University of Puerto Rico
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Agricultural Extension Service

Puerto Rico Annual Report of Accomplishments and Results: FY 2002-2003

Period covered: October 1, 2002 to September 30, 2003.

Due date: April 1, 2004

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PUERTO RICO ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS FY 2002-2003

OVERVIEW

This accomplishment report covers the period from October 1, 2002 to September 30, 2003. During this fiscal year the Agricultural Extension Service (PRAES) used a total of 186.70 FTE's.

PRAES signed multiple agreements and/or made collaborative efforts throughout the island during FY 2002-2003. Public entities, non-profit organizations, public and private universities in and outside of Puerto Rico, local state and federal organizations, community organizations, radio and television stations, and the press participated with PRAES to achieve various 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 77.59 FTE's.

The Puerto Rico Agricultural Reform that started three years ago is still in the development process, as it takes time and economic resources to achieve the goals established by the Department of Agriculture and PRAES. Also farmers are afraid of the new organizational structures and have not adopted the new organizational structures in its early stage. The reform includes the livestock, starchy crops, and vegetable commodities.

PRAES is also collaborating with USDA agencies in order to implement the 2002 Farm Bill. For example, we are coordinating educational efforts with the Natural Resources Conservation Service related to water use and soil conservation practices. We are also collaborating with the Department of Agriculture on the development of an educational program aimed at increasing the consumption of local production through the school lunch programs. Beef, poultry, starchy crops, vegetables, dairy products, and eggs are part of the menu.

The dairy sector still holds the first position by income of all the agricultural sectors. The dairy commodity maintained its Grade A classification through the continued technical support of PRAES personnel and 97% of the dairy farms met the parameters for somatic cells and bacterial count for this fiscal year. Three hundred and forty-one (341) dairy producers maintained consistent Grade A parameters. Seventy-nine (79) dairy facilities and 93 waste disposal systems were improved.

Of 168 farmers registered in the dairy herd improvement program, 81 improved their efficiency in production per cow.

A total of 213 farmers adopted the recommended forage production practices and 77 adopted soil conservation and water quality practices.

Of the 2,377 coffee producers oriented, 1,130 (48%) adopted the recommended production practices, 160 increased their production per acre and 117 improved the quality of their coffee.

In the fruit commodity, 1,592 fruit producers adopted the recommended production and post harvesting practices and 15 farmers increased their added value to their crops.

Six hundred and sixty six (666) vegetable producers and 244 of the farmers oriented on hydroponic systems adopted the recommended production practices.

Eighty four (84) grain and legume producers adopted the recommended production practices and 12 increased their income.

One thousand and thirty-seven (1,037) farmers adopted the recommended production practices in starchy crops and a total of 275 farmers increased their production.

In livestock production, a total of 42 (37%) poultry producers, 595 beef producers, and 208 swine producers adopted the recommended production practices. Of these, 15 poultry producers, 167 beef producers, and 73 swine producers improved their farm facilities, respectively. Thirty-one (31) beef producers and 60 swine producers increased their income.

Goal 2, A safe and secure food and fiber system, accounted for a total of 7.23 FTE's.

PRAES developed on-going food safety programs at different levels with a from-the-farm-to-the-table approach. There is multi-county cooperation and Extension personnel are cooperating and disseminating research and results to the clientele. The seafood and meat HACCP regulation and the Good Agricultural Practices (GAP) guidelines are examples of how PRAES is offering training to agronomists and farmers in order to help them comply with the new regulations.

Two training meetings were conducted on GAP for fruits and vegetables.

Two thousand five hundred and forty-six (2,546) persons in charge of food establishments completed the course requirements of the 12-lesson Section 84 of the Food Safety Certification Course (24 contact hours) and the certification tests with scores over 70%. They all adopted methods to control food temperature/time and other food safety recommendations.

The food safety education initiative for consumers was carried in the four PRAES base programs and other programs through the Puerto Rico Partnership for Food Safety Education. Five thousand six hundred and sixty-one (5,661) consumers completed non-formal consumer education programs on food safety. Of these, 3,033 consumers demonstrated the adoption of the recommended practices.

During this fiscal year 1,000 farmers were oriented on IPM practices. Three hundred and fifty (350) farmers adopted one or more IPM practices in coffee, 100 in fruits, 300 in starchy crops (banana and plantains), and 75 in vegetable crops. The early and correct diagnosis of pests in the PRAES Plant Diagnostic Clinic saved farmers $200,000.

Three hundred and seventy two (372) dairy farmers received on-site technical orientation on how to maintain bacteria counts under 100,000 units of colonies/ml and somatic cells below 400,000 cell/ml; they were also oriented on how to reduce antibiotic residues in milk. Three hundred and forty-one (341) dairy farmers actually maintained consistent Grade A standards.

One hundred and fifty three (153) children and youth attended the 5-lesson course designed to help them understand the importance of assuring the food supply in Puerto Rico. All the participants expressed their concerns about the security of food for the island. Eleven (11) participants planted one or more vegetables or herbs.

Two thousand two hundred and fifty-two (2,252) participants of the Nutrition Assistance Program (NAP), Puerto Rico Department of the Family, attended a 6 -session short course to improve supermarket strategies, the use of resources for acquiring food, food safety practices, and nutrition. One thousand four hundred and sixty-five (1,465) NAP participants completed the course. Two to six months later, 754 reported that they had managed to change one or more practices.

One thousand one hundred and twenty-seven (1,127) volunteers spent 12,576 hours in support of the program.

Goal 3, A healthy well-nourished population, accounted for a total of 21.75 FTE's (this does not include EFNEP as it is a 3(d) funded program).

During this fiscal year extension agents and volunteers played an active role in improving individual and family nutrition and health, non-formal nutrition and health promotion, and education programs.

Seven hundred and thirty-four (734) children and youth completed non-formal health education and promotion programs; 593 (81%) adopted one or more of the recommended practices after completion of the programs.

A total of 3,807 adults completed non-formal education programs on topics related to health promotion and health education. Of these, 1,585 reported that reducing their risk levels upon completion of one or more recommended practices.

In the area of indoor air quality, 1,202 individuals learned about indoor air contamination through short courses, seminars and home assessment. Of these, 505 learned about the different air contaminants and methods for their mitigation and elimination. One hundred and sixty-six (166) persons adopted humidity control practices in their homes, and 275 reduced sources of contamination in in-door air.

PRAES, in partnership with the Health Fraud Prevention Commission, developed a fraud prevention program targeted to individuals infected and affected by HIV/AIDS, adults and elderly people. Three hundred and seventy-five (375) participants reported knowledge gained and behavior and attitudes changed; five persons reported health fraud cases to government agencies.

A 7-session short course is used to improve nutritional practices among NAP participants. During FY 2002-2003, 2,877 people participated in the course. Of these, 1,916 completed the course and 2,200 planned to change one or more practices. Between two to six months later 925 persons reported that they had actually managed to change one or more practices. One hundred and nineteen (119) volunteers were recruited and dedicated a total of 1,280 volunteer hours. Twenty four thousand five hundred and thirty-three (24,533) persons participated in community activities designed to help them change dietary habits; an additional 1.5 million people were reached through mass media.

A total of 112 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, sugar, low consumption of vegetables, fruit, and whole grain products. Seventy-four (74) adopted one or more recommended dietary habits six months after completing the short course.

There were 10,251 families oriented and 3,505 enrolled in EFNEP in Puerto Rico. Of the families enrolled, 1,825 graduated, 3,119 receive food checks, and 1,979 participated of the WIC program. Two hundred and fourteen (214) pregnant EFNEP mothers were oriented on the importance of breastfeeding and adequate prenatal care in order to have healthier babies. Three (3) babies died during their first month of life. Seventeen (17) EFNEP mothers breastfed their babies.

As a result of the educational experience on EFNEP 1,825 persons reported that they are now eating a variety of food and are making good use of their allowance to obtain nutritional food. Two thousand one hundred and twenty-two (2,122) volunteers helped in some stage of the program. Of these, 772 worked with youth and 1,350 with adults; 3,372 volunteer hours were dedicated to youth and 6,153 were dedicated to families, representing and economic impact of $18,426 and $31,687.95 saved by using volunteers, respectively.

Goal 4, To achieve greater harmony (balance) between agriculture and the environment, accounted for 9.92 FTE's.

PRAES maintains its educational program on water quality, farm waste management, and rural aqueducts. The program is aimed at providing farmers with information on the environmental regulations for facilities built or planned for animals in confinement as well as for processing plants. Also assistance is offered to comply with such regulations and for communities that are serviced by rural aqueducts. PRAES generates educational activities and information on water quality for homeowners, low-income communities, and the general public.

Ten aqueducts were evaluated. Two thousand five hundred and twelve (2,512) people will benefit from the improvements made to rural aqueducts by receiving safe drinking water in their homes.

One hundred (100) animal waste management systems were designed and 75 systems were improved.

One hundred and twenty (120) persons adopted the recommended practices for the reduction of superficial and underground water contamination caused by chemicals used on the farm and at the home.

Twenty-four (24) persons adopted the recommended practices for the maintenance of septic systems.

Sustainable agriculture has become a familiar subject to our farmers and clientele. People are becoming more sensitive on this issue and request information on sustainable practices and ways to safely produce food. Five hundred and twenty-three (523) persons established practices on sustainable crop production. Fifty volunteers offered trainings or were facilitators to distribute information on sustainable agriculture.

PRAES offers orientation on the proper use of soils, which are the basis for agricultural production, and fertilizers. This is important due to the diversity of soils on the island and for the competitive production of quality food.

Two hundred and ninety-eight (298) soil, irrigation water, and vegetable tissue samples were analyzed. Two hundred and six (206) farmers used the results to determine the application of fertilizers and soil amendment requirements.

The proposal *Forest Health and Integrated Pest Management Online in Puerto Rico* was extended until September 2004 in order to complete and maintain the Forest Health Webpage. Another proposal *Improving Health of Forest Nurseries in Puerto Rico: Training in Good Cultural Practices*, was submitted and approved.

Thirty-five (35) samples of trees and woody ornamentals were processed in the Plant Diagnostic Clinic with a direct impact of at least $30,000 saved because of the correct pest diagnosed.

Seventy-five (75) persons were oriented on IPM practices which included landowners, personnel from the Department of Natural Resources and Environment, and personnel working in forest management.

The two pesticide instructors trained 3,500 young adults; 1,182 private applicators and 316 commercial applicators were recommended to be certified by the PR Department of Agriculture.

Goal 5, To enhance opportunities and the quality of life among families and communities accounted for a total of 70.21 FTE's.

PRAES combined with the local government to educate families on family relations, parenting skills, child development, consumer education, family budget, community development, family resources management, value of household work, and youth development life skills. Efforts were also aimed at assisting low-income families, promoting healthy behaviors, and improving lifestyles of individuals, families and communities to be "Healthy People and Healthy Communities".

Extension personnel trained parents, families and childcare providers in parenting skills and child development at childcare centers. These educational non-formal programs consisted of seven lessons (*Family Values and Traits Education Curriculum*) based on six character traits, values, communication skills, family strengths, childcare, and other areas related to family relations.

Three thousand two hundred and eighty-three (3,283) families adopted practices in family relations and other related areas. After six months 906 parents showed changed attitudes toward responsible parenting and assertive communication helping them to prevent child abuse and neglect.

During this fiscal year (2002-2003), 1,379 low-income families were trained and oriented in money management, family budget, and financial skills. As a result, 255 families prepared a family budget, 11 people established their own business, 576 consumers made wise decisions toward money management, and 203 families adopted practices and changed attitudes toward money management.

Six hundred and ten (610) individuals were advised and trained in self-employment skills. Eleven (11) people established their own business and 231 families adopted the recommended practices.

Of a total of 1,421 farmers oriented on farm safety and prevention of farm accidents, 755 farmers changed attitudes and increased knowledge on farm safety, 327 adopted farm safety practices, 175 developed an emergency plan, and 347 adopted practices in case of natural disasters.

The Family Relations and Child Development Specialist developed a family project at state level (CYFAR) to train and empower parents to raise successful kids and to become responsible parents and prevent child abuse and neglect. A federal proposal was approved to develop this project which was established in two municipalities.

Three hundred and thirty six (336) families at risk were trained and oriented in parenting skills and child development in which 252 parents developed parenting skills, 468 children were benefited through this project and 126 parents taught their children social and emotional skills to improve their children's well-being.

Eighty percent (80%) of the participants reported changes in attitudes in positive discipline to prevent child neglect and abuse.

Base Programs

The Four-H Youth Development base program accounted for 33.204 FTE's during this fiscal year. This base program continued focusing on youth at risk with an increase in activities, contests, projects, competitions, trainings, workshops, and volunteer recruitment. During this period the Four-H Youth Program impacted 15,737 members and 27,949 other children and youth. Projects developed were "*Posponiendo la Actividad Sexual-PAS"* (*Postponing Sexual Activity*), *"Resaltando tu Apariencia Personal-RAP"* (*Improving your Personal Appearance*), and *Animals and Plants*. Curriculums on self-esteem, consumer education, and nutrition were also developed.

A total of 43,686 children, youth, and 4-H members were reached. Three thousand nine hundred and thirty-three (3,933) children and youth developed skills though special projects in after school enrichment programs. Thirty five thousand (35,000) people were benefited through radio programs. One thousand and seventy-four (1,074) 4-H members and youth obtained knowledge and developed vocational skills and experiences related to vocational exploration. Sixty-four projects were developed in technology and sciences by 4-H members.

During this period, 599 volunteers obtained knowledge in leadership skills and 216 volunteers organized youth activities to promote healthy lifestyles. One thousand nine hundred and fourteen (1,914) 4-H members and other youth obtained knowledge in leadership development, community development, and civil rights.

A total of 1,411 youth and adult volunteers offered 4,803 volunteer hours that represent an economic impact of $22,846 to the program.

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 4-H members to travel to the National 4-H Congress.

The Community Resource Development Program (CRD) accounted for 10.086 FTE's during 2002-2003.

CRD focused its 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 to prevention of school desertion, among others.

As a result of work carried out in CRD, 66 communities were organized and 776 families improved their community relations. Thirty one (31) communities established recycling projects. Two hundred and fifty-two (252) small farmers were organized; of these, 130 improved their economic situation.

Six hundred and seven (607) community leaders were oriented about community project development. As a result, 73 community projects were developed.

The Fifth Home Garden Festival was celebrated at the Caguas region. The activity consisted of conferences and exhibitions and awards to volunteer leaders.

A. PLANNED PROGRAMS

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

OVERVIEW

During FY 2002-2003 the Puerto Rico Agricultural Extension Service (PRAES) worked to increase production, consumption and competition of the agricultural products Orientation was offered on how to increase the value added commodities and the availability of local products. PRAES collaborated with USDA agencies in order to implement the 2002 Farm Bill and with the State Department of Agriculture to promote the agricultural reform.

The PR Department of Agriculture has been implementing an agricultural reform for the past three years. Its main goal is to organize the producers in commodities groups to establish a hierarchy structure which is the first step to organize each sector, including harvesting periods and marketing. The process takes time because farmers do not adopt new organizational structures in the early stages.

The reform is intended to create a 3-level structure. The first level is integrated by farmers of all agricultural sectors members of the agricultural commodities groups; the second level is for classification purposes; and the third level consists of the processing facilities. The purpose of the commodities groups is to organize production in accordance with the supply and quality of the products. The production surplus and non-marketable products will be used to produce a variety of byproducts partially cooked or ready-to-eat. This process adds value to the products and increases the farmers' income.

The Agricultural Reform will inject $128.3 million in infra-structure and $42 million in the field. It is expected to create 7,333 new jobs and an increased participation of the products in the local market.

The success of this program will depend on the facilities built, post harvesting practices, the technology used to increase production, and the implementation of the recommended production practices. To help the farmers with this goal PRAES developed meetings, trainings, mass media, workshops, and individual contacts. Good agricultural practices in vegetables, fruits, and starchy products, food safety of livestock products, and farm management practices are emphasized.

If farmers implement the recommended production practices, we expect an increase in efficiency, the production of quality products, increased profits, and increased participation in the local market.

I. Key Theme: Agricultural Competitiveness

A. The agricultural sector includes crops and livestock. The crops reported are coffee, vegetables, starchy vegetables, fruit, grains and legumes. Intensive training in recommended sustainable coffee propagation, production, and post harvest coffee processing were emphasized. Two thousand three hundred and seventy-seven (2,377) coffee farmers were trained in production, propagation and handling of raw coffee beans.

The starchy crops sector increased production due to the pest resistant varieties used, irrigation, and the adoption of the better management techniques during harvesting and post harvesting practices. A total of 3,891 farmers were trained in pest control and recommended starchy crop practices to improve efficiency.

The fruit sector is the one with major diversity. The demand for fruit increased and most farmers show interest in this sector. The biggest effort is with the recommended production practices. A total of 4,175 farmers were trained in the latest production practices in quality, post harvesting, and disease prevention program.

A total of 1,998 farmers were trained in the recommended vegetable production practices and 1,744 were trained in hydroponics systems.

The production of grains and legumes has been growing in the northern and southern part of the island. A total of 159 farmers were trained in the recommended production practices.

The livestock sector includes poultry (layer eggs and broilers), swine, beef, forage and dairy. Local producers supply 30% of the broiler consumption. This sector was restructured and a total of 114 farmers were trained in the recommended production practices, business administration, and farm safety. The swine sector is also in the process of restructuring. A total of 547 swine producers were oriented in the recommended production practices.

The beef sector is still facing continuous competition from imports, which decrease the local market participation. A total of 1,452 beef farmers were trained in the recommended production practices.

The forage sector increased due to dairy activities. To reduce dependency on concentrated feed dairy producers are using more hay and silage to reduce production cost. A total of 575 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 provided by Extension personnel has

contributed in maintaining the Grade A classification. All 372 dairy farmers where trained in the recommended dairy production practices.

The group of other livestock is composed by small farmers of goats, sheep honeybees, rabbits, and horses. Extension personnel is working with this group to make them more profitable. A total of 814 persons were trained in the recommended production practices.

B. Impact – Of 2,377 coffee producers oriented, 1,130 (48%) adopted the recommended production practices. One hundred and sixty (160) coffee producers increased their production per acre, and 117 improved coffee quality.

One thousand and thirty-seven (1,037) farmers adopted the recommended production practices in starchy crops. A total of 275 farmers increased their production.

One thousand five hundred and ninety-two (1,592) (38%) fruit producers adopted the recommended production and post-harvesting practices. Fifteen (15) farmers increased the value-added to their crops.

Of all vegetable farmers oriented, 666 (33%) adopted the recommended production practices and 244 (14%) adopted the recommended hydroponics practices.

Eighty-four (84) producers (52%) of grains and legumes adopted the recommended production practices and 12 increased their income.

A total of 42 (37%) poultry producers adopted the recommended production practices, and 15 improved farm facilities.

Two hundred and eight (208) (38%) swine producers adopted the recommended production practices, 60 increased their income, and 73 improved their facilities.

Five hundred and ninety-five 595 (41%) beef producers adopted the recommended production practices. One hundred and sixty-seven (167) improved their facilities and 31 increased their income.

A total of 213 (37%) farmers adopted the recommended forage production practices. Seventy-seven (77) farmers adopted soil conservation and water quality practices.

In average 341 (92%) dairy producers maintained consistent Grade A parameters. Seventy nine (79) dairy facilities and 93 waste disposal systems

were improved. Of the 168 farmers registered in the dairy herd improvement program, 81 (48%) improved their efficiency in production per cow.

A total of 270 (33%) 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

D. Scope of Impact – State specific

II. Key Theme: Aquaculture

A. The aquaculture sector has grown during the past year. At present, it is in the organization process according to agriculture public policy of commodity groups. There is a high demand for aquacultural products and consumers pay high prices for shrimp and fish. This sector is being promoted through educational activities and printed material. A total of 75 farmers were oriented in management and business financing.

B. Impact – A total of 50 (67%) farmers improved their facilities. Five (5) farmers adopted the recommended farm safety practices.

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

D. Scope of Impact –State Specific

III. Key Theme: Ornamental/green agriculture

A. The ornamental sector is growing constantly. The demand is greater than supply. This sector is being organized through ornamental commodity group. The lack of organization among producers has created a disruption in the market and overstock. A total of 235 ornamental producers were trained in the recommended production practices.

B. Impact – A total of 72 ornamental producers adopted the recommended production practices. Six (6) persons established their own business and 10 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)

The agricultural sector faces a series of challenges related to production, marketing, and safety. To deal with this PRAES developed and offered several activities to the public. One of the methods to provide information in an organized way is through training on several 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 were also conducted.

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 of implementing the program and outreach 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 AND EXTERNAL LINKAGES

Internal
Personnel of the College of Agricultural Sciences, the PR Agricultural Extension Service, the Agricultural Experiment Stations, and the Sea Grant Program help with trainings, research, and information sharing.

External
The Puerto Rico Department of Agriculture offers 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.

Farm Service Agency sponsors the Small Farmer Outreach Training and technical Assistance Program. It intends to educate small farmers on farm management.

The private sector also 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 SARE on livestock management disposal, to the Rangeland Research Grant Program, and to McIntere Stains 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, and farm personnel, agricultural entrepreneurs, packers, 4-H members, members of agricultural and professional associations, people from the private sector, and personnel from other agencies such as the Department of Agriculture, the Natural Resources and Conservation Service, and the College of Agricultural Sciences.

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
2001	1316	1714	243	253
2002	1343	1202	252	128
2003	1372	1708	257	97
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	22636	12264	11784
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
2001	978	492[1]	406	189[1]
2002	1007	419[1]	418	106[1]
2003	1015	597	423	114[1]
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		$3,605,790.62		$3,605,790.62
2003		$3,348,541.91		$3,348,541.91
2004				

ESTIMATED FTE COMMITMENT

Year	Professional			Professional		
	1862	1890	Other	1862	1890	Other
2000	79.99					
2001	78.86					
2002	78.48					
2003	77.58					
2004						

EDUCATION AND OUTREACH PROGRAMS

PRAES developed two agricultural programs in the crop and livestock area which 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, farm 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 – According to the 2000 Population Census, Puerto Rico is one of the most densely populated countries in the world with 3,808,610 persons and 3,435 square miles of land (1,112 persons per square mile). Agriculture represents only 0.67% of the internal gross product (*Economic Report to the Governor 1996)* of the Island. The total farmland (2002 Census of Agriculture) is estimated in 690,687 *cuerdas,* 174,791 *cuerdas* less than 1998. The island imports 69% of the food from the United States (report of the Puerto Rico Department of Agriculture 1992). 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 2003, a monthly average of 1,027,020 people (26.6% of total population) received an average of $97.60 a month per person from the NAP to buy food. According to the Census Bureau (2000), 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, the Puerto Rico Agriculture Extension Service (PRAES) initiated a project with a food security and affordability component to help low-income families become more food secure 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. Given the high level of poverty on the island food insecurity has been accepted as a fact among the population served by the PRAES and has not been measured as such in our program.

Food Safety: Farmers, Wholesalers, Retailers - The 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, regulatory and training areas.

Food Safety: Integrated Pest Management - Integrated Pest Management (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 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 372 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 2002-2003 of the Puerto Rico DHIA (Dairy Herd Improvement Association) and Puerto Rico Dairy Health Project show that an average of 92% of all dairy producers maintained consistent Grade A parameters.

Food Safety: Consumers – PRAES strengthened coordination with eight state and federal agencies through the Partnership for Food Safety Education which was initiated in 1998 to develop and support food safety education for consumers including the *Fight BAC!* campaign. The Partnership 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 *Buying Safe Food*. Thousands of consumers were benefited through courses, conferences, radio, press articles, exhibitions, and fairs.

The project “Future Chefs” consists of a 5-lesson course (one of which is Fight BAC!), and local and state competitions. It is designed to initiate children and youth in the art of healthy and safe food preparation in which participants can learn and practice safe food handling procedures.

Food Safety: Persons in charge of Food Establishments – Puerto Rican food establishments had a great food employees turn over requiring well trained persons in charge to train and supervise them. PRAES worked in partnership with the Puerto Rico

Department of Health Food Establishments' Hygiene Program to offer the Food Safety Certification Course based on HACCP principles to persons in charge of food establishments. The main reference of this course is the FDA Food Code (2001). The Food Code, which was originally translated into Spanish as part of the project No. *96 - EFSQ - 1 – 4171*, was updated in 1999 and 2001. This Code is part of the Food Hygiene Regulation No. 6090 of the Puerto Rico Department of Health approved 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: Security of Supplies

. One hundred and fifty-three (153) children and youth completed the 5-lesson course designed to help them understand the importance of assuring food supply in Puerto Rico.

. Impact – Of the youth involved in the course, 153 became aware of food security. In some cases the intervention did not consist of the 5-lessons, thus it was reported that 235 youth tried a new food that they had previously not accepted, 26 became aware of the impact of urban expansion on agriculture, 11 planted one or more vegetables or herbs, four were successful in their plantings, and 153 expressed their concerns about the security of foods for the island.

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

. Scope of Impact - State Specific

II. Key Theme – Food Security: Affordability

. Two thousand two hundred and fifty-two (2,252) participants of the Nutrition Assistance Program (NAP) 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, food safety practices, and, also, to improve nutrition.

. Impact – Two thousand two hundred and fifty-two (2,252) NAP participants participated in the course. One thousand four hundred and sixty-five (1,465) NAP participants completed the course, 1,797 planned to change one or more practices, and 754 reported that they had managed to change one or more practices two to six months later. One hundred and nineteen (119) volunteers spent 1,280 hours in support of the program. The total number of nutrition assistance recipients who reported a change in behavior in the use of supermarket strategies and the use of resources for obtaining foods were: 470 improved their planning of meals and snacks, 376 followed the plan they

developed, 561 selected alternatives that are more economical and of the same nutritional value, 483 used food harvested in Puerto Rico, 524 informed that they now make a shopping list, 707 improved their use of supermarket specials, 697 compare prices before they buy, and 572 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%.

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

. Scope of Impact - State Specific

III. Key Theme – Food Safety: Farmers, Wholesalers, and Retailers

. Trainings on good agricultural practices (GAP) in fruits and vegetables were 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.

. 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.

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

. Scope of Impact: State Specific

IV. Key Theme – Food Safety: Integrated Pest Management

. One thousand (1,000) farmers were oriented on IPM practices. Three hundred and fifty (350) farmers adopted one or more IPM practices in coffee, 100

farmers in fruits, 300 farmers in starchy crops (banana and plantain), and 75 farmers in vegetable crops. The recommended IPM practices were based on visits and monitoring of pests in the farms.

Diseased samples were processed and diagnosed at the Plant Diagnostic Clinic and a written report to farmers with the recommended IPM practices they had to establish to maintain adequate pest control.

. Impact – The early and correct diagnosis of pests in the PRAES Plant Diagnostic Clinic saved farmers $200,000. One hundred (100) farmers were oriented on IPM through visits to the farm and reports with IPM recommendations. Eight hundred (800) persons (including farmers, agricultural agents, homeowners, agronomists, and ornamental producers) received educational IPM materials.

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

. Scope of Impact – State Specific

V. Key Theme – Food Safety: Foodborne Pathogen Protection Mastitis Prevention Program

. Three hundred and forty-eight (348) dairy farms maintained consistent bacteria counts below 100,000 units of colony per milliliter and somatic cells below 400,000 cell/ml.

. Impact – Three hundred and forty-one (341) dairy farmers actually maintained Grade A standards.

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

. Scope of Impact – State Specific

VI. Key Theme - Food Safety: Consumers

. 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. Five thousand six hundred and sixty-one (5,661) consumers completed non-formal consumer education programs on food safety; 53,435 persons participating in short conferences, 3,741 attended exhibits, agriculture market, and fairs. Home economists participated in 273 radio and TV programs and wrote 110 press articles in local newspapers.

. Impact – Three thousand and thirty-three (3,033) consumers demonstrated the adoption of the recommended practices: improved their hand washing practices, increased their sanitation of surfaces; reduced cross contamination of foods; cooking at the proper temperature; and maintained an adequate temperature in the refrigerator.

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

. Scope of Impact – State Specific

. **Key Them – Food Safety: Future Chefs Competition**

. One hundred and forty-four (144) children and youth participated in the Regional Future Chefs Competition (five regions).

. Impact – Eighty per cent (80%) of the participants demonstrated good food handling practices during transportation separating ready to eat food from raw foods to avoid cross contamination and maintaining perishable food in refrigerators.

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

. Scope of Impact – State Specific

. **Key Theme – Food Safety Certification Course**

. During fiscal year 2002-2003, 17 home economists and two (2) Food Specialists (FTEs = 4) graduated 2,546 participants in Section 84 of the Food Safety Certification Course (24 contact hours). The home economists and 40 environmental health inspectors received a 7-day training about the contents of the 12 lessons and a course on administrative procedures.

. Impact – All the 2,546 participants that approved the certification course, adopted a method to control food temperature/time and other food safety recommendations. A sample of 714 participants were evaluated in the following specific practices using a pre-post evaluation form:

Food safety practices evaluated at the end of the certification courses
Universe = 2,546 establishments that prepare food

Sample, total = 714

	Restaurants	School, Gov..
	N=579	N=135
	%	
1. Check with thermometer & refuses perishable foods over 45°F during receiving	50	3
2. Employees washing their hands often.	92	95
3. Facility has separate cutting table and utensils for meat and for vegetable and fruit preparation.	70	51
4. Ingredients to prepare sandwiches and salads were maintained to 41°F or less.	80	52
5. Utilized correct method to defrost.	89	91
6. Used one or both of the following methods to maintain hot food to 140°F or more:		
Use thermometer and/or	51	3
Use time	86	97
7. Used measures to cool hot foods quickly to lower their temperature from 140°F to 41°F in six or less hours.	77	N/A
8. Used gloves and utensils while preparing and serving ready to eat food.	70	38
9. Reheated cooked foods in the stove or oven at the internal temperature of 165°F or more.	65	15
10. The establishment has a three compartment sink	83	100
11. Washed utensils with hot water and soap, rinsed, and in the third compartment used a solution of chlorine, iodine or quaternary.	74	92
12. Utilized a certified exterminator to keep pest management program.	84	99
13. Excluded or restricted food employees who had symptoms related to the foodborne disease as established in the FDA Food Code.	66	66
14. Used appropriate method to maintain hot foods 140°F or more.	69	24

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

. Scope of Impact – State Specific

IX. Key Theme – Food Safety: PRAES and Personnel from other Agencies

A. This year conferences and workshops were offered in which professionals of PRAES and others agencies attended: *Global Vision and Local Working in the Education of Food Safety, Critical Aspect of Fish and Shellfish,* and food Safety trainings.

B. Impact – Two thousand and five (2,005) professionals attended the *Global Vision and Local Work in the Education of Food Safety* conference and workshop, and 200 attended the *Critical Aspect of Fish and Shellfish*

Conference. Seventy-nine (79) PRAES professionals and 168 professionals of other agencies attended food safety trainings.

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

D. Scope of Impact – State Specific

X. Key Theme – Food Safety: Food Industry

E. The Food Technology Specialist offered 195 technical assistance to the food industry personnel. One hundred and fourteen (114) managers approved the Hazard Analysis and Critical Control Point (HACCP) training, and 685 employees increased knowledge in food safety.

F. Impact – Five (5) new processing plants prepared and implanted HACCP.

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

H. Scope of Impact – State Specific

KEY PROGRAM COMPONENT (S)

Security of Supplies – A 5-session course was designed for children and youth to help them understand the importance of agriculture in Puerto Rico. Agronomists established or supported farmer's markets, organized groups or cooperatives, to expand access to affordable nutritious local food supplies. Also, PRAES professionals offered 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) had three basic components: individualized group teaching, social marketing, and the formation and fortification of coalitions at the local level. Individualized group teaching consisted of a short 6-lesson course with follow-up two to six months later to assess impact over time. The course included 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 was planned by the coalitions that wrote mini-proposals for their communities to improve a specifically identified food access problem.

The MeNu program, which focused 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 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 to use the knowledge of pest identification and alternative control measures offered so they can orient the clientele. Among the methods used to achieve and transfer pest control information are: 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 for use 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 final competitions. PRAES home economists at local level recruit youth and offer the course. Participants learn safe food handling procedures while learning about nutrition and practicing food preparation. The best youth 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 and 2001 Food Code.

PRAES home economists and inspectors of the Department of Health receive 7-day trainings on the contents of the twelve lessons and the administrative procedures.

Food Safety – Institutional Personnel - The objective is to increase knowledge and improve understanding on food safety to enhance them to train and to advise food handling employees. PRAES home economists' plans at municipal level include offering the Food Safety Certification Course to food employees working with groups vulnerable to 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, 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 Consumer 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.

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	
	Target	Actual	Target	Actual
2000	1884	150	855	153
2001	1946	2494	911	780
2002	1990	90	974	2
2003	300	153	100	135
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)	
	Target	Actual	Target	Actual
2000	482	1933	274	1887
2001	472	335	291	251
2002	538	2,852	470	700
2003	1,400	2,252	470	754
2004	1,400		470	

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	
	Target	Actual	Target	Actual
2000	843	1173	515	685
2001	831	11,295	466	10,092
2002	796	8,602*	418	4,324*
2003	2,200	5,661	1,000	3,033
2004	2,200		1,000	

*The Fight BAC campaign and the curriculums and educational materials prepared for consumers, and youth had created an excellent involvement of all PRAES personnel and had increased the participation of clientele. An additional 53,435 persons participating in conferences and workshop, and 3,741 persons attended exhibits.

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	2,546*
2004	2000	0

* The PRAES Food Safety Certification Course has been well accepted by 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	110*
2004	300	0

*HACCP plan and temperatures documentations for restaurants were accomplished as a voluntary action.

Five additional Food Processors Plant prepare and implant HACCP as part of the Food Technology Specialist intervention.

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 400,000 or less somatic cell.	
	Target	Actual	Target	Actual
2000	373	370	365	360
2001	378	390	370	390
2002	377	361	376	367
2003	369	367	348	258
2004	350	0	335	0

The number of dairy farms was reducing. Approximately 372 dairy farms provide 100% of Puerto Rico's needs. The control effectiveness was evaluated by using the parameters indicated 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		$311,810.81		$311,810.81
2004				

ESTIMATED FTE COMMITMENT

Year	Professional			Professional		
	1862	1890	Other	1862	1890	Other
2000	4.27					
2001	3.83					
2002	5.81					
2003	7.53					
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.

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GOAL 3: A HEALTHY, WELL-NOURISHED POPULATION.

OVERVIEW

During FY 2002-2003 extension agents and volunteers played an active role in improving individual and family nutrition and health through non-formal nutrition and health promotion and education programs. Based on feedback from the pilot study conducted during 2003, a final revision was made to the Indoor Air Quality (IAQ) health project: *Youth, Protect The Air That You Breathe.* This project prepares youth with skills that may help them identify interior air contaminants, their sources, their effect on human health, and their mitigation. Extension agents, leaders and 4-H members of the Caguas and San Juan regions were trained, thereafter forwarding the project to approximately 110 youth. Of these, 60 were selected to participate in regional 4-H IAQ competitions, where they demonstrated the knowledge and skills acquired in the project. These competitions were covered by two leading newspapers of the island. Work is also being done in the Healthy Indoor Air for America's Home Project. An IAQ exhibit was developed emphasizing on the health effects of tobacco.

The PRAES health specialist, as part of the Puerto Rico HIV/AIDS Health Fraud Prevention Commission, offered the island-wide conference *To Achieve New Frontiers in Health Fraud Prevention*. Three hundred (300) health professionals participated of this conference.

PRAES continued its alliance with the Department of the Family, which sponsored the "*Programa para Mejorar la Nutrición en Puerto Rico (MeNu)* (Program to Improve Nutrition in Puerto Rico) with money from the *Nutrition Assistance Program (NAP)* (the Block Grant "Food Stamp" program for Puerto Rico). During FY 2003 the, *MeNu* employed six full-time home economists who were paid by the Food and Nutrition Service funds, as well as 35 PRAES home economist working 20% of their time through matched funds. The impact of the program was greater during FY 2003 for the amount of FTE spent compared to FY 2002, especially in the areas of shopping practices, selection and planning, reduction in the use of sugar and fat, and hand washing.

I. Key Theme – Human Health

A. PRAES personnel implanted health projects directed to children and youth using different curricula developed by the specialist such as: *Learning to be Healthy (HIV/AIDS prevention)* and *Toward a Drug Free Year 2000*, for children; and the curricula *PAS Project (Postponing Sexual Activity), Enhancing Your Personal Appearance*, *Human Sexuality, HIV/AIDS Prevention,* and the *Protect the Air You Breathe-Indoor Air Quality Project*, for adolescents. PRAES personnel used different curricula such as: *Promoting Healthy Lifestyles* and *Human Sexuality,* for adults. 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 on risk reduction and safety.

B. Impact – Seven hundred and thirty-four (734) children and youth completed non-formal health education and promotion programs. Of these, 593 (81%) adopted one or more recommended practices after completing one or more of these programs.

A total of 3,807 adults completed non-formal education programs on topics related to health promotion and health education. Of these, 1,585 reported reducing their risk levels upon completion of one or more recommended practices after completing the programs.

Through the accidents prevention education programs, 596 individuals were oriented on risk reduction and safety. Of this total, 330 individuals acquired skills and modified attitudes and practices related to accident prevention.

In the area of indoor air quality, 1,202 individuals learned about indoor air contamination through short courses, seminars and home assessment. Five hundred and five (505) of the individuals oriented learned about the different air contaminants and methods for their mitigation and elimination. One hundred and sixty-six (166) individuals adopted practices to control humidity in their homes, and 275 reduced sources of contamination 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 targeted to individuals infected and affected by HIV/AIDS, adults, and elderly people. Four hundred and sixty-eight (468) health professionals and home economists received training about health fraud prevention. The following areas were emphasized: efforts to stop health fraud, fraud in the Internet, and how to report fraud cases. We continued working in the first Spanish HIV/AIDS health fraud web site (http://www.ojoalfraude.org) (http://healthfraud.org/pr) to promote health fraud prevention.

B. Impact - Evaluation indicates that the health fraud prevention program resulted in both knowledge gained, and changed behavior and attitudes of participants. Three hundred and seventy-five (375) participants reported knowledge gained and changes in behavior and attitudes related to health

fraud prevention. Five (5) persons reported health fraud cases to the government agencies.

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

. Scope of Impact – State specific

. **Key Theme - Human Nutrition**

. A 7-session short course was used to improve nutritional practices among NAP participants. The course included sessions to assess the current situation in terms of eating behaviors with emphasis on what people are doing right. It also included meal planning, shopping behaviors, and food preparation.

. Impact - During FY 2003, 2,877 people participated of these courses. Of these, 1,916 participants completed the course, 2,200 planned to change one or more practices, and 925 reported that they had managed to change one or more practices six months later. In addition, 24,533 persons participated in community activities designed to help them change dietary habits. A million and a half (1.5 million) people were reached through 19 newspaper articles and other educational materials (an average of 80,000 per piece). Eighteen (18) radio and television programs reached a total of 3.2 million people (an average of 180,000 per program). During FY 2003, home economists devoted 10.1 FTE to this program. This number is reduced compared to FY 2002 because one full-time home economist was never hired and other full-time home economists found other positions when they discovered that the program would be discontinued.

One of the most important achievements during FY 2002- 2003 was that the home economists reported more effectiveness in their ability to promote adoption of practices compared to FY 2002.

The total number of persons completing non-formal consumer education programs designed to improve the nutritional quality of the diet (output):

Individualized group teaching	Number		
	NAP	not NAP	Total
New short courses.	654		654
People registered.	2,252	625	2,877
People who completed the course.	1,465	451	1,916
People who planned to change one or more practices.	1,797	403	2,200
People who adopted one or more practices.	754	171	925
Volunteers recruited.	46	73	119
Volunteers who taught a session.	52		52
Volunteers who taught a course.	8		8
Hours of work of volunteers.	1,280		1,280

Practices Adopted	Number of people		
	NAP	not NAP	Total
Increased consumption of fruits	466	160	626
Increased consumption of vegetables	392	153	545
Increased consumption of whole grain cereals and breads	322	87	409
Increased consumption of water	544	84	628
Increased consumption of milk and milk products	329	96	425
Decreased consumption of milk and milk products	100	31	131
Decreased consumption of meat, poultry and fish	192	33	225
Decreased consumption of liquids that are basically water and sugar	433	89	522
Decreased consumption of other sources of sugar	352	90	442
Decreased consumption of salt	302	67	369
Decreased consumption of added fat	376	58	434
Eat meals instead of nibbling	348	79	427
Eat and adequate breakfast	564	106	670
Prepare adequate snacks	379	75	454
Prepare one-dish meals	402	76	478
Have tried a new recipe for foods of high nutritional value	580	130	710
New recipes tried	343	108	451

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

. Scope of Impact - State specific

IV. Key Theme - Dietary Habits

. Three hundred and twelve (312) 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.

. Impact – Seventy four (74) persons adopted one or more recommended dietary habits six months after completing the short course.

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

. Scope of Impact - State specific

KEY PROGRAM COMPONENTS

The PRAES offered orientation and promoted the development of the 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 the health projects. Extension agents develop the educational program using different strategies such as short courses, exhibits, health clinics, and mass media among others. The following health projects were used to help children and adolescents to develop skills to change behaviors: for children, *Learning to be Healthy (HIV/AIDS prevention)*, *Toward a Drug Free Year*; and for adolescents they used the curricula *PAS Project (Postponing Sexual Activity), Human Sexuality, HIV/AIDS prevention* and *Personal Care Project*. For adults, PRAES personnel used different curricula such as *Promoting Healthy Lifestyles, Preventing Health Fraud, HIV/AIDS prevention and 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)* (in Spanish: *"Programa para Mejorar la Nutrición en Puerto Rico" (MeNu)* are: individualized group teaching and the formation and fortification of coalitions at the local level. Individualized group teaching consists of a 7-lesson short course with follow-up two to six months later to assess impact over time.

Dietary habits to prevent nutrition related chronic disease lessons were incorporated into the short courses offered as part of PIN/MeNu based on training received during previous years. However, the home economists were given specific training on how to incorporate chronic diseases into the short courses of MeNu.

INTERNAL AND EXTERNAL LINKAGES

<u>Internal</u>
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, and Regional Supervisors of Family and Consumer Education Program (5) and PRAES volunteers.

<u>External</u>
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, the Food and the Nutrition Commission of Puerto Rico, the Puerto Rican Heart Association, the Department of Health, the American Cancer Society, the University of Puerto Rico-Medical Science Campus, the Environmental Protection Agency, the Puerto Rican Lung Association, the 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 project need to be implemented at an early age.

School age children - (The 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 interested in the prevention or treatment of chronic diseases - (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)

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)
A. 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	312**	1381	74**
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. However most of the teaching was reported under general nutrition.

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	1,916	470	925
2004	1,400	0	470	0

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	5,743	951	3,124
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	596	401	330
2004	647	0	417	0

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	2,812
2004	2716	0

PROGRAM DURATION

5-year Planning Cycle.

ALLOCATED RESOURCES

	Resources			
Fiscal Year	State	Federal	Others Federal	Total
2000		$775,138.34	$1,353,330.00	$2,128,468.34
2001		$923,495.68		$923,495.68
2002		$835,305.51		$835,305.51
2003		$938,655.27		$938,655.27
2004				

ESTIMATED FTE COMMITMENT

Year	Professional			Professional		
	1862	1890	Other	1862	1890	Other
2000	18.26					
2001	28.44					
2002	21.38					
2003	21.75					
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 GREATER HARMONY (BALANCE) BETWEEN AGRICULTURE AND THE ENVIRONMENT

OVERVIEW

Puerto Rico's climate is tropical with average temperatures of 75°F. Rains fall mainly from May to October, with most precipitation from August to October. Being an island land is a limited resource and in high demand. Except for the coastal areas, the topography is mostly mountainous (60%). One of our main concerns is the quantity and quality of water for both humans and agricultural purposes. The Puerto Rico Agriculture Extension Services (PRAES) strives to generate educational materials and activities to provide information and education on soil and water conservation through its sustainable agriculture program, recycling, natural resources conservation, and integrated pest management.

The PRAES Water Quality (WQ) program provides informal education and orientation to the communities to create awareness of the maintenance needed to operate rural aqueducts and to ensure the water safety. A multi-agency committee (integrated by EPA, the Department of Health, the National Rural Water Association, Rural Health, and PRAES) met to analyze and discuss ways of handling problems related to drinking water in rural isolated communities that are not serviced by the Water and Sewage Authority. These rural communities are often not organized and lack the resources to improve or comply with established regulations. This is a long-term process which conveys the initial evaluation of the aqueducts, providing information and assistance through follow-up visits, and community meetings.

Under the WQ program attention is also given to farm waste management aimed at the planning and implementation of environmental control systems (best management practices – BMP) in farms with animals in confinement. This effort to improve the agricultural infrastructure was carried out in cooperation with the State Department of Agriculture (DA). The DA requires that farmers that apply for economic incentives for new facilities and/or the improvement of existing facilities, comply with the Building Codes. This requirement motivates the clientele to use the services offered by our specialists, resulting in new facilities with adequate structural stability to withstand tropical hurricanes and the purchase of insurance coverage from private providers.

Our educational programs in irrigation continue to be very active; however, a shift of emphasis from design to programs that support operation and maintenance is anticipated.

A special project to establish a regional mechanism to address water quality issues common to the universities in EPA´s Region 2 and EPA was established. Topics like animal waste management, nutrient trading, and non-conventional septic systems were discussed. Specific outcomes include a demonstration of the closure of a lagoon that received poultry waste, a computer spreadsheet to design waste management system components, and a regional web page. A presentation on septic systems was delivered to

an audience of 200 technicians. As a result, interest on the topic has grown and a workshop on non-conventional septic systems has been planned.

Preliminary tests are being conducted, using bench top digesters, on the feasibility of anaerobic digestion to treat agricultural wastes. The results of these tests will be shared with personnel from Cornell. Material on water quality in marinas, septic systems and horse farms produced in the UVI and Rutgers is now being used in training meetings with county agents in Puerto Rico. This material is being used in the five PRAES regions with an expected audience of 100 agents.

Given the population density of the Island, and the fact that there are only 29 landfills to dispose of our solid waste, PRAES recognized the need to offer orientation to the clientele and the general public on recycling and compost preparation. By composting alone, the amount of solid waste could be reduced to half.

The number of farms with animals in confinement remains as 372 dairies, 1,000 small swine production units, 292 broilers, and 30 egg producers. Of these, 65% have implemented some type of waste disposal system. Several of these farms implemented waste management systems but lack efficient operation and management. Some systems have never been completed or submitted for approval to the regulatory agencies. Assistance is also provided to coffee processing plants to up-grade their facilities.

Coffee is grown, harvested, and processed on the farm or nearby to ensure quality. However, most of the 118 coffee processing plants have a high requirement for water and the waste product resulting from these processing plants needs to be handled properly. Through collaboration with the College of Agriculture, the Agriculture Experiment Station, the State Department of Agriculture and the USDA-NRCS training a demonstration was offered on new ecological coffee processing equipment that operates with small amounts of water and is energy efficient, its costs, and building size for both processing and waste disposal. Some 100 farmers, coffee processors, agricultural professionals, and other people interested in the subject attended.

The mountain region does not offer many job opportunities besides those generated by agriculture, due in part to its steep slopes and the need for a proper infrastructure. Coffee has maintained a prominent position as one of the five major agricultural products of importance on the Island due, not only to the production and income generated, but because of its social importance. Twenty-two (22) municipalities in the central mountain region are heavily dependent on the production of coffee as a source of income. It also provides the livelihood of 200,000 residents of the area. As a result, a second agreement was signed with the Department of Labor to offer another course on sustainable production of coffee to farm workers. This time it was offered at five different locations. A total of 115 persons graduated from the two sessions offered.

Educational efforts on sustainable agriculture which were initiated in Puerto Rico several years ago through a proposal approved by SARE have been incorporated as part of the general agricultural program. Training and activities will continue to be offered for their

vital importance in the conservation and to seek ways to improve the economy and the environment. In March we had an exchange with North Carolina State University that conveyed the visit of graduate students and two professors to Puerto Rico. Several visits and conferences were conducted on sustainable agriculture. Arrangements were made for our students to conduct their summer practice in NCSU in the following areas: agro-forestry, soil and water conservation practices, organic agriculture, and sustainable management of dairy farms in their farm lab.

The 8th Caribbean Urban Forestry Conference was held in June 2003 with the theme "Biodiversity and Sustainability, Concepts and Actions for Conservation" with an attendance of 230 persons. The Smithsonian Institute partnered the conference jointly with the State Department of Natural Resources and Environment, *"Fideicomiso de Conservación"* and the Forest Service-Tropical Institute. Three workshops were offered on vegetation monitoring, GIS, and Caribbean Monitoring Vegetation to participants from PR, VI, Jamaica, Guadalupe, Trinidad, the Dominican Republic, Antigua, and Saba.

The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and Law 49 of the Commonwealth of Puerto Rico require that pesticide applicators be trained and certified. The PRAES is responsible for the education and training on the use of restricted pesticides for both private and commercial use, and recommends for certification those who successfully approve the courses and exams to the State Department of Agriculture.

The PRAES agriculture engineering unit submitted a proposal to conduct a study on the use of agricultural water in Puerto Rico. The proposal was approved by the Center of Water Resources, School of Engineering, University of Puerto Rico-Mayagüez Campus, with an initial budget of $50,000, for a total amount of $136,000. The aim is to prepare an integral conservation plan for the year 2025 for the development and use of water for agricultural purposes.

I. Key Theme – Water Quality

D. The PRAES maintains its educational program on farm waste management and rural aqueducts aimed at providing farmers with information on the environmental regulations for facilities built or planned for animals in confinement, as well as for processing plants. Also assistance is provided to comply with such regulations and for communities with water supplied by rural aqueducts. Education and information on water quality is generated and offered to homeowners, low-income communities, and the general public.

   The Non-PRASA Interagency Committee met once. The specialist in charge of rural aqueducts conducted six visits to communities to follow-up on improvements to rural aqueducts and offered nine training sessions to community residents with rural aqueducts.

Agricultural waste management issues continue to be areas of involvement to our specialists as a result of a vigorous regulatory program by the enforcement agencies. One thousand eight hundred and twelve (1,812) extension clients were informed about adequate waste management and water quality in their projects. Four hundred and ninety (490) clients were reached regarding the improvement of their facilities and structures using model plans prepared by the PRAES.

One hundred and sixty-six (166) persons contacted PRAES for information on irrigation projects.

Three thousand six hundred and seventy (3,670) persons received orientation on recycling and 5,532 persons received orientation on compost preparation and its benefits.

One thousand three hundred and three (1,303) persons were informed on ways to reduce superficial and underground water contamination caused by the use of chemicals on the farm at home and 86 persons were informed on the maintenance of septic systems.

D. Impact –Ten aqueducts were evaluated. Two thousand, five hundred and twelve (2,512) persons will benefit from the rural aqueduct improvements by receiving safe drinking water at their homes.

One hundred (100) animal waste managements systems were designed and 75 systems were improved.

Of the 3,670 persons oriented, 1,135 adopted or improved the recommended recycling practices. Two hundred and fifty-four (254) persons established recycling projects in their communities.

Three hundred and seventy-seven (377) persons adopted the recommended practices on compost preparation and 139 established compost preparation projects. One hundred and thirteen (113) persons prepared compost using farm waste residues and 61 using home or garden residues. By the adoption of these practices the amount of solid waste is significantly reduced and the landfills' capacity extended.

Fifty (50) of the clients that received model plans improved their facilities which comply with the requirements of the Permits and Regulations Administration and the Environmental Quality Board.

Forty (40) new irrigation systems were established.

One hundred and twenty (120) persons adopted the recommended practices for the reduction of superficial and underground water contamination caused

by the use of chemicals on the farm or at home. Twenty four (24) persons adopted the recommended practices for the maintenance of septic systems.

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

D. Scope of Impact – State Specific

II. Key Theme – Sustainable Agriculture

A. Sustainable agriculture has become a familiar subject to our farmers and clientele. People are becoming more sensitive on this issue and request information on sustainable practices and ways to safely produce food. Several educational activities were conducted during FY 2002-2003 on the farms where the recommended sustainable agriculture practices were adopted. Such practices were: use of vegetative barriers, compost preparation, agro-forestry, and integrated pest management among others. A demonstration was conducted in collaboration with the Agricultural Experiment Stations on the Low Environmental Impact of Coffee Processing. A conference was offered on Genetically Modified Organisms and the Development of a Sustainable Agriculture. Personnel from North Carolina State University (professors and students) visited us and offered presentations. Two thousand and seventy-eight (2,078) persons received orientation in different activities or were trained in sustainable crop production, while 97 were oriented/trained on sustainable animal production.

B. Impact - Five hundred and twenty-three (523) persons established practices on sustainable crop production; 50 volunteers offered training or were facilitators to distributed information on sustainable agriculture; 93 persons established projects on sustainable agriculture. Forty-five (45) persons from government agencies were trained on sustainable crop production. Thirty-six (36) persons established sustainable practices on animal production; 15 persons established projects in their animal farms on sustainability; and 10 professionals from government agencies were trained on sustainable animal production.

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

D. Scope of Impact – State Specific

III. Key Them – Natural Resources Conservation

A. PRAES offers orientation on the proper use of soils and fertilizers. This is very important due to the diversity of soils on the Island and for the competitive production of quality food. Soils are the basis for agricultural

production. The 2002 Agricultural Census for Puerto Rico shows that 690,687 cuerdas are used for food production, pastures, and forests; 65.6% are cultivated.

Everybody has the right to enjoy our natural resources in compliance with the established regulations. The average person lacks the necessary information regarding environmental conservation, which results in the inappropriate use of the resources and fines for those caught breaking the regulations. Public policies emphasized education on environmental aspects geared to the general public knowledge of the regulations for the protection of the natural resources both state and federal.

One thousand five hundred and sixty-seven (1,567) farmers received orientation and training on the use of chemical analysis of soils and vegetable tissue as a means for fertilizer use and soil amendments. Four hundred and eighty-two (482) farmers received orientation or were trained on soil preparation and management practices. Two hundred and ninety-eight (298) soil, irrigation water, and vegetal tissue samples were analyzed.

One hundred and sixty-three (163) policy makers and other persons received information regarding the importance of public policy on the conservation and protection of natural resources and 125 persons from different agencies were informed about water quality, natural resources, research results, and federal and state regulations.

B. Impact – Two hundred and six (206) farmers used chemical analysis of soils, water, and vegetal tissue analysis to determine the applications of fertilizers and soil amendments requirements. Two hundred and forty-three (243) farmers improved the soils on their farms by using organic fertilizers.

   One hundred and sixty-two (162) persons got involved in the decision-making on environmental public issues.

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

D. Scope of Impact – State Specific

IV. Key Theme – Integrated Pest Management

A. People are more conscious about the use of pesticides and seek environmentally safer control methods such as biological, cultural or physical alternatives. IPM is an integral part of the PRAES educational programs not only for agricultural production purposes. The PRAES educational program on Pesticides Safety offers training to pesticides applicators for both private and commercial users on the correct use of pesticides to protect human health and the environment. Extension Service is in charge of providing the training

in collaboration with the State Department of Agriculture, which is the agency that issues the pesticide applicator certifications.

Pests, especially insects and diseases, are destructive elements that negatively affect production, environmental and aesthetic values derived from our forests. Forest nurseries are crucial to sustaining forests, forest operations and the management of many natural ecosystems. Early pest detection, combined with rapid problem diagnosis is a prerequisite to successful Integrated Nursery Pest Management (INPM). Prevention and use of good cultural practices are essential in nurseries to produce healthy trees. Emphasis is placed on pest monitoring and maintenance of the overall health of trees, rather than on controlling pests and diseases once they have become a problem.

D. Impact – Four hundred (400) persons (farmers, agricultural agents, homeowners, agronomists, and ornamental producers) received educational materials (publications) about insects and diseases of importance in urban forests; and 100 persons received educational materials related to forest health.

A publication was developed on *"Management Practices for the Prevention of Turf Diseases and Registered Fungicides"*.

The proposal "Forest Health and Integrated Pest Management Online in Puerto Rico" was extended until September 2004 to complete and maintain the Forest Health Webpage. Another proposal, "Improving Health of Forest Nurseries in Puerto Rico: Training in Good Cultural Practices", was submitted and approved. The objectives of the project are to produce a publication about good cultural practices in nurseries, to make the information available through the Forest Health Management Webpage, and to train personnel related to tree production in nurseries in the use of good cultural practices.

Thirty-five (35) samples of trees and woody ornamentals were processed in the diagnostic clinic with a direct impact of at least $30,000 saved because of the correct pest diagnosed.

Seventy-five (75) persons were oriented on IPM practices which included landowners, personnel form the Department of Natural Resources and the Environment, and personnel working in forest management.

The two pesticide instructors trained 3,500 young adults; 1,182 private applicators and 316 commercial applicators were recommended to be certified by the State Department of Agriculture.

Sixty per cent (60%) of the farmers, farm workers, adults, and youth trained adopted one or more of the recommended practices for personal protection, the protection food, and the protection of the environment. Nine hundred and

seventy (970) farmers and 146 commercial applicators were trained and recommended to renew their certification.

Two hundred and thirty-one (231) owners of food service businesses and their employees were trained; 20 health professionals, 25 teachers and 550 adults and youth received orientation on the safe use of pesticides and the sustainable management of pests in the farm and urban areas.

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

D. Scope of Impact – State Specific

KEY PROGRAM COMPONENTS

The PRAES educational programs are geared toward the adoption of recommended practices directed to increase agriculture production by making wise use of the natural resources and creating awareness of the environment. These efforts convey practices on farm management in accordance with state and federal agency regulations. Once the clientele receives the initial information, it is attained through farm follow-up visits, workshops, conferences, presentations, demonstration of methods–use of new or recommended equipment or machinery, participatory research, periodical publications, and mass communication to agricultural professionals, rural communities, leaders, PRAES personnel in a train-the-trainer approach, the general public, and other agency personnel.

INTERNAL AND EXTERNAL LINKAGES

Internal

Personnel of the College of Agricultural Sciences (CAS) and the Agricultural Experimental Station (AES) assisted in training, research and in project implementation, besides information sharing.

External

A second agreement with the Department of Labor (WIA-167) was obtained to train farm workers in the sustainable production of coffee. Also, as part of the collaboration with the State Department of Agriculture, PRAES personnel were instrumental in the reorganization of the 17 Soil Conservation Districts in Puerto Rico. Collaborations continue with the USDA-Forest Service, the State Department of Natural Resources and the Environment, the USDA-NRCS, the Environmental Quality Board, the Solid Waste Authority, the State Health Department, National Rural Water Association, Rural Health, Center for Water Resources-School of Engineering, the Environmental Protection Agency, and the Soil Conservation Districts around the Island.

A regional collaboration with EPA´s Region 2, Cornell University, University of Virgin Islands, and Rutgers to establish a mechanism to address common water quality issues. Under sustainable agriculture an exchange was conducted with the North Carolina State University.

TARGET AUDIENCES

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

OBJECTIVES, 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	2230[4]	745	667[4]
2004	956	0		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.
[4]The increase in actual output compared to the target output is due to the amount of information offered through a variety of activities offered during this fiscal year.

DATA COLLECTION METHODOLOGY

Farmer interviews and observation of implementation of recommended practices 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	3605	1969	1892
2004	3388	0	2029	0

[1]Water quality is a priority issue. Therefore, all personnel has time assigned to work in this issue under solid 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]	1493	279[1]
2001	2542	2141	1776	1516
2002	2607	1454[2]	1889	380[2]
2003	2619	2624	1908	1924
2004	2627	0	1945	

[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	288	275	162
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		$427,833.43		$427,833.43
2004				

ESTIMATED FTE COMMITMENT

Year	Professional			Paraprofessional		
	1862	1890	Other	1862	1890	Other
2000	31.48					
2001	7.48*					
2002	8.31					
2003	9.92					
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 of population there are 3,808,610 people in Puerto Rico: 51.9% women and 48.1% men. Seventy one percent (71%) of the population is urban and 29% rural. There are 307,000 children between the ages of 0 to 5 years old. Thirty three percent (33%) are children and adolescents between 5 to 19 years old.

The accelerated population growth and the rapid economic and social transformations undergone by the Island, have had an impact upon the family system, lifestyles, and social and economic needs, and community development. PRCES combined efforts with local government to educate family members on family relations, parenting skills, child development, consumer education, family budget, community development family resource management, value of household work, and youth development life skills. Efforts were also aimed at assisting low-income families, promoting healthy behaviors, and improving lifestyles in individuals, families, and communities to be "Healthy People and Healthy Communities".

The Puerto Rico Department of Health (2000) reported 59,461 births, of which 28,410 were from adolescent mothers. These young mothers are at a disadvantage because they are not prepared to face the emotional, social, and economic issues affecting their lives and their children. As a result, our mission is to educate parents and young families in parenting skills and development to contribute to the development of stable, happy, and successful children both in school and everyday life so that they may become responsible citizens and better human beings in their adult lives.

The Family Life and Child Development Specialist facilitated strategic planning workshops for families and communities at risk, curriculum, trainings, community organizations, and local and state coalitions. A state family project *"Values Education in Character Traits"* was established to promote education in a non-formal based program on parenting skills, behavior, and practices. Also a federal proposal was submitted and approved to develop the parenting project *"Empower Parents to Raise Successful Kids"*, to help families, children and communities at risk.

According to the 2000 Census of Population, there are 417,218 elderly people in Puerto Rico (13.2% of the island's total population). Of these, 27.7% have some type of physical and/or mental limitation. As a result, PRAES has to focus its work to meet the needs of this population. Our educational efforts are directed towards orienting this clientele to know and understand the process of aging and to help them to change their negative attitudes into positive ones. One thousand ninety-two (1,092) elders were oriented in elderly aspects in which 193 persons adopted practices and changed attitudes. Two hundred (200) families acquired knowledge and assumed responsibility with their elderly parents/community.

The 4-H and Youth Program reported the total number of youth that completed non-formal education was 15,737 (4-H members) and the number of other children and youth impacted was 27,949. The educational program included life skills, leadership development, self-esteem, safety, science and technology, nutrition, health, environment, sexuality education, and others. Three thousand nine hundred and thirty-three (3,933) youth participated in the after school enrichment program. Nine thousand four hundred and fifty-two (9,452) youth changed their attitudes after their participation in 4-H activities. Eight (8) youth delegates participated in the 4-H National Congress. Eighty-two (82) 4-H members developed skills and knowledge in vocational exploration.

Rural and urban communities in Puerto Rico are in continuous development. PRAES, as part of the College of Agricultural Sciences University of Puerto Rico, serves as link between the University and the community. The Community Resource Development Program educates and trains community leaders to find solutions to their problems. PRAES assists in the preparation of an action plan to offer support to community leaders and government agencies. Among the most significant achievements of the Community Resources Development program were: 66 communities were organized, 776 families improved their community relations, and 31 communities established recycling projects. Also, 1,432 leaders were trained in development of leadership skills.

PRAES developed informal educational programs to help families use their own family resources to help themselves develop skills in consumerism education and family resources management. Six hundred and ten (610) people were oriented and trained in the area of self-employment, 231 families adopted practices and 11 established their own business.

PRAES' goals are 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, so they can face them and solve them in a positive a 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 non-formal programs consisted of seven lessons (Family Values and Traits Education Curriculum) based on six character traits, values, communication skills, family strengths, childcare, and other areas related to family relations. Each session is conducted with group dynamics, role planning, visual aids, computer labs and internet search information, and other educational methods and strategies.

B. Impact – Three thousand two hundred and eighty-three (3,283) families adopted practices in family relations, effective parenting, and communication skills. After six months 906 parents showed changed attitudes toward

responsible parenting and assertive communication helping them to prevent child abuse and neglect. Three-hundred and twenty two (322) childcare providers were trained in child development practices. Five hundred and sixty-six (566) parents changed attitudes toward positive discipline and 334 parents reported that they communicate love and nurturing to their children. Sixty-one (61) home economists were trained in family relations and child development areas.

D. Source of Federal Funds-Smith Lever 3 (b), 3 (c) Funds.

D. Scope of Impact-State Specific

II. Key Theme - Children Youth, and Families at Risk

D. The 4-H Youth Development base program continued focusing on youth at risk with an increase in activities, contests, projects, competitions, trainings, workshops, and volunteer recruitment. Extension agents and volunteers of the 4-H Program promoted the adoption of healthy lifestyle and skills that allow youth to make adequate decisions. During FY 2002-2003 the 4-H Youth Program impacted 15,737 members and 27,949 other children and youth. Projects developed were *Posponiendo la Actividad Sexual* -PAS (Postponing Sexual Activity), Resaltando tu Apariencia Personal-RAP (Improving your Personal Appearance), and Animals and Plants. Curriculums on self-esteem, consumer education, and nutrition were also developed.

D. Impact – A total of 43,686 children, youth, and 4-H members were reached. Three thousand nine hundred and thirty-three (3,933) children and youth developed skills through special projects in after school enrichment programs. Thirty-five thousand (35,000) people were benefited through radio programs. One thousand and seventy-four (1,074) 4-H members and youth obtained knowledge and developed vocational skills and experiences related to vocational exploration. In relation to the 4-H program philosophy "Learning by Doing", 64 projects were developed in technology and sciences by 4-H members. Four hundred and eighty-one (481) children and youth completed a non-formal education program in human sexuality, ITS prevention (VIH/SIDA), and use and abuse of drugs prevention. Also, 599 volunteers obtained knowledge in leadership skills and 216 volunteers organized youth activities to promote healthy life-styles. One thousand nine hundred and fourteen (1,914) 4-H members and other youth obtained knowledge in leadership development, community 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

B. The number of families dependent on government programs increases every year according to the assistance Economic Division of the Department of the Family. In addition, due to an increase in consumerism, Extension Agents continue developing non-formal educational efforts to help low-income families. During the FY 2002-2003, 1,379 low-income families were trained and oriented in money management, family budget, and financial skills.

B. Impact – As a result, 255 families prepared a family budget, 11 people established their own business, 576 consumers made wise decisions toward money management, and 203 families adopted practices and changed attitudes toward money management.

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

D. Scope of Impact- State Specific

IV. Key Theme - Home Based Business Education

A. Extension agents and volunteer leaders continue developing educational home-based programs to help low-income families use their own resources to increase family income. This educational non-formal program suggests many ways in which families and individuals can turn skills and abilities into money. Six hundred and ten (610) individuals were advised and trained in self-employment skills.

B. Impact – Eleven 11 people established their own business and 231 families adopted practices.

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

D. Scope of Impact- State Specific

V. Key Theme - Farm Safety

A. One thousand four hundred and twenty-one (1,421) farmers were oriented about farm safety and prevention of farm accidents.

B. Impact – As a result, 755 farmers changed attitudes and increased knowledge in farm safety, 327 adopted farm safety practices, 175 developed an emergency plan, and 347 adopted practices in case of natural disasters.

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

D. Scope of Impact- State Specific

VI. Key Theme - Job/Employment

B. Extension agents developed a comprehensive program to increase citizen's awareness of economic trends offering local economics and providing knowledge base to community participation in community development programs. The CRD program developed projects to help people, youth, families and communities to improve their quality of life and well-being. Extension agents and community leaders aim to provide knowledge base to community development efforts to increase their value system and economic progress.

B. Impact – As a result, 66 communities were organized, 776 families improved their community relations. Thirty-one (31) communities established recycling projects. Two hundred and fifty two (252) small farmers were organized, of these, 130 improved their economic situation. Six hundred and seven (607) community leaders were oriented about community projects development. As a result, 73 community projects were developed.

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

D. Scope of Impact- State Specific

VII. Key Theme - Parenting

B. 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 raise successful kids and to become responsible parents and prevent child abuse and neglect. A federal proposal was approved to develop this project which was established in two municipalities.

B. Impact-Three hundred and thirty six (336) families at risk were trained and oriented in parenting skills and child development in which 252 parents developed parenting skills, 468 children were benefit through this project, and 126 parents taught their children social and emotional skills to improve their children's well-being. Eighty percent (80%) of the project participants reported changes in attitudes in positive discipline to prevent child neglect and abuse.

B. Source of Federal Funds-Smith Lever 3(b), 3(c) Funds.

B. Scope of Impact- State Specific

KEY PROGRAM COMPONENT (s)

PRAES, will continue developing educational programs to: orient the families to assure their resources; strengthen the capacity of families and communities; be partners in building stronger families that can contribute to on-going efforts in community development; strengthen and empower families to nurture, support and guide their members throughout their lives; and manage better the expertise of Extension educators at all levels. Each municipality will prepare a plan of action to accomplish the state goal. At state level a model program will be prepared for adaptation and implementation in the 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 to train and empower parents, couples, and children in different areas of family relations and child development; developing and establishing special projects in parenting skills, child and human development, adolescent life skills development, youth at risk issues, financial aspects, elderly-care, and leadership development to form better leaders and citizens. Also, emphasis will be given to 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 communities and well-being. This will be done by a more effective use of technology such as distance learning strategies to help reach more clientele.

Extension specialists/educators prepare publications, curriculums, articles, training, radio and television programs, forums, and workshops to reach state goals. The Agricultural Experiment Station provides the research basis needed to advance the producers' and communities understanding of the changes occurring in their given situations. 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, 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, Río Piedras Campus), and extension specialists.

External

Department of the Family, the Department of Agriculture, the Department of Education, Department of Labor, the Puerto Rico Planning Board, the 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 personal life.

Married couples and teenagers: To strengthen the family base and the relationship between both sexes.

Parents: Education on how to rear and discipline their children.

School age children and teenagers: To develop life skills in order to be better citizens and to learn how to handle their problems.

Elderly persons: To orient them 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.

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	720	263	312
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	46
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	11
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	5045	3556	4,713
2004	4355	0	3458	0

*****At this moment we confront a dramatically decrease of Extension Agents working at municipally level. There is no 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	5928	4006	2464
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	1307	963	863
2002	2840	714*	904	412
2003	2695	1276	896	517
2004	2958	0	761	0

*Decrease of staff working at county level and there are no specialists 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	3455	2424	1276
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	47996**	11140	20858
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.

**Increased number of persons in youth program development as a result of an increase in percentage of Extensión Agents working this area.

PROGRAM DURATION

5-year Programming Cycle (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		$3,030,285.40		$3,030,285.40
2004				

ESTIMATED FTE COMMITMENT

Year	Professional			Professional		
	1862	1890	Other	1862	1890	Other
2000	89.41					
2001	71.12					
2002	67.47					
2003	70.21					
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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B. STAKEHOLDER INPUT PROCESS

Puerto Rico Agricultural Extension Service recognizes the importance of conducting the Stakeholder Input Process to identify the needs of our clientele. We are promoting this to be a continuing and participatory process at every level of our organization. However, during this year we have restructured our Local Advisory Committees and are in the process of designing the next strategy for needs assessment to be implemented through the new local committees. Nevertheless, we collect input from our stakeholders during different educational activities. Stakeholders presented issues and recommendations for program improvement through questionnaires or informal meetings.

During this fiscal year, at the state level, we conducted focus groups to gather the input of our stakeholders. The focus groups included clientele and volunteer leaders. Participants came from different municipalities and represented the four program areas: Agriculture, Marketing and Natural Resources; Family and Consumer Sciences; Community Resource Development; and Four-H and Youth. The municipalities were randomly selected to represent the five regional sectors of the Island. The local agents invited the volunteers to participate in the focus groups based on their leadership and knowledge of their programs. Participants assisted on a voluntary basis.

The purpose of the focus groups was to gather the opinion of the stakeholders about the most critical issues affecting their communities, including the municipal and state levels. Stakeholders were also asked about their suggested strategies to address these issues.

The findings of this process have been presented to all administrative staff including the Associate Dean, the Planning and Evaluation Office, and program leaders. The findings will be used to strengthen areas identified by our stakeholders and modify those that need to be improved in all of our programmatic areas. We are in the process of designing a more comprehensive stakeholder input process.

C. PROGRAM REVIEW PROCESS

For this fiscal year we revised and modified the process to conduct the Merit Review. The main reason for this was to include members external to PRAES in the process. Four committees will be established by program area: Agriculture, Marketing and Natural Resources; Family and Consumer Sciences; Community Resource Development; and Four-H and Youth. Each committee will consist of five reviewers: the program leader, the specialist and contact person in the area, a member of the planning and evaluation office, and two external members such as a key member from a state department, a faculty member in the specific area or another person with vast knowledge of critical issues in the specific area. The committees will meet at least three times annually in order to discuss our plan of work, particularly how our plan of work is addressing the needs of our stakeholders and to evaluate accomplishments at the end of the year. Reviewers will provide the necessary recommendations in order to keep the relevance of our program goals.

D. EVALUATION OF THE SUCCESS OF MULTI AND JOINT ACTIVITIES

4) Did the planned programs address the critical issues of strategic importance, including those identified by stakeholders?

Since Puerto Rico does not participate in multi-state and multi-institutional activities, our major collaborative efforts are of a multi-disciplinary nature between the external and internal linkages. This multi-disciplinary effort facilitated PRAES in identifying issues of strategic importance as we shared knowledge between community organizations, scientists, and state departments in identifying needs of similar stakeholders. For example, the recently established commodity groups supported by the PR Department of Agriculture are addressing the issues of production and marketing, which have long been critical issues for the agricultural sector. PRAES is collaborating in this multidisciplinary effort providing education in safety handling practices and other areas to improve production of the farmers. Another example is the CYFAR project, which has been able to identify critical issues that affect low-income families through multi-disciplinary efforts. It was established in two high-risk municipalities to target low-income families in parenting issues. Specific needs of this under-represented population were identified through different methodologies. The educational curriculum was revised to address these identified needs such as family communication, stress management and self-esteem. Many other programs, such as the Food Safety Program and the Indoor Air Quality Program, identify critical issues through multi-disciplinary coalitions, although some are from stakeholders at the state level only. More emphasis is given to increase stakeholders at local levels.

Joint activities between PRAES and PRARS are conducted for several commodities including coffee, starchy crops, fruits, vegetables, beef and dairy among others. Other strategies are also being planned for joint collaboration for the stakeholder input process.

4) Did the planned programs address the needs of under-served and under-represented populations of the State?

Planned programs are mainly designed to address the needs of under-represented populations. Through multi-disciplinary efforts between other specialists from the Department of the Family, the Department of Education and the Department of Labor, among others, PRAES has been able to increase the participation of under-represented populations, particularly low-income families, adolescent mothers and youth at risk. For example, the Program to Improve Nutrition in Puerto Rico is targeted to the participants in the Nutrition Assistance Program, which are among the poorest in PR. Also, the Sustainable Coffee Production special project targets farm workers in the mountain region, whose major income is the coffee production, to develop the necessary farm skills. These are also participants in the welfare reform program. However, we recognized the importance including more under-served populations such as homeless persons.

4) Did the planned programs describe the expected outcome and impacts?

Planned programs describe the expected outcomes and impacts under the objectives for each goal.

4) Did the planned programs results in improved program effectiveness and/or efficiency?

Because of the external collaborators, most programs have been able to improve their effectiveness in achieving their expected outcomes and impacts, as critical issues has been more easily defined through this multi-disciplinary effort and facilitated the recruitment of high-risk and under-represented populations. Also joint activities between PRAES and PRARS have been effective in providing the research-based knowledge to develop up-to-date materials that address the critical issues of our clientele.