

**Project Title:** Urban Agriculture and Small High Tunnel Farmers Outreach Program

**Applicant/Entity name:** Puerto Rico Agricultural Extension Service

**Project Director:** Myrna Comas Pagan, PhD  
PRAES Food Security Contact Person

### **Project summary**

Urban Agriculture and Small High Tunnel Farmers are an alternative to increase food security in countries with high density population and negative net imports like Puerto Rico. With this project we will promote the organization of communities and farmers to adopt high tunnel as an innovation technology and urban agriculture in order to increase local food production. The outreach plans include the development of educational guides, posters and a webpage that will be used for capacity building of Extension faculty, the community organizations and the farmers.

### **Introduction**

The Puerto Rico Agricultural Extension Service (PRAES) mission is to improve the quality of life of the Puerto Rican family in socio-economically disadvantaged through an educational process based on scientific research and focused on clientele's needs and issues of public interest. This project's goals and objectives relates to the United States Department of Agriculture - National Institute for Food and Agriculture (NIFA) vision, to catalyze transformative discoveries, education, and engagement to address agricultural and community challenges.

To achieve the project objectives, PRAES will works with NIFA's national challenges

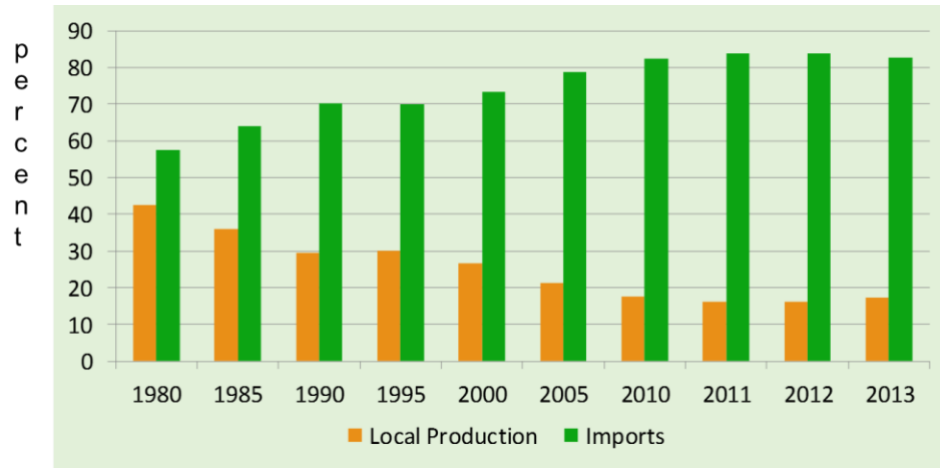
- Food Security
- Climate Variability and Change
- Water
- Sustainable Bioenergy
- Childhood Obesity Prevention
- Food Safety

Extension work begins at each local office, with the active participation of volunteer leaders in the planning and development of the Agency's program areas. The agency work with four programmatic areas:

- Agriculture, Marketing and Conservation of Natural Resources
- Family and Consumer Sciences - (FCS)
- Youth and 4-H Clubs
- Community Resources Development - (CRD)

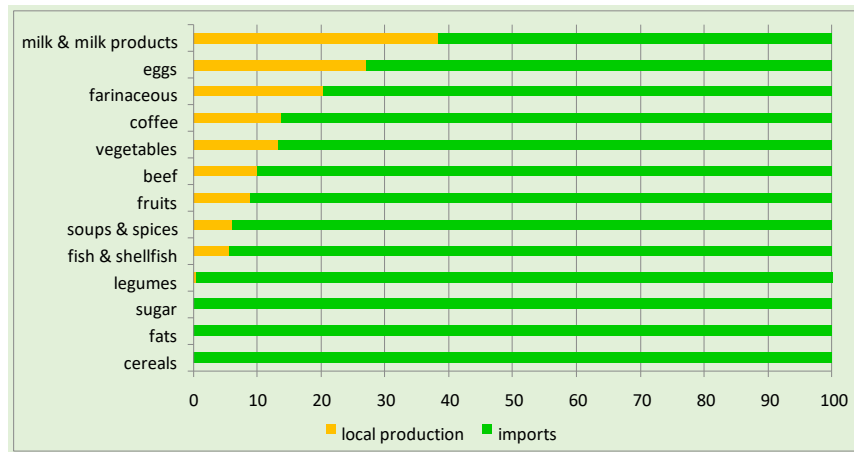
The proposed project attends food security, climate change and water use challenges. Year by year, Puerto Rico loses its more productive farming land and the provision of local products for food

consumption in the Island decreases (Graph 1), and its insertion in a global food markets. This insertion triggered the importation of close to eighty percent (80%) of the food products that were consumed in the Island.



**Graph 1. Puerto Rico’s food consumption by its origins**

When the availability of food for local consumption was evaluated, it was found that Puerto Rico imports 100% of the cereals, oils and sugar consumed. Also, more than 90% of the vegetables, fish and seafood, soups, and spices are imported. Similarly, more than 80% of the coffee, cocoa and tea, vegetables, meats, and fruits comes from other countries. Most of food that is produced in Puerto Rico consists of milk and derivate, starchy crops and eggs (Graph 2). The reality is that in Puerto Rico it is produced only a small quantity of the food that is included in the basic food basket. As an example, rice was not produced and neither beans, and less than the 20% of the meats.



**Graph 2. Puerto Rico’s Local Food Production and Imports<sup>1</sup>**

<sup>1</sup> External Trade Statistics y PR Agricultural Statistics Office, 2012

This positions Puerto Rico in a susceptible situation when climatic factors at a global level affects food production and distribution. International organizations such as the World Bank (WB), the Food and Agriculture Organization of the United Nations (FAO), and the Intergovernmental Panel on Climate Change (IPCC) have recommended that each country should establish their own public policies and adopt adaptation strategies regarding food security.

Puerto Rico was inserted in the worldwide food system, which had been in crisis for the last decades. In addition, in the World Summit on Food Security Declaration in Roma (2008) was expressed that “the actual crisis placed in manifest the weakness of worldwide food systems and its vulnerability in difficult situations”. At a global level, it was reported that close to billion persons live in extreme poverty, reason why they live in hunger; an extreme manifestation of food insecurity. In Puerto Rico near to 40% of our population participates in the Nutritional Assistance Program. The food security need of our citizens, makes it mandatory not to postpone the adoption of practices that let us to increase local agricultural production, create projects that help our economy and jobs creation.

We also need to consider that Puerto Rico lost 32% of their farming lands between 1998 through 2012 (Table 1).

<b>Table 1. Puerto Rico’s Farming Land, 1992-2012</b>					
<b>Indicator</b>	<b>1991</b>	<b>1998</b>	<b>2002</b>	<b>2007</b>	<b>2012</b>
Farms	22,350	19,951	17,659	15,745	13,159
Acres	826,893	865,478	690,687	557,530	584,988
Percent of lands used in agriculture	36.7	38.4	30.6	24.7	25.9
Average capacity (acres)	37.0	43.4	39.1	35.4	44.5

It is important to recognize that urban agriculture is an economic activity which could contribute directly and indirectly jobs creation, increase gross national product and food security and reduce food miles. Our agriculture should be an advanced one in which we could adopt the appropriate technological innovations to be efficient and take in consideration the responsible use of the natural resources, including soil and water. High tunnels is a technology that can be use in urban areas and help improve products quality and yield, eliminate temperature peaks and droughts, and aiding with pest control. This technology will aid in giving the growers a competitive advantage. Also, this innovative technology provides for efficient production planning and a consistent and predictable harvest.

Also, this technology will be new to Puerto Rico. A process of technology adoption will be achieved through PRAES outreach education. This includes the development of educational materials, training, meetings and individualized counseling for farmers.

## **Period of Performance - Duration**

2 years

## **PRAES goal**

- a. Increase Puerto Rico's food security
- b. Contribute to our economy
- c. Promote job creation

## **Project Objectives**

- Develop a Community Gardens Curriculum
- Develop a Community Organization Guide
- Develop an Urban Agriculture Tool Kit
- Develop a Crops for High Tunnels' Guide
- Develop High Tunnels Enterprise Development Blueprints
- Train the Extension faculty as trainers in:
  - a. Community gardens development
  - b. Community Organization Guide
  - c. Agribusiness plan development
  - d. The use of the urban agriculture tool kit
  - e. Crops for High Tunnel's guide
- Promote the adoption of high tunnels systems for urban agriculture between farmers, future farmers and community organizations.
- Increase urban agriculture production by 20% in 10 high tunnels systems.
- Strengthen the organization and management capacities of 30 high tunnels farmers.
- Establish agricultural marketing networks between the 30 high tunnel farmers, the supply chain and the consumers.

## **Deliverables Publications**

- 400 High tunnel posters
- 300 copies of the Community garden curriculum
- 300 copies of the Community Organization Guide
- 300 copies of the Agricultural Business Plan Development Guide
- 500 copies of the Agribusiness Plan Development for high tunnels producers - Adapt and update PRAES Financing Proposal Guide
- 300 copies of the Puerto Rico's Urban Agriculture Tool Kit - adapted and translated to the Spanish language
- USDA Urban Agriculture Tool Kit
- 500 copies of the Crops for High Tunnel Guide

## **Webpage**

- Design Puerto Rico Urban Agriculture webpage
- Incorporate Puerto Rico's Urban Agriculture Tool Kit on the webpage
- Incorporate Crops for High Tunnel Guide on the webpage
- Program electronic High Tunnel Agribusiness Plan

Trainings the Extension faculty as trainers

- Community gardens
- High tunnels agribusiness development plan
- Urban Agriculture Tool Kit
- Crops for high tunnel

Farmers and Community Organization Individual Assistance-

- Production
- Marketing Strategies
- Finance - USDA funds and technical assistance opportunities

**PRAES Personnel**

Dr. Myrna Comas Pagan – Project Director, PRAES Professor in Agricultural Economics and Food Security Contact Personal

Dr. Robinson Rodriguez – PRAES Community Resources Development Leader

Dr. German Ramos – PRAES Professor in Rural Sociology

Prof. Luis Reynaldo Santiago – PRAES Professor in Crops and Agro-Environmental Sciences

Prof. Gustavo Rodríguez – Agricultural Agent (Extension Faculty), Bayamón - Cataño

Prof. Pablo Jiménez – Agricultural Agent (Extension Faculty), Trujillo Alto – Carolina

Prof. Ada Acosta – Agricultural Agent (Extension Faculty), Rio Piedras, Guaynabo, Carolina, San Juan

PRAES Urban Agriculture County agent - In recruitment process

**Professional Services**

Computer programmer, to be contracted

**Action plan and Timelines**

The following plan of operation explains the methodologies and procedures aimed at achieving each of the project objectives.

**Urban Agriculture Project  
Period 1 July 2017 – June 2018**

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
<b>Administrative</b>												
Receive notification, sign contracts												

Coordinate work with PRAES administrative offices												
Acquisition of computational devices and expendable materials												
Complete PRAES Human Resources documentation												
Project Staff planning meetings												
Project Progress Report												
Cleveland Ohio travel												
<b>Publications and electronic program</b>												
High tunnels poster design												
High tunnels poster printing												
Develop the Community gardens' curriculum												
Community gardens curriculum printing												
Prepare the Community Organization Guide												
Prepare the Agribusiness Development Plan Guide												

Agribusiness Development Plan Guide printing												
Prepare the High Tunnel Development Plan for farmers												
High Tunnel Development Plan for farmers printing												
Electronic Business Plan												
Develop the Urban Tool Kit publication												
Develop the Crops for high tunnel guide												
<b>Trainings</b>												
Business Plan for farmers												
Community garden												
Farmers individual assistance												

**Urban Agriculture Project  
Period 2 July 2018 – June 2019**

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
<b>Administrative</b>												
Project Staff planning meetings												
Project Progress Report												
<b>Publications and electronic program</b>												

Community Organization Guide printing												
Urban Tool Kit Guide printing												
Urban Tool Kit Electronic Guide												
Crops for high tunnel guide												
Crops for high tunnel guide printing												
<b>Trainings</b>												
Urban Tool Kit												
Crops for high tunnel guide												
Community organization Guide												
Business Plan for farmers												
Electronic Business Plan for trainers												
Farmers individual assistance												

**Budget**

Urban Agriculture Proposal Year 1 (2017-2018) Budget				
	Effort	Academic	Summer	Total
<b>Salaries</b>				
Dr. Myrna Comas Pagan	3 credits	\$20,226		\$20,226
<b>Total Salaries</b>				<b>\$20,226</b>



<b>Fringe Benefits</b>				
Dr. Myrna Comas Pagan	3 credits	\$7,484		\$7,484
<b>Total Fringe Benefits</b>				<b>\$7,484</b>
<b>Travel</b>				
<b>Cleveland travel</b>				<b>\$12,600</b>
<b>Local travel</b>				<b>\$26,800</b>
<b>Equipment</b>				\$0
<b>Materials and Supplies</b>				<b>\$8,700</b>
<b>Printing</b>				<b>\$8,300</b>
<b>Other Direct Costs</b>				<b>\$4,800</b>
<b>Total Direct Costs</b>				<b>\$88,910</b>
<b>Indirect Costs</b>				<b>\$8,891</b>
<b>Total Project Costs</b>				<b>\$97,801</b>

### First Year Budget Narrative

#### Personnel

25% Myrna Comas Pagan Salary - \$20,226

Myrna Comas Pagan Fringe Benefits - \$7,484

#### Travel

**Cleveland Ohio Travel** – Coordinate work with Cleveland NRCS Staff and participate in an educational exchange on how they establish urban agriculture initiative and how communities in coordination with NRCS established projects to maximize opportunities to incorporate urban agriculture into new development.

Flight: \$900/person \* 7 (5 PRAES personnel & 2 farmers) = \$6,300

Hotel Cost: \$700 \* 4 nights \* 7 = \$4,900

Allowance: \$40/day (\$8-breakfast, \$14-lunch, \$18-dinner) \*7 persons\*5 = \$1,400

**Local Travel**

\$110/ Extension Faculty /coordination day \* 8 \* 10 day = \$8,800  
 \$60/6 Extension Faculty /40 farmer’s individual assistance = \$14,400 \$30/  
 Extension Faculty’s/training day \* 60 agents \* 2 days = \$3,600

**Materials and Supplies**

2 laptops @ \$1,500 each - Will be used to prepare educational material, presentations, edit photos and videos  
 4 tablets @ \$400 each – will be used by the Extension Faculty to bring farmers assistance  
 2 printers @ \$350 –printing educational materials  
 2 projectors @ 700 to trainings and meetings presentation  
 Expendable materials - \$2,000

**Publications**

400 copies of the High Tunnels posters @ \$2  
 300 copies of the Community garden curriculum @ 10  
 300 copies of the Agribusiness Plan Guide @ \$10  
 500 copies of the High tunnels agribusiness plan for farmers @ \$3

**Other direct cost**

1 Computer Programmer wage (UPR undergraduate student): \$10 \* 20 hours per week \* 24 weeks

**Indirect costs**

Total Direct Cost \* 10%

<b>Urban Agriculture Proposal Year 2 (2018-2019) Budget</b>				
	<b>Effort</b>	<b>Academic</b>	<b>Summer</b>	<b>Total</b>
<b>Salaries</b>				
Dr. Myrna Comas	3 cred/1summo	\$20,226	\$8,989	\$29,215
<b>Total Salaries</b>				<b>\$29,215</b>
<b>Fringe Benefits</b>				

Dr. Myrna Comas	3 credits/ 1 summer month	\$7,484	\$1,636	\$ 9,120
<b>Total Fringe Benefits</b>				<b>\$9,120</b>
<b>Travel</b>				
<b>Local Travel</b>				<b>\$26,800</b>
<b>Equipment</b>				0
<b>Materials and Supplies</b>				<b>\$4,500</b>
<b>Printing</b>				<b>\$5,500</b>
<b>Other Direct Costs</b>				<b>\$9,600</b>
<b>Total Direct Costs</b>				<b>\$84,735</b>
<b>Indirect Costs</b>				<b>\$8,474</b>
<b>Total Project Costs</b>				<b>\$93,209</b>

### **Second Year Budget Narrative Personal**

25% Myrna Comas Pagan Salary - \$20,226

Myrna Comas Pagan Fringe Benefits - \$7,484

### **Travel Local Travel**

\$110/ Extension Faculty /coordination day \* 8 \* 10 day = \$8,80000

\$60/6 staff/40 farmer's individual assistance = \$14,400

\$30/ Extension Faculty's training day \* 60 agents \* 2 day = \$3,600

### **Materials and Supplies**

USB portable drives for Urban Agriculture initiative material to be distributed to farmers and Extension Faculty – 500 \* \$5 = \$2,500

Expendable materials - \$2,000

**Publications**

300 copies of the Puerto Rico Urban Agriculture Tool Kit @ \$5

300 copies of Community Organization guide @ \$5

500 copies of the Crops for high tunnels guide @ 5

**Other direct costs**

2 Computer Programmers wage (UPR undergraduate student):  $\$10 * 20 \text{ hours per week} * 24 \text{ weeks}$

**Indirect cost**

Total Direct Cost \* 10%

### **Project staff Director**

**Myrna Comas-Pagán.** Dr. Comas is a professor at the Department of Agricultural Economics and Rural Sociology of the University of Puerto Rico, Mayaguez Campus with joint teaching and extension responsibilities. She is the contact person for the PRAES Food Security National Initiative and as Agricultural Economics Specialist works with farmers on their Farm Plan Development. Dr. Comas is usually in charge of teaching graduate Agricultural Project Feasibility Analysis and Farm Management courses.

### **Collaborators**

**Robinson Rodriguez.** Dr. Rodriguez is PRAES Community Resources Development Leader and Rural Sociology Professor at the Department of Agriculture Economics and Rural Sociology of the University of Puerto Rico. He worked in many research and educational program community development.

**German Ramos-Cartagena.** Dr. Ramos is an Assistant Professor at the Department of Agricultural Economics and Rural Sociology, University of Puerto Rico, Mayaguez Campus and is also a Rural Sociologist in the Agricultural Extension Service. He teaches undergraduate courses in community organization, rural sociology, sustainable agriculture and food supply. His research and community outreach focus is in sustainable community organizations. He is the founder of important entrepreneur community gardens in Puerto Rico the San Juan area.

**Luis Reynaldo Santiago.** Mr. Santiago is a Professor at the Department of Crops Agroenvironmental Sciences. He developed and administrates the Agricultural Extension Service Community Garden. He developed the garden as a workshop to offer urban agriculture courses in San Juan area. He also created an Urban Agriculture Webpage.  
<https://www.youtube.com/watch?v=htEPuyaTXuQ>

**Pablo Jimenez-Cruz.** Prof. Jimenez is Carolina and Trujillo Alto Extension Faculty. He was Agriculture Education Director in the Puerto Rico's Department of Education. He works with farmers, community development and 4-H Club and promotes urban agriculture. Also was State Advisor of Future Farmer of America.

**Gustabo A. Rodríguez-Rivera.** Prof. Rodriguez is Cataño and Bayamon Extension Faculty. He works with farmers, community development and 4-H Clubs and promotes urban agriculture. Also he works with the Woman farmer's Association.

**Ada Acosta.** Prof. Acosta is San Juan, Carolina, Guaynabo and Rio Piedras Extension Faculty. He works with farmers, community development and 4-H Clubs and promotes urban agriculture. Also she promotes community organization to stablish community gardens and small agribusiness.

**Attached** – Ex. Deliverable template  
PRAES Financing Proposal Guide  
USDA Urban Agriculture Tool Kit