers, and retailers about food safety and their responsibilities dealing with their products.

C. Source of Federal Funds: Smith Lever 3(b), 3(c) Funds.

D. Scope of Impact: State Specific

IV. KEY THEME – FOOD SAFETY- INTEGRATED PEST MANEGEMENT

A. Twelve thousand nine hundred (12,900) cuerdas are under IPM practices in coffee, plantain, banana, and citrus crops, with an economic benefit to farmers of $15-30 per cuerda.

Two hundred and twenty five (225) samples were processed in the diagnostic clinic with a direct impact of $375,000 saved because of the correct diagnose of the pest. Two hundred (200) farmers were oriented in IPM through reports with specific recommendations to control the diagnosed pest.

B. Impact – During fiscal year 2001-2002, 2,425 farmers adopted one or more IPM practices: 600 farmers in coffee, 400 farmers in fruits, 1,300 farmers in starchy crops, banana and plantain, and 125 farmers in vegetables.

C. Source of Federal Funds – Smith Lever 3(b), 3(c) Funds

D. Scope of Impact – Specific

V. KEY THEME – FOODBORNE PATHOGEN PROTECTION MASTITIS PREVENTION PROGRAM

A. Agronomists visited 380 dairy farmers in 7,261 occasions to offer technical orientation on how to maintain bacteria counts under 100,000 units of colonies per milliliter and somatic cells under 750,000 cell/ml. They were also oriented on how to reduce antibiotic residues in milk.

B. Impact – Three hundred and seventy-two (372) dairy farmers (98%) actually adopted the practices.

C. Source of Federal Funds – Smith Lever 3(b), 3(c) Funds

D. Scope of Impact – State Specific

VI. KEY THEME - FOOD SAFETY FOR CONSUMERS

A. The food safety education for consumers was carried out in four PRAES Programs and in other programs through the Puerto Rico Partnership for Food Safety Education. Eight thousand six hundred and two (8,602) consumers completed non-formal, education programs on food safety; of these, 4,324 adopted one or more recommended food safety behaviors or practices. However, it is difficult to measure the actual number of consumers reached and the number of that changed their behavior as the personnel of the eight agencies in the partnership develop different activities to promote awareness, understanding, and information among their clientele in 78 municipalities and they do not count with records of their educational efforts. The members of the partnership also carried out various radio and TV programs and wrote press articles for local (municipal) newspapers.

B. Impact – Consumers that completed a course and fulfilled auto-evaluations demonstrated the adoption of the following recommended practices: 934, reduced cross contamination of foods; 1,028 improved their hand washing practices, 966 increased their sanitation of surfaces, 788 maintained an adequate temperature in the refrigerator, and 991 improved their cooking practices so that microorganisms would not survive.

C. Source of Federal Funds – Smith Lever 3(b), 3(c) Funds

D. Scope of Impact – State Specific

VII. KEY THEME – FOOD SAFETY: FUTURE CHEF COMPETENCY

A. Two hundred and thirty (230) children and youth participated in the Regional Future Chefs Competition (five regions).

B. Impact – Ninety per cent (90%) of the participants demonstrated the following good food handling practices: wash their hands every time they change from one food preparation to another, separate ready to eat from raw foods, avoid cross contamination, maintain perishable food in refrigerators, and cook at the recommended temperature.

C. Source of Federal Funds – Smith Lever 3(b), 3(c) Funds and State
D. Scope of Impact – State Specific

VIII. KEY THEME – FOOD SAFETY CERTIFICATION COURSE

A. Fifty (50) food safety courses were carried out in 10 municipalities, the San Juan Region and the Mayagüez Region, with local persons in charge of food establishments. Three PRAES specialists and eleven home economists were instructors (4 FTE) in coordination with personnel of the Department of Environmental Health. One thousand seventy hundred and forty four (1,744) participants attended the certification course and text.

B. Impact – One thousand six hundred and ninety three (1,693) persons in charge of food establishments approved the course requirements: attended the 12 lessons, approved certification tests with scores over 70%, started to use a methods to control food temperature/time, and auto-evaluated practices using a pre-post evaluation form. The following analysis demonstrates the differences between the practices carried out before and after taking the course:

	Before FSCC %	After FSCC %
1. Refuses perishable foods over 45°F during receiving.	14	59
2. Employees washing their hands often.	76	89
3. Facility has separate cutting table and utensils for meat and for vegetable and fruit preparation.	16	49
4. Ingredients to prepare sandwiches and salads were maintained to 41°F o less.	43	76
5. Utilized correct method to defrost.	66	91
6. Used one or both of the following methods to maintain hot food to 140°F or more.		
Use thermometer and/or	1	9
Use time	82	98
7. Used measures to cool hot foods quickly to lower from 140°F to 41°F in six or less hours.	67	93
8. Used gloves and utensils while preparing and serving ready to eat food.	50	79
9. Reheat cooked foods in the stove or oven at the internal temperature of 165°F or more.	12	52
10. Wash utensils with hot water and soap, rinse, and in the third compartment used a solution of chlorine, iodine or quaternary.	71	90
11. Utilized a certified exterminator to keep pest management program.	91	97
12. Exclude or restrict food employees when have symptoms		
13. related to the foodborne disease as settle the FDA Food Code.	32	58
14. Use appropriated method to maintain hot foods to 140°F or more.	25	77

C. Source of Federal Funds – Smith Lever 3(b), 3(c) Funds

D. Scope of Impact – State Specific

IX. KEY THEME – FOOD SAFETY: INSTITUTIONAL PERSONNEL

A. During fiscal 2001-2002 the home economists trained a total of 204 professionals from other institutions on food safety. The food specialists trained 349 PRAES professionals and personnel of the other agencies on food safety.

B. Impact - One hundred and fifty one (151) employees of school cafeterias completed a 4-lesson course entitled "Safety Decisions in Food Handling". Twenty six (26) school cafeterias comply with HACCP risk control standards.

C. Source of Federal Funds – Smith Lever 3(b), 3(c) Funds

D. Scope of Impact – State Specific

KEY PROGRAM COMPONENT (S)

Security of supplies - Develop a 5-session course designed for children and youth to help them understand the importance of agriculture in Puerto Rico.

Agronomists will establish or support farmer's markets, organized groups or cooperatives, to expand access to affordable nutritious local food supplies.

PRAES professionals will offer short courses to the public, teachers, and school children about the importance of agriculture in general and local agriculture in particular.

Affordability - The Program to Improve Nutrition in Puerto Rico (in Spanish "Programa para Mejorar la Nutrición en Puerto Rico"--MeNu) has three basic components: individualized group teaching, social marketing, and the formation and fortification of coalitions at the local level. Individualized group teaching consists of a short 6-lesson course with follow-up two to six months later to assess impact over time. The course includes sessions to assess the current situation in terms of eating behaviors with emphasis on what they are doing right, meal planning, shopping behaviors, and food preparation. Social marketing is planned by the coalitions that write mini-proposals for their communities to improve a specifically identified food access problem.

Implement the MeNu program, which focuses on individuals and needy families to raise awareness and to promote the better use of food checks and other food programs.

Use a short course based on Belenky *et al,* and behavior modification techniques. In addition, social marketing was carried out through talks to community groups, newsletters, bulletins, exhibits, radio, TV, bulletin boards, and other mass marketing activities. Coalitions will be strengthened at the community level.

Food Safety - Farmer, Wholesaler, Retailer - PRAES trains the staff personnel and agronomists in specific farm areas such as beef cattle, poultry, eggs, fruit, and vegetables, to qualify them to prepare programs to educate farmers, wholesalers, and retailers about food management skills leading to less contaminated and better quality foods. The University of Puerto Rico, the Food and Drug Administration (FDA), and the Food and Safety Inspection Service (FSIS) established a 5-year cooperative training and research program in the product areas subject to their regulation. As part of this partnership, FDA's specialized personnel train agronomists in farm food safety concerns related to emerging new pathogens or new vectors for pathogens, toxicity of novel products, and differing needs and applications for pesticide controls in tropical climates. PRAES will also collaborate in future international training Spanish speaking audiences.

Food Safety: Integrated Pest Management (IPM) – Train-the-trainers agronomists and home economists were trained on how to use the knowledge of pest identification and alternative control measures to orient the clientele. The methods used to achieve and transfer pest control information were: training meetings, short courses, seminars, Extension publications, educational materials, radio and TV programs, and an IPM database program. The IPM program reaches audiences through meetings and contacts with other agencies, mass media, circular letters, and articles to journals, and the press. The office of the IPM Coordinator prepares checklists and surveys with the help of specialists and the Extension Evaluator to evaluate the adoption of IPM strategies in selected program areas.

Food Safety- Mastitis Prevention Program – Farm visits to train dairy farmers on mastitis management and quality milk production and to create awareness of the importance of proper antibiotic use, temperature control, and sanitation to prevent contamination of raw milk. Educational materials and slide sets were prepared for this purpose. A close interagency coordination is maintained with law enforcement agencies like the Puerto Rico Departments of Health and Agriculture.

PRAES specialists at state level developed curriculums and program strategies for specific target clientele. They offer formal education or train-the-trainer courses to field personnel on the use of the teaching materials developed. The specialists also teach students of the College of Agricultural Sciences, and train the personnel of other agencies, industry, and the private sector. The agronomists and home economists offer non-formal teaching on food related matters to specific target clientele: farming, small business processors, food establishments, and consumers. Use of volunteers as community leaders has been an integral part of PRAES programs because they are the link to reach low-scholastic and low-income clientele.

Food Safety-Consumers – Food safety education for consumers is part of four PRAES Programs: Regular, MeNu, EFNEP, and 4H, and the Puerto Rico Partnership for Food

Safety Education. The Fight BAC educational campaign materials were adopted and adapted in Spanish that was used in the educational activities developed for clientele. These materials were also distributed to health educators, and nutritionist-dietitians through their respective associations. The partnership organizes the activity for the Food Safety Month proclamation and carries out mass media activities.

Home economists establish partnership committees at local level to offer food safety lessons and educational activities through all PRAES programs addressed to consumers: EFNEP, 4H, MeNu, and the Consumer and Family Sciences Regular Program. Use of volunteers as community leaders has been an integral part of PRAES programs because they are the link to reach low scholarship and low-income clientele.

Food Safety- Children and Youth - The "Future Chef's" consists of a 5-lesson course (one lesson of *Fight BAC!*) and finals competitions. PRAES home economists at local level recruit youth and offer the course. Participants learn safety food handling procedures while learning about nutrition and practicing food preparation. The best are selected to participate in a food preparation competition at regional and state level.

Food Safety- Persons in Charge (certification course) - The PRAES and the Food Hygiene Division, Puerto Rico Department of Health have been working together during the past years to train home economists and environmental health inspectors to offer the Food Safety Certification Course to personnel in charge of food establishments. The 1997 Food Code and course were originally prepared in Spanish as part of the USDA-CRSEES Project No. 97-EFSQ-1-0096. Every year the project director prepares and revises the contents and art of the 12-lesson course based on the Food Code, 2001 (FDA) and Managing Food Safety: A HACCP Principles Guide for Food Establishments, April 1998. The Food Hygiene Division of the Department of Health updates the 1999 Food Code.

PRAES home economists and inspectors of the Department of Health receive 4-day training about the contents of the twelve lessons and the administrative procedures.

Food Safety- Institutional Personnel – (high-risk clientele services) - The objective is to increase knowledge and improve understanding on food safety and HACCP application to enhance them to train and to advice food handling employees and offer education to clientele. PRAES home economists' plans at municipal level include offering food safety courses to food employees working with groups vulnerable to foodborne diseases. The curriculum was developed as part of the USDA-CSREES Project No. 96-EFSQ-1-4171. The course titled "Decisiones seguras en el manejo de alimento" (Safe decisions in food management) consists of the following four lessons: micro world, personal hygiene, food receiving and storage, and food preparation and service. At the completion of the course, the home economists evaluate if the HACCP standards were followed to control risk of foodborne diseases.

INTERNAL AND EXTERNAL LINKAGES

Internal

UPR, Mayagüez Campus, Professional Resources - Evaluation Specialist, editors in charge of educational media and support personnel from the Educational Media and Information Office, the Radio and TV Specialist, Press Specialist, Graphic Arts Specialist, External Resources Office, and the Planning and Evaluation Office.

Food Security of supplies – Food and nutrition specialists, agricultural specialists in horticulture and related areas, 4-H specialists, agronomists and home economists, faculty of the Agricultural Economics and Rural Sociology departments of the College of Agriculture, and the Sociology Department of the College of Arts and Sciences.

Food Safety-Farmers, Wholesalers, Retailer - PRAES personnel: aquaculture specialist, entomology specialists (2), poultry and eggs specialist, dairy herd Specialist, meat specialists (3), fruit specialist, starchy vegetables specialist, agronomists; personnel of the Mayagüez Campus-University of Puerto Rico: seafood products specialist and extension agent, SEA GRANT, professors in marine sciences, professors in food microbiology, professors in Food Science and Technology Program, and professors in College of Art and Sciences (Microbiology and Marine Sciences).

Food Safety - Integrated Pest Management (IPM) – Extension IPM Coordinator, entomology Specialists, agronomists and home economists/nutritionists, Crop Protection Department, and the Agricultural Experiment Station.

Food Safety- Mastitis Prevention Program – Extension dairy specialist, agronomists, and Extension dairy agents.

Food Safety-Consumers, and Food Establishments – PRAES personnel: food and nutrition and food technology specialists, nutritionist, home economists, regional supervisors, the Family and Consumer Education Program personnel, and from Mayagüez Campus-University of Puerto Rico: Food Science and Technology Department and SEA GRANT program.

External

Food Security of Supplies and Food Security affordability – The Administration of Socio Economic Development of the Puerto Rico Department of the Family, Nutrition Committee of Puerto Rico, and the Food and Nutrition Commission of Puerto Rico.

Food Safety-Farmers, Wholesalers, Retailer –FDA, USDA-FSIS, the Puerto Rico Department of Agriculture, the Department of Health, Environmental Health Secretary personnel, food processors, and retailers.

Food Safety - Integrated Pest Management (IPM) – Cooperation will continue and efforts will be strengthened with homemakers, the home economist's association, the food service industry, and other government agencies such as the State Department of Health.

Food Safety- Mastitis Prevention Program – US and State Department of Health, the US and State Department of Agriculture, and the US Food and Drug Administration.

Food Safety-Consumers and institutional personnel - Puerto Rico Partnership for Food Safety Education, external personnel are: Director of Food Hygiene Division, Puerto Rico Department of Health, Federal Food and Drug Administration, Director of Nutrition Service, Governor's Office for Elderly Affairs, State Epidemiologist, Epidemiological Division for Transmittable Disease Prevention and Control, Executive Director, Supplementary Nutrition Special Program (WIC), USDA, Agricultural Department, HACCP Assistant, Secretary for Special Services, Representatives, Department of the Family's Child and Family Administration and Head Start, Director of Food and Nutrition Services, State Agency, Department of Education, and the Family Ecology School of the UPR-Río Piedras campus.

Partnerships at local level (organized by PRAES Home Economists) - Puerto Rico Department of Health, Environmental Health Inspectors, Family and Consumers Education Association, communities, cooperatives and non-profit organization consumers groups, Puerto Rico Department of Education, School Food Authority, Puerto Rico Department of the Family, Government day care services for infants, children, elderly, sick persons, etc., churches with day care services for infants, children, elderly, sick persons, etc., "CREA" (an educational rehabilitation center for drug addicts and alcoholics) and other homes for drug addicts in the rehabilitation process, the radio, and the press.

Civic and professional organizations and other collaborators - Puerto Rico Association for Health Education, Puerto Rico College of Nutritionists and Dietitians, Agronomists' Association, Puerto Rico Hotel Schools, Volunteers of the Family and Community Education Association, and other farm associations, food industry marketers and distributors.

TARGET AUDIENCES

People susceptible to foodborne diseases such as handicapped, veterans, children, youth, pregnant women, and elderly are under PRAES served population in all programs. Other specific target clientele by programs are:

Food Security: Primary audience: children and youth of NAP families. Secondary audiences: other low-income children and their families.

Food affordability: Primary audience: People and families who receive food checks or electronic transfer of funds provided by the Department of the Family. Secondary audiences: other low-income children and their families.

Food Safety-Farmers, Wholesalers, Retailer: Farmers, food processors, wholesalers, retailers, fishermen and aquaculturists.

IPM: Health food inspectors, persons in charge of food service establishments and homemakers.

Mastitis Prevention Program: Dairy farmers and dairy managers.

Food Safety-Consumers & Food Establishments – Consumers, 4H Program children and youth, persons in charge of food establishments and employees, and personnel that serve high-risk clientele.

EVALUATION FRAMEWORK.

Evaluation Design - questionnaires

Question 1: What were the reactions of participants toward the training?

Question 2: What is the level of attitude, skills and aspirations of participants regarding the adoption of adequate agricultural practices?

Question 3: What is the level of adoption of agricultural practices among participants of non-formal education training?

Evaluation Source: Published Data of Extension Annual Achievement (2001-2002).

Food Security

Formative evaluation: informal reports by the home economists.
Summative evaluation: Self-reported impact of the short courses done by the home economists.
Evaluation Design: not specified
Evaluation summary: At this time for this program we are depending on self-reported information from the home economists.

Food Affordability
Formative evaluation: focus groups of home economists and participants. Evaluation visits by state specialists to home economists selected randomly.

Summative evaluation: The home economists are asked to record changes that the participants in the classes of individualized group teaching report that they are doing. They also do a group evaluation two to six months after the last class session.

Evaluation design: multiple techniques are used to assure that the information is as accurate as possible. The formative evaluation is three fold: by the home economist each

time she teaches a class, by focus groups of randomly selected home economists and a participant they select to participate, and visits by state staff to randomly selected home economists to evaluate teaching sessions. The summative evaluation is done by having the home economists report on the number of people that have made specific changes in shopping and food procurement behaviors.

Food Safety

Evaluation framework: Comparison of result of all participant pre-post self-evaluation using the practices describe in the specific indicators.

Formative evaluation - Participants receive the Food Safety certification after approving the following requirements: attendance, utilizes a food temperature or time control method, obtains a minimal score of 70% in test.

Summative evaluation: Mechanism to evaluate adoption of practice: pre-post behavior auto evaluation of the participant, temperature or time control methods available for the employees monitoring process, and evidence of using a certificated person to apply pest control products.

Question 1: Five thousand and fifty (5,050) persons attended educational activities concerning food safety to eliminate, reduce or control nutrition related food risks. Five hundred and ninety seven persons completed a course to improve their knowledge on nutrition and food safety. Two hundred and four (204) professionals from different agencies were trained by home economists about foodborne diseases, Food Safety Code and the application of the HACCP system. Twenty six (26) institutions satisfied risk control requirements through an HACCP plan. The food safety specialist trained 349 professionals from PRAES and other agencies. One hundred and fifty one (151) food employees completed the course "Safe Decisions in Food management".

Question 2: Five hundred and ninety seven (597) consumers increased their knowledge upon completion of the course on food safety. Five hundred and ten (510) consumers evaluated after completed the course adopted one or more food safety practices. One thousand seven hundred and forty four (1,744) persons completed a 12-lesson certification course and showed knowledge gain. One hundred and thirty four (134) personnel of establishments that prepare and serve food prepared an HACCP plan.

Question 3: One thousand seven hundred and forty four (1,744) food employees adopted one or more food safety practices.

OBJECTIVES, PERFORMANCE GOAL (S) AND OUTPUT AND OUTCOME INDICATORS

OBJECTIVE 1
The assurance of an adequate food supply

PERFORMANCE GOAL 1

To annually increase consumer awareness, understanding, and information on food accessibility and affordability in which CSREES partners and cooperators plan an active research, education, or extension role.

INDICATOR 1

A. The total number of persons completing non-formal consumer education programs on food access and affordability. (Output)

B. The total number of these persons who actually adopt one or more recommended practices within six months after completing one or more of these programs. (Outcome)

Year	Indicator IA		Indicator IB	
2000	1884	150	855	153
2001	1946	2494	911	780
2002	1990	90	974	2
2003	300		100	
2004	300		100	

PERFORMANCE GOAL 2

To increase the effectiveness of constituent and citizen participation on public policy issues affecting food security (i.e., food access, affordability, and recovery).

INDICATOR 1

A. The total number of persons completing non-formal education programs on public policy issues affecting food security (i.e., food access, affordability, and recovery). (Output)

B. The total number of these persons who actually become actively involved on such issues within six months after completing one or more of these programs. (Outcome)

Year	Indicator IA (Output)		Indicator IB (Outcome)	
2000	482	1933	274	1887
2001	472	335	291	251
2002	538	2,852	470	700
2003	1,400		470	
2004	1,400		470	

The number of participants increased due to the Program to Improve Nutrition in Puerto Rico that had awareness the participants in the better use of food checks and other food programs.

OBJECTIVE 2

To improve food safety by controlling or eliminating food-borne risks

PERFORMANCE GOAL 2

To annually increase the consumer (included children, youth, and adult) awareness, understanding, and information on food safety, foodborne risks and illnesses in which CSREES partners and cooperators plan an active research, education, or extension role.

INDICATOR 1

A. The total number of person completing non-formal, consumer education programs on food safety and/or food borne risks and illnesses. (Output)

B. The total number of these persons who actually adopt one or more recommended food safety behaviors or practices within six months after completing one or more of these programs. (Outcome)

Year	Indicator IA		Indicator IB	
2000	843	1173	515	685
2001	831	11,295	466	10,092
2002	796	8,602*	418	4,324*
2003	2,200		1,000	
2004	2,200		1,000	

*The Fight BAC campaign and the curriculums and educational materials prepared by the Food Specialist for consumers, and youth had created an excellent involvement of all PRAES personnel and had increased the participation of clientele. PRAES change plan for 2003-04 because we expected to continue that tendency.

INDICATOR 2

The total number of individual completing food handler certification programs conducted by CSREES partners and cooperators on an annual basis (Outcome)

Year	# of persons completing programs	
	Target	Actual
2000	551	1,850
2001	1500	1,198
2002	1200	1,693*
2003	1200	0
2004	1200	0

* The number of participants increased because since March 2000, the regulations specified that all persons in charge of food establishments should complete a food safety certification course. The PRAES Food Safety Certification Course has been well accepted by this clientele.

INDICATOR 3

The total number of facilities meeting HACCP standards for food handling and management of risks associated with food borne illnesses. (Outcome)

Year	# of facilities meeting HACCP standards	
	Target	Actual
2000	196	159
2001	300	443
2002	300	154*
2003	300	0
2004	300	0

*1,693 participants approved the Food Safety Certification Course and of these 1,659 persons used the time (the rule of 2 or 4 hours) to meet Food Code regulations. HACCP plan and temperature documentations were accomplished as a voluntary action.

Data Collection Method - Records

INDICATOR 4

The total number of milk production facilities meeting management of risks (bacteria's and somatic cell) associated with food borne illnesses. (Outcome)

Year	# Of facilities meeting 100,000 or less colonies of bacteria's.		# Of facilities meeting 750,000 or less somatic cell.	
	Target	Actual	Target	Actual
2000	373	370	365	360
2001	378	390	370	390
2002	377	361	376	357
2003	350	0	348	0
2004	340	0	335	0

The number of milk production farms had been reduced. The control effectiveness was evaluated by using the parameters indicate in the table.

PROGRAM DURATION

5-Year Program Cycle

ALLOCATED RESOURCES

Fiscal Year	Resources			
	State	Federal	Others Federal	Total
2000		$117,285.97		$117,285.97
2001		$124,533.00		$124,533.00
2002	$66,990.00	$227,167.23		$294,157.23
2003				
2004				

ESTIMATED FTE COMMITMENT

Year	Professional			Professional		
	1862	1890	Other	1862	1890	Other
2000	4.27					
2001	3.83					
2002	5.81					
2003						
2004						

EDUCATION AND OUTREACH PROGRAMS

PRAES will continue developing ongoing food safety programs at different levels, from the farm–to-the-table approach. Multi-towns cooperation will continue and PRAES personnel will cooperate in the dissemination of research results.

PROGRAM CONTACTS

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GOAL 3 A HEALTHY, WELL-NOURISHED POPULATION

OVERVIEW

During fiscal year 2001-2002 the Nutrition, Diet and Health Program continued working to improve the well-being of individuals and communities through non-formal nutrition or health education and promotion programs. The project *Resaltando tu Apariencia Personal - RAP* ("Enhancing Your Personal Appearance"*),* co-sponsored by the Johnson and Johnson Co., was developed. Its goal is to improve the skills in personal hygiene through nine lessons. Fifty-nine (59) PRAES agents were trained, thereafter, forwarding the project to 915 children and youth and 72 volunteer leaders. Of those trained, 728 children and youth reported modified attitudes and practices related to personal hygiene and the development of a personal care program.

In response to the need to offer youth guidance on indoor air quality, the *Youth, Protect the Air You Breathe* project was developed. Its goal is to develop skills in youth that may help them identify interior air contaminants, their sources and their mitigation or elimination. The curriculum consists of five lessons developed as a collaborative effort of the Environmental Protection Agency, the Department of Health, the Puerto Rico Lung Association, and PRAES, among others. Eighty (80) young people were trained to determine the adequacy of the curriculum (September 2002). Eighty percent (80%) reported changes attitudes and development of skills for improving interior air quality. Of these, 31 were selected to participate in the 4-H Indoor Air Quality competitions where they demonstrated the knowledge and skills acquired in this project.

The alliance with the Family Department to use money from the Nutrition Assistance Program (NAP) (the Block Grant "Food Stamp" program for Puerto Rico) was continued. The program is known as the Program to Improve Nutrition in Puerto Rico (in Spanish *Programa para Mejorar la Nutrición en Puerto Rico (MeNu).* In FY 2001-2002 the negotiations for this program were complicated due to administrative changes at both the University of Puerto Rico and the Department of the Family. The end result was that the contract for the continuing of the program was not finalized until January 2002. The program employs seven home economists full-time paid through funds from the Food and Nutrition Service. However, due to these negotiations between the University and the Department of the Family, these home economists did not work from October 1, 2002 to January 15, 2002.

During September of FY 2001-2002, the home economists were trained on how to adapt the course used in MeNu to groups with specific health problems such as diabetes, hypertension, obesity and a combination of these three health problems. At that time the exercise session entitled *Physical activity, dare to be healthy*, was added to the curriculum and included as part of the training. Its aim is to promote physical activity among the participants as a healthy lifestyle, which should be practiced. The activity will be incorporated to their daily routine through vigorous exercise or some type of moderate

health-enhancing physical activity. The home economists received training to offer this lesson.

I. KEY THEME – HUMAN HEALTH

A. PRAES personnel implanted health projects aimed at children and youth using different curricula developed by the specialists. For children they used curricula such as: Learning to be Healthy (HIV/AIDS prevention) and Toward a Drug Free Year 2000 and for adolescents, curricula of the PAS Project (Postponing Sexual Activity), Enhancing Your Personal Appearance, Human Sexuality, HIV/AIDS Prevention, and Protect the Air You Breathe-Indoor Air Quality Project. For adults, they used different curricula such as promoting Healthy Lifestyles and Human Sexuality. They also participated in the Healthy Indoor Air for America's Home Program, emphasizing on second hand smoke and asthma prevention. Both groups were oriented in the aspects of risk reduction and safety.

B. Impact – One thousand three hundred and ninety five (1,395) children and youth completed non-formal health education and promotion programs; of these, 1,103 adopted one or more recommended practices.

A total of 2,242 adults completed non-formal education programs on topics related to health promotion and health education. Of these, 786 reported reducing their risk levels upon completion of one or more recommended practices after completing the programs.

Four hundred and fifty two (452) individuals were oriented in risk reduction and safety, through the accidents prevention education programs. Of these, 260 individuals acquired skills and modified attitudes and practices related to accident prevention.

In the area of indoor air quality, 1,199 individuals learned about indoor air contamination through short courses, seminars and home assessments. Of these, 478 learned about the different air contaminants and methods for the mitigation and elimination. Eighteen (18) individuals adopted practices to control the humidity in their homes, 157 individuals evaluated and fixed air conditioning equipment, and 281 reduced sources of contaminants in indoor air.

C. Source of Federal Funds – Smith Lever 3(b) and 3(c) funds

D. Scope of Impact – State specific

II. KEY THEME – HEALTH FRAUD PREVENTION

A. PRAES, in partnership with the Puerto Rico Health Fraud Prevention Commission, developed a fraud prevention program targeting individuals infected and affected by HIV/AIDS, adults, and elderly people. About 775 health professionals and home economists received training about health fraud prevention. The following areas were emphasized: dietary supplements, fraud in the Internet, and how to report fraud cases. Additionally, this program was expanded through the first Spanish HIV/AIDS Health Fraud Web site (*ojoalfraude.org)*. A marketing campaign was developed to promote the Commission and the Web site. It included the development of three large posters placed in key bus stops and four radio spots advertising the Commissions' message and the web site, placed on air during the prime time.

B. Impact - Six hundred (600) participants reported knowledge gained, and behavior and attitude changed related to health fraud prevention. Two (2) persons reported health fraud cases to government agencies.

C. Source of Federal Funds – Smith Lever 3(b) and 3(c) funds

D. Scope of Impact – State specific

III. KEY THEME – HUMAN NUTRITION

A. A 6-session short course is used to improve nutritional practices among participants in the Nutrition Assistance Program (NAP) of the Puerto Rico Department of the Family. The course includes sessions to assess the current situation in terms of eating behaviors with emphasis on what they are doing right, meal planning, shopping behaviors, and food preparation.

B. Impact – During FY 2001-2002, 139 new short courses were offered, 2,852 people participated in these courses, 1,887 completed the courses. Six months after completing the course 700 persons reported having adopted or changed one or more practices. Four hundred and eighty seven (487) persons reported having increased their consumption of fruits (419 NAP, 68 not NAP); 436 their consumption of vegetables: (380 NAP, 56 not NAP); 233 their consumption of whole grain cereals and breads (198 NAP, 35 not NAP); and 513 their consumption of water (449 NAP, 64 not NAP). Three hundred and twenty four (324) persons reported they increased their consumption of milk and milk products (272 NAP, 52 not NAP), while 95 reported that they decreased their consumption of milk and milk products (78 NAP, not NAP 52). One hundred and ninety (190) persons reported having decreased their consumption of meat, poultry and fish; (176 NAP, 14 not NAP); 410 their consumption of liquids that are

basically water and sugar; 267 their consumption of other sources of sugar (225 NAP, 42 not NAP); 287 their consumption of salt (246 NAP, 41 not NAP); and 308 their consumption of added fat (262 NAP, 46 not NAP. Three hundred and fifty five (355) persons reported that they eat meals instead of nibbling (306 NAP, 49 not NAP); 474 that they eat an adequate breakfast (419 NAP, 55 not NAP); 407 that they prepare adequate snacks (365 NAP, 42 not NAP); 385 that they prepare one-dish meals (341 NAP, 44 not NAP); 566 that they have tried a new recipe for foods of high nutritional value (506 NAP, 60 not NAP); and 487 tried new recipes (423 NAP, 64 not NAP).

One hundred and eight (108) volunteers were recruited; 42 taught one session and 11 taught a course on non-formal consumer education. A total of 1,329 volunteer hours were dedicated.

In addition, 21,865 persons participated in community activities designed to help them change dietary habits. Newspaper articles, the radio, and television reached an additional 46,971 persons.

C. Source of Federal Funds – Smith Lever 3(b) and 3(c) funds

D. Scope of Impact: State specific

IV. KEY THEME – DIETARY HABITS

A. A total of 264 persons completed non-formal nutrition education programs to improve their dietary habits in order to reduce the risk factors of chronic diseases: obesity, hypertension, blood cholesterol, blood sugar, low consumption of vegetables, fruit and whole grain products, and others.

B. Impact – Eighty six (86) persons adopted one or more recommended dietary habits six months after completing the short course.

C. Source of Federal Funds – Smith Lever 3(b) and 3(c) funds

D. Scope of Impact: State specific

KEY PROGRAM COMPONENTS

PRAES offered orientation and promoted the development of health education and promotion projects to all PRAES agents and volunteers. Extension continues to work in partnership with different health education and federal and state agencies to develop health projects. Extension agents develop the educational program using different strategies such as short courses, exhibits, health clinics, and mass media among others. The health projects used to help children and adolescents to develop skills to change

behaviors were: for children, the projects Learning to be Healthy (HIV/AIDS Prevention) and Toward a Drug Free Year 2000; for adolescents, the curricula of PAS Project (Postponing Sexual Activity), and the Human Sexuality, HIV/AIDS Prevention, and Personal Care Projects. For adults, PRAES personnel used different curricula such as promoting Healthy Lifestyles, Preventing Health Fraud, HIV/AIDS Prevention, Human Sexuality, and Healthy Indoor Air America's Homes. Both groups were oriented on aspects of risk reduction and safety. These projects evaluated the knowledge and the attitude of the participants using a pre and post-test.

Two basic components of the Program to Improve Nutrition in Puerto Rico (PIN or MeNU in Spanish) are: individualized group teaching, and the formation and fortification of coalitions at the local level. Individualized group teaching through a 6-lesson short course with follow-up two to six months later to assess impact over time.

Dietary habits to prevent nutrition related chronic disease: These lessons were incorporated into the short courses offered as part of PIN/MeNu based on training received in previous years. However, the Home Economists were given specific training on how to incorporate chronic diseases into the short courses of MeNu in September 2002.

INTERNAL AND EXTERNAL LINKAGES

Internal

Health, Food and Nutrition Specialists, CRD Specialist, Agricultural Specialists in Horticulture and related areas, 4-H Specialists, Agronomists, Home Economists, Faculty of the Agricultural Economics and Rural Sociology departments of the College of Agriculture, the Sociology Department of the College of Arts and Sciences, Regional Supervisors (5) of the Family and Consumer Education Program, and PRAES volunteers.

External

The Food and Drug Administration, The Department of Education, The Administration of Socio Economic Development of the Puerto Rico Department of the Family, Nutrition Committee of Puerto Rico, Food and the Nutrition Commission of Puerto Rico, Puerto Rican Heart Association, Department of Health, Food and Drug Administration, American Cancer Society, University of Puerto Rico-Medical Science Campus, Environmental Protection Agency, Puerto Rican Lung Association, Department of Labor and Health Educators´ Association.

TARGET AUDIENCES

Children from low-income areas - (Learning to be Healthy), ATOD, HIV/AIDS prevention education programs and personal hygiene projects need to be implemented at an early age.

School age children - (Menu Evaluation Competition and Chefs of the Future) to teach them about menu planning.

Adolescents - (Postponing Sexual Activity) using peer education strategy to promote the sexual education among this group of age.

Individuals with an interest in post/preventing chronic disease (short course) and indoor air education - (Healthy Indoor Air America's Homes) to help people use knowledge and skills to improve their personal health behaviors.

Participants in the Nutrition Assistance Program (NAP) of the Puerto Rico Department of the Family to help them to select and buy food.

Extension and other Professionals (train to trainer, in service training)

EVALUATION SUMMARY

Common evaluation question were:

Question 1: What were the reactions of participants toward the training?

Question 2: What is the level of attitude, skills, and aspirations of participants regarding the adoption of adequate agricultural practices?

Question 3: What is the level of adoption of agricultural practices among participants of no-formal education training?

The basic impact information is collected from monthly and specials reports submitted by Extensions agents.

Human Nutrition PIN/MeNu (Adequate Normal Nutrition and chronic diseases):

Formative evaluation: focus groups of Home Economists and participants. Evaluation visits by state Specialists to Home Economists selected randomly.

Summative evaluation: The Home Economists are asked to record changes that the participants in the classes of individualized group teaching report that they are doing. They also do a group evaluation two to six months after the last class session. The indicators used to asses impact are: Number of people who increased consumption of fruits, vegetables, whole grain cereals, water or milk and milk products, the number of people who decreased consumption of milk and milk products, meat, fish or poultry, liquids that are basically water and sugar, other sources of sugar, salt, fat, the number of people who prepare meals instead of nibbling, those who prepare adequate snacks, those who eat adequate breakfasts, those who learned to prepare one-dish meals, and those who have tried new recipes as a results of the program.

Evaluation design: multiple techniques are used to assure that the information is as accurate as possible. The formative evaluation is three fold: by the Home Economist each time she teaches a class, by focus groups of randomly selected Home Economists and a participant they select to participate, and visits by state staff to randomly selected Home Economists to evaluate teaching sessions. The summative evaluation is done by having the Home Economists report on the number of people who have made specified changes in shopping and food procurement behaviors.

Evaluation Source:
Visits to one third of the Home Economists randomly selected.
Home Economists reports of adoption of practices. Focus groups of Home Economists and participants as to adequacy of the processes and outcomes.

Question 1: The participants in the focus groups for PIN/MeNu are enthusiastic about the program. They find that the bulletins written for the program are very helpful. They recognize that they were spending large amounts of money on foods of low nutritional value. One reported that he had learned to cook, and now would like to teach others what he learned. He cannot understand why others do not adopt practices that are so important. Others reported that they do not fry foods as frequently as before and they are much more conscious of the importance of good food selection.

Question 2: Attitudes of participants have not been measured. According to evaluation research, the methodology that has been used for measuring attitudes does not produce results that relate to actual adoption of dietary habits.

Six hundred and forty seven (647) recipes were presented to the participants of PIN/MeNu. Seven hundred and two (702) persons have tried one or more new recipes as a result of participation in this program. One-dish meals are promoted to increase vegetable consumption and to have quick recipes available in case of an emergency. The home economists informed that 479 people learned to prepare such meals.

Of the 3,688 participants in PIN/MeNu, 2,311 reported that they planned to change one or more dietary practices.

Question 3: As a result of the short courses offered in PIN/MeNu, 487 people increased their fruit consumption, 436 their vegetable consumption, 233 their consumption of whole grain cereals and breads, and 513 their consumption of water. In order to enable them to increase their consumption of the previously mentioned areas people had to decrease their consumption in other areas. The home economists informed that 190 persons decreased their consumption of meat, poultry and fish, 410 decreased their consumption of liquids that are basically water and sugar, 267 decreased their consumption of other sources of sugar, 287 their consumption of salt, and 308 their use of added fat.

Milk consumption is problematic in Puerto Rico. While the majority, especially those who do not drink coffee, would probably benefit from increased use of milk and

milk products, a minority over consumes these foods. According to the information received at the state level, 324 people increased their consumption of milk and milk products and 95 informed decreased consumption of milk and milk products. Improved practices related to eating patterns resulted in 355 who now eat meals instead of nibbling, 474 who now eat an adequate breakfast, and 407 who prepare adequate snacks.

Human Health

Evaluation methodology: The collected data from RAP project self-administered questionnaire was used. Description statistics and chi square techniques were used to explain and describe the relationship between demographic variable and the knowledge and attitude toward the personal hygiene of the participants in the project. Fifteen (15) items were used to assess the individual level of knowledge regarding personal hygiene and five (5) items to asses their attitude about the topic. Individuals were asked to respond to these items using a true or false scale. An instrument looking for the satisfaction of the facilitator working in the project was also used.

Question 1: Fifty-nine (59) PRAES agents were trained about personal hygiene, thereafter, forwarding the project to 915 children and youth and 72 volunteer leaders. One press article about the achievements of the participants in this project was published in one of the most important newspapers on the island. The facilitators reported satisfaction with the curricula of the project and are very enthusiastic finding the curricula very helpful to deliver the project.

Question 2: Overall, females demonstrated more knowledge than males and in some aspects there being a significant relationship between gender and correct answers. Females were more likely to answer the items correctly. About 90% of the respondents consider personal hygiene as something important to keep their health. However, males were more likely to perceive difficulty in maintaining a good personal appearance.

Question 3: Seven hundred and twenty eight (728) children and youth reported modified attitudes and practices related to personal hygiene and the development of a personal care program.

OBJECTIVES PERFORMANCE GOAL(S) AND OUTPUT AND OUTCOME INDICATORS

OBJECTIVE 1
To optimize the health of consumers by improving the quality of diets, the quality of food, and the number of food choices.

PERFORMANCE GOAL 2
To annually reduce the health risk factors through non-formal educational programs to improve dietary habits and physical exercise practices in which CSREES partners and cooperators play an active research, education, or extension role.

INDICATOR 1
A. The total number of persons completing non-formal nutrition education programs on better management of health risk factors (e.g., obesity, hypertension, etc.). (output)

B. The total number of participants meeting or exceeding some established goal or standard to reduce the level of risk upon completion of one or more recommended nutrition practices within six months of completing one or more of these programs. (outcome)

Year	INDICATOR 1A Output)		INDICATOR 1B (Outcome)	
	Target	Actual	Target	Actual
2000	2254	3,743	1309	1,523
2001	2325	1,500	1400	465
2002	2414	264**	1402	86**
2003	2389	0	1381	0
2004	2546	0	1492	0

**These numbers are underestimates because of the way the evaluation forms were designed. During September 2002 the home economists received specialized training in how to adapt the MeNu curricula to teach good nutrition related to health problems.

PERFORMANCE GOAL 3

To annually increase consumer awareness, understanding, and information on dietary guidance and appropriate nutrition practices in which CSREES partners and cooperators play an active research, education, or extension role.

INDICATOR 1

A. The total number of persons completing non-formal nutrition education programs that provide dietary guidance to consumers. (output)

B. The total number of these persons who actually adopt one or more recommended Dietary Guidelines within six months after completing one or more of these programs. (outcome)

Year	INDICADOR 1A (Output)		INDICADOR 1B (outcome)	
	Target	Actual	Target	Actual
2000	2,080	2,489	690	741
2001	2,000	2,494	670	788
2002	1,400	1,887	470	700
2003	1,400	0	470	0
2004	1,400	0	470	0

- *The total number of FTE devoted to programs in foods and nutrition was reduced from 18 FTE in FY 2001 to 10.34 FTE in 2002 due to difficulties related to the negotiation of the contract with the Family Department.

OBJECTIVE 2

To promote health, safety, and access to quality health care.

PERFORMANCE GOAL 2

To annually improve individual and family health status through non-formal health education/risk reduction and promotion programs in which CSREES partners and cooperators play an active research, education, or extension role.

INDICATOR 1

A. The total number of persons completing non-formal education programs on topics directly related to health education/risk reduction and health promotion. (output)

B. The total number of participants meeting or exceeding some established goal or standard to reduce the level of risk upon completion of one or more health education/risk reduction and health promotion programs. (outcome)

Year	INDICATOR 1A (Output)		INDICATOR 1B (Outcome)	
	Target	Actual	Target	Actual
2000	1585	4,786	660	2,508
2001	1736	4,995	853	1,643
2002	1816	5,288	883	2,949
2003	1886	0	951	0
2004	1979	0	997	0

- These numbers suggest that the educational needs of the population served were more related to health promotion and the personnel made more efforts in this area and we achieve more than the projected.

PERFORMANCE GOAL 3

To annually increase the level of individual and family safety (or reduce risk levels) from accidents in the homes, schools, workplaces, and communities.

INDICATOR 1

A. The total number of persons completing non-formal education programs on topics related to home and workplace risk reduction and safety. (output)

B. The total number of participants meeting or exceeding some established goal or standard to reduce the level of home and workplace risk upon completion of one or more risk reduction programs. (outcome)

Year	INDICATOR 1A (Output)		INDICATOR 1B (Outcome)	
	Target	Actual	Target	Actual
2000	618	279	372	170
2001	677	502	407	200
2002	690	452	400	280
2003	614	0	401	0
2004	647	0	417	0

- These numbers were lower than the projected because the educational needs of the population served were more related to other areas and the personnel refocused their objectives.

PERFORMANCE GOAL 5
To annually increase the availability of health education programs to communities in which CSREES partners and cooperators play an active research,
education, or extension role.

INDICATOR 2
The total number participants in community-wide health events. (outcome)

Year	# of participants community-wide health events	
	Target	Actual
2000	2427	2,094
2001	2571	3,440
2002	2506	3,295
2003	2711	0
2004	2716	0

PROGRAM DURATION

5-year Planning Cycle.

ALLOCATED RESOURCES

Fiscal Year	Resources			
	State	Federal	Others Federal	Total
2000		$776,138.34	$1,353,330.00	$2,128,468.34
2001		$923,495.68		$923,495.68
2002		$835,305.51		$835,305.51
2003				
2004				

ESTIMATED FTE COMMITMENT

Year	Professional			Professional		
	1862	1890	Other	1862	1890	Other
2000	18.26					
2001	28.44					
2002	21.38					
2003						
2004						

EDUCATION AND OUTREACH PROGRAMS

PRAES will continue focusing on health and nutrition programs. County Extension personnel will disseminate research from the Agricultural Experiment Station and the Medical Sciences Campus of the University of Puerto Rico through the island.

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GOAL 4 TO ACHIEVE A GREATER HARMONY (BALANCE) BETWEEN AGRICULTURE AND THE ENVIRONMENT

OVERVIEW

The island of Puerto Rico is almost rectangular in shape. The territory is very mountainous (60%), except in the coasts. It has three main physiographic regions: the mountainous interior, the coastal lowlands, and the karst area. The north coast gets twice as much rain as the south. The Island does not have natural lakes, although it has 15 reservoirs formed by damming the main rivers to produce hydroelectric power (less than 1%) and water for irrigation. Land use is as follows; arable land (4%), permanent crops (5%), meadows and pastures (26%), forest and woodland (16%) and other (49%) 1993 est.

The 3.8 million people that inhabit the island make it one of the most densely populated in the world, with 1,100 people per square mile. One third of the population is concentrated in the San Juan/Carolina/Bayamón metropolitan area. Given that the Island is only 100 miles by 35 miles, our most important natural resource is land. The high population density creates a huge demand for land use to satisfy human needs. According to the Puerto Rico Solid Waste Authority (PRSWA), each person generates 4.5 pounds of solid waste daily. Approximately, 50-60% of the solid waste could be recycled (70% of the waste goes into land fields). PRAES provides information and assistance to its clientele, and maintains a close collaboration with the PRSWA.

Coffee is the most important socio-economic crop for the central mountain region of Puerto Rico providing 30,000 indirect jobs. According to the Puerto Rico Agricultural Census (1998) there are 10,622 coffee farmers generating a gross income of $53.8 millions and providing 47% farm employment. In an effort to upgrade farm workers' skills and to create awareness about the environment, a pilot project was established through an agreement between the PR Agricultural Extension Service and the Department of Labor (WIA-167) in which three groups of 15 farm workers each were offered a course on sustainable coffee cultivation. The 320-hour course covered the following topics: seedlings, nursery production, fertilizer and limestone application, weed and disease control, coffee processing, and farm management principles. The main objective was to teach workers how to properly perform recommended farm practices in harmony with the environment and to acquire the necessary skills to get farm work all year around. Participants received a certificate upon course completion.

The government censure has dramatically increased on farm waste management facilities in Puerto Rico during the past five years. Housing developments near farming centers and citizen interest on water and environment quality created the need of a more aggressive orientation and assistance program to the general public. High water consumption equipment in the 150 coffee processing plants established is being replaced by equipment with low water requirements. During 2001-2002 approximately four new such equipment were installed. The Environmental Protection Agency (EPA) is threatening to close the old coffee processing plants due to their discharges of used

waters into rivers or creeks. One way to address this issue is through the special water quality project that strives to establish a regional coordinating mechanism among Universities under the EPA Region 2: Rutgers, Cornell, Virgin Islands and the University of Puerto Rico. Through such mechanism we could share technical support in the areas of farm waste management, watersheds nutrient management, septic systems, and water quality for human consumption. We work together to establish projects that comply with state and federal regulations. This encourages the use of different educational resources from the region's universities to be used with our clientele. Furthermore, close collaboration is being conducted with scientists of the Agricultural Experimental Station in the development of a phosphorus index for Puerto Rico and in the adaptation of an educational model for the prevention of contaminants from disperse sources.

Irrigation and water drainage is another area covered under the water quality project that seek the improvement of the infrastructure (planning, design and technical documents preparation for irrigation) of farm land under the Puerto Rico Land Authority (PRLA). Assistance was provided to the engineering phase of the PRLA to get uniformity in design and to improve the construction and maintenance efficiency of the irrigation systems.

In 1997 a 1-day 9-month learning-by-doing sustainable agriculture course was offered to farmers and agricultural professionals. During 2001-2002, 25 farmers and agricultural professionals returned to the farm where the course was offered to evaluate the situation and to check on the changes occurred after the practices were implemented four years ago. A conference and demonstration training meeting was conducted on ecological coffee processing plants with environmentally friendly equipment (required less amount of water and the used water is less contaminant) with the participation of 125 farmers and professionals.

For almost four years PRAES has been working on the Forest Health Project in collaboration with Forestry Services. This effort is directed to have information available for the diagnosis of tree problems. The project is part of IPM for forest pest management, including both prevention and control strategies. It conveys the development of forest pest management and information networks to enhance cooperation among countries in the region. Another agreement with the Forest Service conveyed a $10,000 scholarship opportunity for 15 UPR students (10 undergraduate and 5 graduate) to expose them to other study areas and to get acquainted with a broader scope of professionals within forestry. The scholarship covered the students' costs to attend and participate at the 2002 Caribbean Urban Forestry Conference at St. Thomas, Virgin Islands. This year the theme was "The Future of Trees in the Caribbean". For the first time, this conference was able to unite state foresters of all the Caribbean area where the whole spectrum of the Caribbean situation was analyzed. Two Mayagüez Campus students did a plenary session presentation each, on their research efforts: "Evaluation of Findings on Tree Transplanting in Puerto Rico" and "Seed Germination and Early Seedling Survival of Ten Subtropical Dry Forest Species for Urban Forestry in Puerto Rico".

In 1975 the State Department of Agriculture (SDA) and PRAES developed a plan to certify pesticides users. In this plan, Extension Service was responsible for the training on the proper pesticide use to protect human health, the environment and natural resources. The SDA was responsible for the certification. Since then, 12,000 commercial applicators and 45,000 farmers and farm workers have been certified as pesticides applicators.

I. KEY THEME – WATER QUALITY

A. The PRAES Water Quality program continued its informal education and information dissemination on farm waste management and on rural aqueducts. Most of this education is geared to farmers to achieve compliance with environmental regulations on existing as well as new building facilities for animals in confinement and for processing plants. Education and information on water quality is provided to homeowners, communities and the general public.

In the community at Lijas Ward, Municipality of Las Piedras, the PRAES assisted in the establishment of a water filtration system for their aqueduct. During 2001-2002 this filtration system was improved to reduce the quantity of the turbidity present in the water. The system consists of three anthracite filters in series that remove sediment left from the first filter. Such improvement is expected to reduce not only the turbidity, but also the level of bacteria that can be harmful to the health of the residents.

B. Impact – Six hundred (600) persons were informed of the availability of blue prints; of these, 63 improved their building facilities or build new ones.

Two hundred and twenty seven (227) persons received orientation on irrigation systems, 40 of these established irrigation systems in their farms following PRAES recommendations.

Four hundred and thirty five (435) persons received orientation on blue prints for animals in confinement, 90 of these completed their projects.

Three hundred and sixty four (364) waste management systems were designed, most of them are waiting for the approval of the regulatory agencies.

Six interagency meetings were held with the communities.

Three radio programs were conducted on rural aqueduct maintenance and operation reaching 15,126 persons.

Two rural aqueducts were evaluated and recommendations were made for their improvement.

C. Source of Federal Funding – Smith Lever 3(b), 3 (c) funds

D. Scope of Impact – State Specific

II. KEY THEME – SUSTAINABLE AGRICULTURE

A. The PRAES promotes and encourages the implementation of recommended farm practices (compost, soil conservation practices) that are environmentally sound, socially just and economically feasible. This is achieved not only through educational means of learning-by-doing, especially within sustainable agriculture, but by creating awareness and follow-up by volunteers that provide assistance in the educational aspect and as examples to other farmers.

B. Impact - One hundred and twenty five (125) persons participated in a training meeting on ecological coffee processing plants.

Eight hundred and thirty one (831) persons were trained on sustainable agriculture practices.

Three hundred sixty nine (369) persons adopted the recommended practices.

Forty (40) volunteers were trainers to farmers' groups, dedicating 444 hours; a saving of $2,331.

Approximately 5,463 persons benefited from the educational materials developed and distributed by the PRAES personnel.

Nine thousand and fifty eight (9,058) persons received information about compost; 913 persons adopted recommended practices on compost.

Forty one (41) compost projects were established.

One hundred and eighty four (184) persons prepared compost using farm waste products and 193 persons prepared compost using house waste.

Eleven thousand (11,000) persons received information about compost through radio programs.

One thousand three hundred and nine (1,309) persons improved or adopted recommended practices for recycling; 197 persons established recycling projects.

C. Source of Federal Funding – Smith Lever 3(b), 3 (c) funds

D. Scope of Impact – State Specific

III. KEY THEME – NATURAL RESOURCES CONSERVATION

A. In Puerto Rico it is important to make the proper use of our natural resources, at the same time that we foresee the conservation and preservation for future use.

B. Impact - One thousand four hundred and fifty four (1,454) persons were informed about soil conservation practices; 380 persons adopted recommended soil conservation practices.

C. Source of Federal Funding – Smith Lever 3(b), 3 (c) funds

D. Scope of Impact – State Specific

IV. KEY THEME – INTEGRATED PEST MANAGEMENT (IPM)

A. IPM is a sustainable approach that combines biological, cultural, physical, and chemical tools to minimize economic, health and environmental risks. Still, any effort for pest control implies a high percentage of the cost of crop production. Added to this, is the introduction of new pests and diseases that reduce profitability. Insects and diseases are destructive elements that interfere with production, environmental and aesthetic values of our forests. The main problem in diagnosing tree problems is the lack of available information. Three seminars pests of possible introduction and common diseases found in greenhouses were offered to agronomists, Extension personnel, farmers and Department of Natural Resources and Environment personnel

PRAES is the agency in charge of offering the required training to any person interested in the use or supervision of the application of restricted use pesticides to be certified in accordance to federal and state regulations.

B. Impact – During fiscal year 2001-2002, through the educational efforts conducted, 2,425 farmers adopted one or more IPM practices (600 coffee farmers, 400 fruit farmers, 1,300 starchy crop farmers, and 125 vegetable farmers).

A total of 12,900 cuerdas of coffee, plantain, bananas, and citrus are under IPM practices with an economic benefit to the farmer of approximately $15-30 per cuerda.

Two hundred and twenty five (225) samples were processed in the plant diagnostic clinic with a direct impact of $375,000 saved because of the correct pest diagnose.

Two hundred (200) farmers were oriented in IPM through reports that included IPM recommendations specific to control the diagnosed pest.

Seven hundred (700) persons (farmers, Extension personnel, homeowners, agronomists, and ornamental producers) received publications about insects and diseases of importance in urban forests.

One publication was prepared on the identification and management of pests of importance for the forest system in Puerto Rico.

The proposal Forest Health and Integrated Pest Management was extended until September 2003 to develop a Forest Health Webpage.

Six greenhouses of the Department of Natural Resources and Environment produced shrubs and trees for urban reforestation and adopted three IPM practices.
The plant diagnostic clinic processed 50 samples of trees or woody ornamentals with a direct impact of at least $40,000 saved because of the correct diagnose of the pest.

One hundred and fifty (150) persons (including landowners, personnel of the Department of Natural Resources and Environment and other personnel working in forest management) were oriented in IPM practices through reports that included recommendations on specific control for the diagnosed pest.

On thousand eight hundred and sixty three (1,863) private applicators and 693 commercial applicators received training.

Thirty agricultural agents, 551 owners and employees of food services businesses, 100 farm workers, 25 health professionals, 50 teachers, and 700 general public were trained.

C. Source of Federal Funding – Smith Lever 3(b), 3 (c) funds

D. Scope of Impact – State Specific

KEY PROGRAM COMPONENT(S)

The PRAES directs its educational efforts towards the adoption of recommended farm management practices in accordance with state and federal agency regulations. This goal is attained through farm follow-up visits, videoconferences, conferences, presentations, training meetings, workshops, participatory research, demonstrations, periodical publications and other mass communications to agricultural professionals, rural communities, leaders, PRAES personnel in a train-the-trainer approach, general public and other agency personnel.

INTERNAL AND EXTERNAL LINKAGES

Internal

Personnel of the College of Agricultural College (CAS) and the Agricultural Experiment Station (AES) assisted in trainings, research, and in project implementation, besides information sharing. This collaboration had been strongly achieved in water quality issues. During this fiscal year, the AES scientists jointly began the development of a phosphorus index for Puerto Rico and the adaptation of an educational model for the prevention of contamination from disperse sources.

An agreement with the Department of Labor offered a unique opportunity to collaborate with the AES' Rural Sociologist and Agriculture Economics personnel in assisting coffee farm workers. Also the collaboration with the on-campus Space Grant Consortium-Mayaguez Affiliate continued in its effort to provide en educational opportunity for youth to understand and learn how to preserve our marine ecosystem.

External

In an effort to establish a regional coordination to obtain and share technical support in the areas of farm waste management, watersheds nutrient managements, septic systems and water quality, collaboration is been generated among EPA Region 2 universities (Rutgers, Cornell, Virgin Islands and Puerto Rico). Sponsorship was obtained this year to offer the course on sustainable coffee production to farm workers from the Department of Labor. Collaboration continues with the USDA-Forest Service. Also, strong linkages were kept with the State Department of Agriculture, the State Department of Natural Resources and Environment, the USDA-NRCS specially through its RC&D program, the Environmental Quality Board, the Solid Waste Authority, the State Planning Board, and the Soil Conservation District around the Island.

TARGET AUDIENCES

The target audiences are farmers, youth, farm workers, rural community leaders, and general public. The elderly, handicapped and veterans constituted the under-served population and had been identified as the target audience.

EVALUATION

Evaluation Source: Published Data of Extension Annual Achievement (2001-2002). Printouts of Extension Reports, and Extension Project Evaluations.

Evaluation Methodology: Interviews to Farmer and observations of recommended practices and implementation in farm visits.

Evaluation Questions:

Question 1: What were the reactions of participants toward the training?

Question 2: What is the level of attitude, skills and aspirations of participants regarding the adoption of adequate agricultural practices?

Question 3: What is the level of adoption of agricultural practices among participants of non-formal education training?

Water Quality

Question 1: One thousand five hundred and seventy-nine (1,579) clients were oriented regarding the reduction of contamination of superficial waters in farms with confined animals and 525 were oriented regarding the reduction of contamination of superficial waters by the use of chemicals in the home and on the farm. Sixty-four (64) persons were oriented on how to reduce contamination by keeping the septic system in good condition.

Question 2: Three hundred and thirty-nine (339) clients reduced contamination in superficial waters in farms with animals in confinement. One hundred and seventy-one (171) clients adopted adequate management practices of chemicals to reduce contamination in the home and on the farm. Eleven (11) persons adopted the recommended practices for the reduction of contamination by keeping the septic system in good condition.

Air Quality in Interiors

Question 1: Two thousand one hundred and ninety-nine (2,199) persons were trained on the topic of air quality in interiors.

Question 2: One hundred and fifty-seven (157) persons were oriented on the maintenance of air conditioners and purifiers.

Question 3: Eighteen (18) persons adopted the recommended practices for humidity control in the home and 281 persons reduced air contaminants in the home.

Recycling

Question 2: Seven thousand two hundred and seventy-nine (7,279) persons increased their knowledge on recycling in order to reduce water contamination caused by waste generated in the home and on the farm.

Question 3: One thousand three hundred and nine (1,309) persons improved or adopted recommended recycling practices. One hundred and ninety-seven (197) persons established recycling projects.

Composting

Question 1: Nine thousand and fifty-eight (9,058) persons were oriented regarding the preparation of compost using waste generated in the home or on the farm. Forty one (41) compost projects were established.

Question 3: Nine hundred and thirteen (913) persons adopted recommended practices for the preparation of compost. One hundred and eighty-four (184) persons prepared compost using waste material from the farm and 193 prepared compost using waste material from their home or garden.

Reforestation

Question 1. Five thousand nine hundred and five (5,905) persons were oriented about reforestation practices in urban areas. Ten thousand one hundred and eighty (10,180) persons were trained regarding the conservation of natural resources and the protection of the ecosystems. One thousand two hundred and seventeen (1,217) persons were trained in rural reforestation. Four thousand five hundred and fifty-seven (4,557) trees were planted in the urban area and 5,914 in the rural area.

Question 3. One thousand nine hundred and fifty-nine (1,959) persons adopted or improved their practices regarding the conservation of natural resources and/or protection of ecosystems. One thousand four hundred and thirty-eight (1,438) persons adopted reforestation practices for urban areas and 669 for rural areas.

Land Use

Question 1. One thousand one hundred and twenty-nine (1,129) persons were oriented regarding the adequate use of land. Four hundred and twenty-five (425) persons were oriented regarding territorial ordinance.

Question 3. Four hundred and one (401) persons made proper use of knowledge gained a result of the educational activities developed by PRAES.

Sustainable Agriculture

Question 1: Eight hundred and thirty-one (831) persons were trained on topics related to agricultural sustainability. Educational material prepared reached some 5,463 persons. Forty (40) volunteers served as facilitators. Two leaders and eight persons from other agencies were trained through professional improvement activities. Twenty one (21) educational activities were developed and six (6) reports were prepared. Three radio and TV programs were broadcast on the topic of sustainable agriculture.

Question 3: Three hundred and sixty-nine (369) persons adopted practices on agricultural sustainability.

Integrated Pest Management

Question 1. One hundred and seventy five (175) farmers, 30 homemakers and 20 producers of ornamentals were oriented regarding IPM through reports, trainings or individual visits by which they received specific recommendations for the control of the pest diagnosed in each case.

Question 3. Two thousand four hundred and twenty-five (2,402) farmers adopted integrated pest management practices in various crops. Pesticide expenses were reduced by $375,000 due to the correct and timely diagnosis of pests in 225 samples processed in the PRAES Plant Diagnostic Clinic.

OBVJETIVES, PERFORMANCE GOAL(S), AND OUTPUT AND OUTCOME INDICATORS

OBJECTIVE 1
To develop, transfer, and promote the adoption of efficient and sustainable agricultural, forestry, and other resource conservation policies, programs, technologies, and practices that ensure ecosystems achieve a sustainable balance of agricultural activities and biodiversity.

PERFORMANCE GOAL 2
To annually increase agricultural producer awareness, understanding, and information regarding the adoption of agricultural production practices that sustain and/or protect ecosystem integrity and biodiversity in which CSREES partners and cooperators play an active research, education, and extension role.

INDICATOR 1

A. The total number of persons completing non-formal education program on sustaining and protecting ecosystem biodiversity while improving the productivity of the U.S. agricultural production system. (output)
B. The total number of these persons who actually adopt one or more recommended practices within six months after completing one or more of these programs. (outcome)

Year	Indicator 1A (Output)		Indicator 1B (Outcome)	
	Target	Actual	Target	Actual
2000	527	2565[1]	380	1580[1]
2001	729	5060	416	2650[2]
2002	920	9889[3]	590	3009[3]
2003	945	0	745	0
2004	956	0	844	0

[1]The state government established a reforestation program where the Department of Natural Resources and Environment must annually prepare the seedlings, mostly of native trees, to be planted around the island. The program is called "Sembrando por Puerto Rico".

[2]This increase in the expected outcome can be accounted to the public policy of the State Department of Natural Resources and Environment, which launched an aggressive island-wide reforestation campaign; and to the Caribbean Urban Forestry Conference and the First Agricultural Congress, with around 500 participants, in which a sustainable approach to agricultural production was highlighted.

[3]Under PAT program education is offered on ground water protection, endangered species, protection of farm workers, pesticide safety and management. Citizens are interested in learning about recommended practices on management species for both urban and rural areas.

DATA COLLECTION METHODOLOGY

Farmers Interview and observation of recommended practices implementation in farm visits.

OBJECTIVE 2

To develop, transfer, and promote adoption of efficient and sustainable agricultural, forestry, and other resource policies, programs, technologies, and practices that protect, sustain, and enhance water, soil and air resources.

PERFORMANCE GOAL 1

To annually increase producer adoption of agricultural production practices that conserve and/or protect surface and groundwater supplies on or adjacent to agricultural production sites or land uses.

INDICATOR 1

A. The total number of persons completing non-formal education programs on sustaining and/or protecting the quantity and quality of surface water and ground water supplies. (output)
B. The total number of these persons who actually adopt one or more water management practices within six months after completing one or more of these programs. (outcome)

Year	Indicator 1A (Output)		Indicator 1B (Outcome)	
	Target	Actual	Target	Actual
2000	2462	2494	1559	429
2001	2693	3270	1784	1437
2002	2900	5549[1]	1815	2618[1]
2003	3008	0	1969	0
2004	3388	0	2029	0

[1]Water quality is a priority issue. Therefore, all personnel has time assigned to work in this issue under soilid waste management, rural aqueducts, irrigation and drainage, and pesticide application.

PERFORMANCE GOAL 2

To annually increase producer adoption of agricultural production "best practices" that conserve, protect, and/or enhance the soil resources on or adjacent to agricultural production sites or land uses.

INDICATOR 1

A. The total number of persons completing non-formal education programs on conserving, sustaining, and/or protecting soil resources. (output)
B. Total number of these persons who actually adopt one or more soil conservation practices within six months of completing one or more non-formal education programs. (outcome)

Year	Indicator 1A (OUTPUT)		Indicator 1B (OUTCOME)	
	Target	Actual	Target	Actual
2000	2561	1109[1]	1433	279[1]
2001	2542	2141	1776	1516
2002	2607	1454[2]	1889	380[2]
2003	2619	0	1908	0
2004	2627	0	1945	0

[1]The Environmental Quality Incentive Program coordinated by the USDA-NCRS, was not implemented during 1999-2000. Two trainings were offered on soil erosion and sedimentation control (Jan 98, Aug 98), sponsored by a local RC&D Council, but none were organized nor offered during 1999-2000, since in October 1999 Puerto Rico was the host of the Southeastern RC&D Development Council Association's Annual Training Meeting.

[2]Due to early retirement, we lack the services of a soil specialist. Most of the soil conservation education is conducted in collaboration with the USDA-NRCS.

DATA COLLECTION METHODOLOGY

Follow-up on farmers and farm visits to corroborate the practice implementation and that is properly applied.

OBJECTIVE 3
To improve decision-making on public policies related to agriculture and the environment.

PERFORMANCE GOAL 2
To annually increase the effectiveness of constituent and citizen participation on public policy issues affecting agricultural production, the environment, and ecosystem integrity and biodiversity.

INDICATOR 1

A. The total number of persons completing non-formal education programs on public policy issues affecting agricultural production and ecosystem integrity and biodiversity. (output)
B. The total number of these persons who actually become actively involved in one or more public policy issues within six months after completing one or more of these programs. (outcome)

Year	Indicator 1a (Output)		Indicator 1b (Outcome)	
	Target	Actual	Target	Actual
2000	205	112	150	21
2001	290	279	241	81
2002	295	299	246	26
2003	307	0	275	0
2004	341	0	292	0

PROGRAM DURATION

5-Year Planning Cycle (2000-2005)

ALLOCATED RESOURCES

Fiscal Year	Resources			
	State	Federal	Others Federal	Total
2000		$864,583.50		$864,583.50
2001		$242,960.09		$242,960,09
2002		$324,709.98		$324,709.98
2003				
2004				

ESTIMATED FTE COMMITMENT

Year	Professional			Paraprofessional		
	1862	1890	Other	1862	1890	Other
2000	31.48					
2001	7.48*					
2002	8.31					
2003						
2004						

*NOTE: During previous years personnel worked on a special project sponsored by AmeriCorps—College Coastal Conservation Crops—where college students were hired to provide information and education about the protection and conservation of the coastal areas. The main project covered the Southwestern part of Puerto Rico. The project was not fully implemented during 2001, therefore the number of personnel was reduced. There was also a reduction of personnel assigned to the water quality unit.

EDUCATION AND OUTREACH PROGRAMS

Some ongoing environmental projects will continue during the next years. Coordination with all related agencies/organization will be continued and research will be disseminated.

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GOAL 5 TO ENHANCE ECONOMIC OPPORTUNITIES AND THE QUALITY OF LIFE AMONG FAMILIES AND COMMUNITIES

OVERVIEW

According to the 2000 Census, the total population of Puerto Rico is 3,808,610: 51.9% women and 48.1% men. Seventy one percent (71%) of the population is urban and 29% rural. Three hundred thousand and seven (307,000) of the population are children 0 to 5 years old and 24.6% children and adolescents 6 to 18 years old. There were 59,461 births in Puerto Rico during 2000 (Department of Health - 2000), 28,410 were from adolescent mothers. These young mothers are in disadvantage because they are not prepared to face the emotional, social and economic factors affecting their lives and their children. We must educate parents and young families in parenting skills and child development to prepare stable, happy and successful children for both school and everyday life who will become responsible citizens and better human beings in their adult lives. The Family Relations and Child Development Specialist facilitated strategic planning workshops for families and communities at risk, curriculums, trainings, community organizations, and local and state government coalitions. Educational efforts are also directed toward clarifying on a personal and community wide basis what are ethical values associated to the concept of quality of life. A state family project "Values Education On Character Traits" was established to offer training on parenting skills and child development through non-formal education in which people adopted one or more parenting principles, skills, behavior, and practices. A federal proposal "Empower Parents to Raise Successful Kids helping Families, Children and Communities at Risk", was submitted and approved.

PRAES developed educational home-based programs to help families use their own resources and started home-based businesses. These programs suggest several ways in which families can turn skills, hobbies and ideas into money to increase their incomes. The creation of home-based businesses is a growing trend in our economy.

The elderly population in Puerto Rico is increasing (417,218 persons) and 59% have some type of physical and/or mental limitation (2000 Census of Population). Because of the rapid changes in the socio-economic and technological aspects of Puerto Rican society, meeting the needs of our aging is a challenge.

According to the 4-H and Youth Program reports, 45,137 youth completed non-formal education: 16,084 were 4-H members and 29,053 other youth. Educational programs included life skills, leadership development, self-steam, safety, science and technology, nutrition, health, environment, water quality, sexuality, civic education, and others. Three thousand nine hundred and fourteen (3,914) 4-H youth participated in after school enrichment program and 4,183 developed skills and knowledge in vocational exploration and skills. Twelve (12) youth delegates participated in the National 4-H Congress. The methods used to reach these youngsters were trainings, conferences, workshops, campaigns, field trips, club meetings, competitions, and other educational activities.

PRAES, as part of the College of Agricultural Sciences-University of Puerto Rico, serves as link between the University and the community. Its goal is to increase the quality of life of the communities at risk with special emphasis on the rural and sub-urban areas. The Community Resources Development Program (CRD) educates and trains community leaders to find solutions to their problems. Among CRD's most significant achievements: 220 committees were organized to give support to families and promote the increase of the family value system, 461 volunteer leaders were trained in leadership, community development and others, 192 communities established recycling projects.

PRAES' goal is to develop educational programs that can vitalize and strengthen the foundation of the democratic system and prepare citizens to participate more effectively in the issues and problems they are likely to face and how to solve them in a positive and successful way.

I. KEY THEME – CHILD CARE/DEPENDENT CARE

A. Extension Agents trained parents, families, and childcare providers in parenting skills and child development at childcare centers. These educational efforts in non-formal programs consisted of seven lessons (Values Family Education Curriculum) on six character traits, values, communication skills, family strengths, emotional and physical development, childcare, and other areas related to family relations. Each session is conducted with the use of visual aids, role-playing, examples, and other educational methods.

B. Impact – Two thousand five hundred and three (2,503) families adopted parenting skills and 1,273 parents changed attitudes toward responsible parenting and assertive family communication. One hundred and fifty thousand (150,000) people were benefited through radio programs on family relations and child development related areas. Two hundred and twenty-two (222) persons working in childcare centers were trained on child development. One hundred and eighty-eight (188) children increased their self-esteem and developed study skills through special projects. Five hundred and fifty-five (555) parents were oriented on positive discipline and changed their attitudes helping to prevent child abuse and neglect.

C. Source of Feudal Funds- Smith Lever 3(b), 3(c) Funds

D. Scope Of Impact- State Specific

II. KEY THEME – CHILDREN, YOUTH, AND FAMILIES AT RISK

A. The 4-H Youth Development base program continued focusing on youth at risk with an increase in activities, contests, projects, and competitions. Extension agents and volunteers of the 4-H Program promoted the adoption of healthy lifestyles and skills that allow youth to make adequate decisions. During fiscal year 2001-2002 the 4-H Youth Program impacted 16,084 4-H members and 29,053 other children and youth at risk. The following projects and curriculum were developed: *Posponiendo la Actividad Sexual-PAS* (Postponing Sexual Activity) project, Vieques Kids and Science Education-VKSE, *Resaltando tu Apariencia Personal*-RAP (Improving your Personal Appearance) project, and a curriclum on self-esteem.

B. Impact - A total of 45,137 youth and 4-H members were reached. One thousand four hundred and eleven (1,411) leaders were trained and 3,914 youth and children participated in the trainings offered by leaders helping them to develop skills in after school programs. Thirteen thousand three hundred and twenty-one (13,321) other youth obtained knowledge through educational activities (exhibitions, family days, and information centers). Four-thousand one hundred and eighty-three (4,183) youth obtained knowledge, developed vocational skills and changed academic experiences. Among the 4-H Program Philosophy "Learning by Doing", 463 youth obtained knowledge on skills development, adopted healthy lifestyles, and made better decisions in their lives. Also, 932, 4-H members and youth obtained knowledge in leadership development and civil rights.

C. Sources of Federal Funds- Smith Lever 3(b), 3(c) Funds

D. Scope of Impact- State Specific

III. KEY THEME – FAMILY RESOURCES MANAGEMENT

A. The number of families dependent on government programs increased during fiscal year 2001-2002. Extension Agents continue developing non-formal educational efforts due to an increase in consumerism. They trained and oriented 1,043 low income families in: money management, family budget and financial skills. Also, 414 consumers were oriented on how to make wise money management decisions. Three hundred and eighty-one (381) people were oriented on adequate food practices, clothes, articles, household, and other related areas.

B. Impact - During fiscal year 2001-2002, 134 families prepared a family budget and 288 adopted home management practices and changed attitudes.

C. Sources of Federal Funds- Smith Lever 3 (b), 3 (c) Funds

D. Scope of Impact- State Specific

IV. KEY THEME – FARM SAFETY

A. During fiscal year 2001-2002, 1,725 farmers were oriented about farm safety and eight people were oriented about the prevention of farm accidents.

B. Impact - One thousand (1,000) farmers changed attitudes and increased their knowledge in farm safety, 158 adopted farm safety practices, 269 farmers developed an emergency plan, and 203 adopted practices in case of natural disasters.

C. Sources of Federal Funds- Smith Lever 3 (b), 3 (c) Funds

D. Scope of Impact- State Specific

V. KEY THEME – HOME BASED BUSINESS EDUCATION

A. Extension Agents and volunteers leaders continue developing educational home-based programs to help families use their own resources and start home-based businesses to increase family income. This educational non-formal program suggests many ways in which families and individuals can turn skills, abilities and ideas into money. Four hundred and forty (440) people were trained and advised on self-employment skills. Eight hundred and thirty-eight (838) people were oriented and completed non-formal education in clothing confection.

B. Impact - During fiscal year 2001-2002, eight (8) persons were certified as artisans and 38 became self employed. Two hundred and ninety-eight (298) persons adopted practices. Eighty nine thousand (89,000) persons were benefit from radio and T.V. programs.

C. Sources of Federal Funds - Smith Lever 3(b), 3(c) Funds.

D. Scope of Impact - State Specific

VI. KEY THEME – JOBS/EMPLOYMENT

A. Income is one of the factors that affect the stability of the families and communities. Extension Agents and community leaders organized efforts to increase citizen's awareness of economic trends offering local economics and providing knowledge base to participate in community development programs. The Community Resources and Economic Development Program, developed projects to help people, youth, families and communities to improve their quality of life and well-being. Extension Service agents and community leaders aim to provide knowledge base to community development efforts to increase their value system and economic progress.

B. Impact - Two hundred and twenty (220) committees were created to give support to families at risk. Sixty-two (62) communities were organized reaching 459 families increase communities relations and 76 communities' projects were developed. Four hundred sixty-one (461) leaders of the Program were oriented in leadership development and skills to help the communities. One hundred nine-two (192) communities established recycling projects. Two hundred seventy-seven (277) small farmers were organized in which 113 improved their economic situation.

C. Sources of Federal Funds- Smith Lever 3 (b), 3 (c) Funds

D. Scope of Impact- State Specific

VII. KEY THEME – PARENTING

A. The PRAES will develop an educational program to strengthen the capacity of families to nurture, support and guide family members throughout their lives. The Extension Specialist developed a family project at state level to train and empower parents to become responsible parents and prevent child abuse and neglect.

B. Impact - A federal proposal was approved and a project was developed in two municipalities to empower parents to raise successful kids. Eighty (80) families at risk were trained and oriented in parenting skills and child development in which 38 families changed attitudes and gained knowledge toward child development and responsible parenting. One hundred and fifty thousand (150,000) people were benefited from radio programs and 362 gained knowledge toward educational activities. Two thousand five hundred and three (2,503) clientele learned and adopted practices in discipline, family relations, family positive communication and family life and child development related areas. One thousand two hundred and seventy-three (1,273) participants changed attitudes after six

month in effective parenting. Two hundred and twenty-two (222) childcare providers were trained in family relations and child development and 122 parents completed a non-formal education program in child development areas. Five hundred and fifty-five (555) parents changed attitudes in positive discipline to prevent child abuse.

C. Sources of Federal Funds- Smith Lever 3 (b), 3 (c) Funds

D. Scope of Impact- State Specific

KEY PROGRAM COMPONENT (S)

The Agricultural Extension Service will continue developing educational programs to orient the families to assure their resources; strengthen the capacity of the families and communities; be partners in building stronger families that could contribute to on-going efforts in community development; strengthen and empower families to nurture, support and guide their members throughout their lives; and make better management of the expertise of Extension educators at all levels. Each municipality will prepare a plan of action to accomplish the state goals. At state level a model program will be prepared for adaptation and implementation in communities by Extension educators. Efforts will emphasize an increase in interagency and organization collaboration at federal, state and local levels to improve outreach to families. Other strategies are: training and empowering parents, couples and children in different areas of family relations and child development; and developing and establishing special projects in parenting skills, child and human development, adolescent life skills development, youth at risk issues, financial aspects, elder-care, and leadership development to form better leaders and citizens.

There will be an emphasis on the use of volunteers as sources of support for families and communities at risk, involving families and communities in public policy decisions that affect their well-being and communities. This will be done by a more effective use of technology, such as distance learning strategies to reach a larger clientele.

Extension Specialists prepare publications, curriculums, articles, trainings, radio and television programs, forums, and workshops to reach state goals. PRAES provides the research basis needed to advance producers and communities understand the changes occurring in their situation. Research results are shared with PRAES personnel and government officials, particularly with those in the position of making public policy decisions.

Internal and External Linkages

Internal

Extension agents and specialists, professors from the Department of Agricultural Education (College Of Agricultural Science, University of Puerto Rico, Mayagüez Campus), professors from the School of Ecology, Family and Nutrition (University of Puerto Rico, Rio Piedras Campus).

External

The Department of the Family, the Department of Agriculture, the Department of Education, the Department of Labor, the Puerto Rico Planning Board, Head Start Program, the Department of Consumer Affairs, volunteer leaders, farmers, and producers.

The collaboration in coalitions/partnerships and the coordination with different agencies will increase the impact of educational programs.

TARGET AUDIENCES

- Families with children (0-5 years old) and child-care providers – to provide support and education on child growth/development, early childhood education and care to develop healthy children to become successful in school and life.
- Married couples and teenagers – need to strengthen the family base and the relationship between both sexes.
- Parents – educate them on how to rear and discipline their children.
- School age children and teenagers – to develop life skills in order to become better citizens and learn how to handle their problems.
- Elderly persons – orient them on how to face their situations and have a better quality of life.
- Families and youth at high risk – educate and train them to improve and develop family relations skills.
- Volunteer leaders – an important element to expand the educational message to other clientele.
- Farmers – research results and other scientific practices in agriculture.
- Low-income families and other families – to help them improve their socioeconomic environment and orient them on how to manage their resources and to be wise consumers.

EVALUATION FRAMEWORK

Evaluation Source: Published Data of Extension Annual Achievement Report (2001-2002), Printout of Extension Reports

Formative Evaluation: Reports by the home economists

Summative Evaluation: Self reported impact of the short courses done by the home economist and group evaluation six months after the last class session.

Common Evaluation Questions:

Question 1: What were the reactions of participants toward the training?

Question 2: What is the level of attitude, skills and aspirations of participants regarding the adoption of adequate agricultural practices?

Question 3: What is the level of adoption of agricultural practices among participants of non-formal education training?

Family

Question 1: Forty-five (45) radio programs were broadcasted on the topic reaching 150,000 people. Two thousand seven hundred and eight (2,708) persons ere benefited by educational material distributed.
Question 2: Two thousand five hundred and three (2,503) families increased their knowledge and skills regarding family strengths and child development. Two thousand four hundred and seventy-five (2,475) persons acquired knowledge through exhibitions and information centers.

Question 3: One thousand two hundred and seventy-three (1,273) families adopted effective parenting skills and used positive discipline.

Gerentology

Question 1: Twenty-one (21) training sessions on gerontology were offered to employees working in centers for senior citizens to change negative attitudes about senior citizens. Three hundred and four (304) persons completed non-formal educational programs on the topic. One thousand three hundred and sixty-four (1,364) elderly persons completed non-formal educational programs on topics related to the aging process.

Question 2: One hundred and fourteen (114) homemakers acquired knowledge regarding gerontology.

Question 3. Three hundred and four (304) persons adopted practices and changed their attitudes regarding the elderly community.

Human Relations

Question 1: Forty-four (44) PRAES employees were trained on topics relating to human relations.

Question 2: Fifty-one (51) teaching and non teaching PRAES personnel transmitted the concepts learned to their clients.

Question 3: One hundred and eighty three (183) families changed attitudes, modified conducts and applied skills to increase social well-being.

Children, Youth and Families at Risk

Question 1: One hundred and twenty two (122) persons completed non-formal education on topics related to child development. Four hundred and sixty (460) persons took advantage of the educational material distributed. Twenty-five thousand (25,000) persons benefited from radio programs broadcasted on topics related to children, youth and families at risk.

Question 2: Two hundred and twenty-two (222) persons of child-care centers acquired skills regarding child development. Twenty-three (23) leaders were trained on child development.

Question 3: One hundred and fifty-five (155) parents adopted social and emotional skills to teach children strategies on how to succeed in school.

OBJECTIVES, PERFORMANCE GOAL(S), AND OUTPUT AND OUTCOME INDICATORS

OBJECTIVE 1
To increase the capacity of communities and families to enhance their own economic well being.

PERFORMANCE GOAL 2
To annually increase economic opportunities in communities through economic development programs in which CSREES partners and cooperators play an active research, education, and extension role.

INDICATOR 1

A. The total number of public officials and community leaders completing non-formal education programs on economic or enterprise development. (Output)
B. The total number of these public officials and community leaders who actually adopt one or more recommended practices to attract new businesses or help expand existing businesses within six month after completing one or more of these programs. (Outcome)

Year	Indicator 1A (Output)		Indicator 1 B (Outcome)	
	Target	Actual	Target	Actual
2000	546	559	267	0
2001	536	890	245	103
2002	507	712	219	245
2003	508	0	263	0
2004	530	0	258	0

INDICATOR 2

B. The number of new businesses started resulting from economic development programs developed in collaboration with CSREES partners and cooperators. (Outcome)

Year	# of new businesses started	
	Target	Actual
2000	41	19
2001	43	20
2002	44	22
2003	42	0
2004	44	0

INDICATOR 4

B. The number of jobs created by the formation of new businesses and expansion of existing businesses resulting from economic development programs developed in collaboration with CSREES partners and cooperators. (Outcome)

Year	Indicator	
	Target	Actual
2000	34	277*
2001	28	32
2002	25	8
2003	24	0
2004	27	0

PERFORMANCE GOAL 3

To annually improve the financial status of families through financial management education programs implemented in which CSREES partners and cooperators play an active research, education, or extension role.

INDICATOR 1

A. The number of persons completing non-formal financial management education programs. (Output)

B. The total number of these persons who actually adopt one or more recommended practices to decrease consumer credit debt or increase savings within six months after completing one or more of these programs. (Outcome)

Year	Indicator 1A (Output)		Indicator 1 B (Outcome)	
	Target	Actual	Target	Actual
2000	4354	0	4098	1922*
2001	4629	5116	3827	2301
2002	4379	2662*	3680	1241*
2003	4355	0	3556	0
2004	4355	0	3458	0

*At this moment we confront a dramatically decrease of Extension Agents working at municipally level. There is not a Specialist in this area to train and present special projects

OBJECTIVE 2

To increase the capacity of communities, families, and individuals to improve their own quality of life.

PERFORMANCE GOAL 1

To annually increase the incidence of caring communities resulting from non-formal education programs in which CSREES partners and cooperators, play an active research, education, or extension role.

INDICATOR 1

A. The total number of persons completing non-formal education programs on community decision-making and leadership development. (Output)
B. The total number of these persons who actually become actively involved in one or more community projects within six months after completing one or more of these programs. (Outcome)

Year	Indicator 1A (Output)		Indicator 1 B (Outcome)	
	Target	Actual	Target	Actual
2000	7492	6110	3784	2400
2001	7459	5469	3887	1699
2002	7554	7884	3874	1622
2003	7595	0	4006	0
2004	7711	0	4037	0

INDICATOR 2

A. The total number of dependent cares providers completing non-formal education programs. (Output)
B. The total number of these dependent cares providers who actually adopt one or more new principles, behaviors, or practices within six months after completing one or more of these programs. (Outcome)

Year	Indicator 1A (Output)		Indicator 1 B (Outcome)	
	Target	Actual	Target	Actual
2000	2843	1322	1200	6582*
2001	2654	1,307	963	863
2002	2840	714*	904	412
2003	2695	0	896	0
2004	2958	0	761	0

*Decrease of staff working at county level and there are not Specialist working this area to promote the program

PERFORMANCE GOAL 2

To annually increase the incidence of strong families resulting from non-formal education programs in which CSREES partners and cooperators play an active research, education, or extension role.

INDICATOR 1

A. The total number of persons completing non-formal education programs on parenting. (Output)
B. The total number of these persons who actually adopt one or more parenting principles, behaviors, or practice within six months after completing one or more these programs. (Outcome)

Year	Indicator 1A (Output)		Indicator 1 B (Outcome)	
	Target	Actual	Target	Actual
2000	2752	1337	2376	3262
2001	2796	2094	2383	1044
2002	2713	3234	2398	2658
2003	3009	0	2424	0
2004	2966	0	2502	0

INDICATOR 2

A. The total number of persons completing non-formal education programs on youth development. (Output)

B. The total number of these persons who actually adopt one or more youth development principles, behaviors, or practices within six months after completing one or more of these programs. (Outcome)

Year	Indicator 1A (Output)		Indicator 1 B (Outcome)	
	Target	Actual	Target	Actual
2000	10000	50624	8500	*29209
2001	11500	52788	9200	33036
2002	12100	*45137	10309	18352
2003	14201	0	11140	0
2004	16109	0	12900	0

*Increased per cent of Extension Agents working this program. There are two 4-H and Youth Specialist to train and promote this program

Program Duration

5-year Programming Cylce (2000-2005)

Allocated Resources

Fiscal Year	Resources			
	State	Federal	Others Federal	Total
2000		$2,454,673.68		$2,454,673.68
2001		2,308,391.03		2,308,391.03
2002		$2,635,442.08		$2,635,442.08
2003				
2004				

Estimated FTE Commitment

Year	Professional			Professional		
	1862	1890	Other	1862	1890	Other
2000	89.41					
2001	71.12					
2002	67.47					
2003						
2004						

EDUCATION AND OUTREACH PROGRAMS

Many farmer, youth and community projects will be continued during the next years. Three different programs devote FTE's to this goal (Family and Consumer Sciences, 4-H Youth, and Community Resource Development). These efforts will be carried out through the whole island.

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MERIT REVIEW PROCESS

As part of the Merit Review Process for this year, the opinions of stakeholders (including clientele, volunteers and Extension staff) were gathered through a written questionnaire. A random sample of 13% of the Extension staff that included home economists, agricultural agents and specialists participated in this process. To encourage participation from clienteles, each member of the field staff was asked to invite one program participant to the meetings. These were identified in order to represent all the four programs. A total of 19 participants including homemakers, youth, farmers and volunteers completed the group of stakeholders. Five regional meetings were conducted to administer the questionnaires on site. Five open-ended questions collected the opinion of the stakeholders on the strengths and weaknesses of the program, benefits of Extension programs to the communities and suggestions for improvement. An Extension Specialist administered the questionnaires. A committee composed of the Specialist and four additional staff members analyzed the findings and established categories for the answers.

The findings showed that the clientele is reporting positive changes in knowledge, skills and behavior changes after having participated in Extension programs. Among the major changes mentioned were communication skills, interpersonal relations, leadership, decision-making skills, agricultural practices, improvement in nutritional habits, home budget, environment protection and auto-employment. All participants responded positively to Extension been helpful in attending the needs of their communities. According to the clientele responses, Extension has achieved significant changes in their communities including development of community leaders, protection of the environment and has promoted a healthy community, which they defined as nutritionally healthy, a free-of-drug-youth and development of infrastructure projects. The clientele and staff also identified areas of strengths and weaknesses in Extension. These were categorized as follow:

Strengths of Extension (Clientele Opinion)

- New learning opportunities
- Varied and updated information
- Development of personal skills, particularly leadership and auto-esteem
- Empathy and kindness of their staff
- Immediate attention given to their problems

Weaknesses and Recommendations (Clientele Opinion)

- Integration of new technologies in education: videos, Internet, computers
- More variety in educational topics
- More contests for 4-H youth
- Improve printed material to be more visually attractive
- Increase use of mass media, particularly for promotion
- Improve Interagency coordination efforts
- Improve access for handicap persons in the different county offices

Strengths of Extension (Staff Opinion)

- Human Resources: staff with an excellent academic preparation, opportunities for Professional development offered by Extension to their staff, use of community leaders and volunteers
- Educational Methodology: diverse and updated information, interaction with the community and clientele, Interagency collaborations, plan of work based on needs assessments, scientific-based information, particularly from the Agricultural Experimental Station
- Integration with the University system: Extension mission, credibility, Strategic planning
- Presence of Extension across the Island
- Equipment: access to a diverse and modern equipment

Weaknesses (Staff Opinion):

- Human Resources: continuous changes in administrative personnel, weak field supervision, inefficient internal communication, poorly develop volunteers for community work
- Educational Methodology: weak marketing of programs
- Integration with the University system: complex bureaucratic structure, unstable administration
- Equipment: lack of particular equipment in some offices, lack of budget for educational activities for larger audiences
- Planning and evaluation: high numbers expected within each program area to reach program's objective ("programs need better integration to achieve our goals"), lack of efficient coordination among Extension and the Puerto Rico Agricultural Department, not enough evaluations to cover all programs and poor discussion of evaluation results

Recommendations to improve program effectiveness (Staff Opinion):

- Increase integration of the four program areas (Agriculture, Family and Consumer Sciences, 4-H, Community Resources Development)
- Improve the evaluation system and improve validation of results
- Improve development of Human Resources
    - Training in administration skills for supervisors
    - Strength and continue the professional development training with updated information
    - Expand training for volunteers according to their needs
    - Improve need assessment skills
    - Improve interpersonal relations
    - Recruit the staff necessary in some municipalities
    - Review the recognition system for staff achievements
    - Promote more research
- Planning
    - Improve Interagency collaborations
    - Review Extension mission to target our efforts accordingly

- Continue improvement of educational methodology and integrate the new technologies (educational videos, materials published in the Internet, etc.)
- Avoid continuous changes in administrative positions.

❖ Equipment and office supplies: better distribution according to county needs

The findings of this evaluation indicate that Extension is having a positive impact in individuals and their communities as expressed by the opinion of the surveyed clientele. Most of these aspects have been reported in previous evaluations. In order to complete this process with our stakeholders, each of the participants in this evaluation process received a copy of the Summary Report that presents the findings. A priority is given by the Extension personnel to follow up on these areas by strengthening and promoting positive aspects while addressing and looking for solutions in the areas that need to be improve. Particularly, in the areas that need improvement, it is planned to organize several committees to attend the issues of greater priority.

We are currently reviewing our stakeholder input process in order to improve its strategy.