



**SERVICIO DE
EXTENSION AGRICOLA**
COLEGIO DE CIENCIAS AGRICOLAS

Puerto Rico Cooperative Extension Program on Urban Forestry and Arboriculture



Sally González Miranda, Specialist
Horticulture Department
College of Agriculture

Mayagüez Campus, University of Puerto Rico

Overview

- **General Knowledge of Puerto Rico**
- **Puerto Rico Cooperative Extension Service (PRCES)**
- **Urban Forestry and Arboriculture Program on PR**

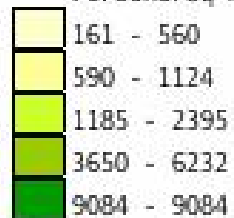
General Information



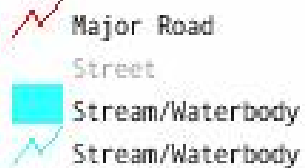
City Population, Census 2002

Data Classes

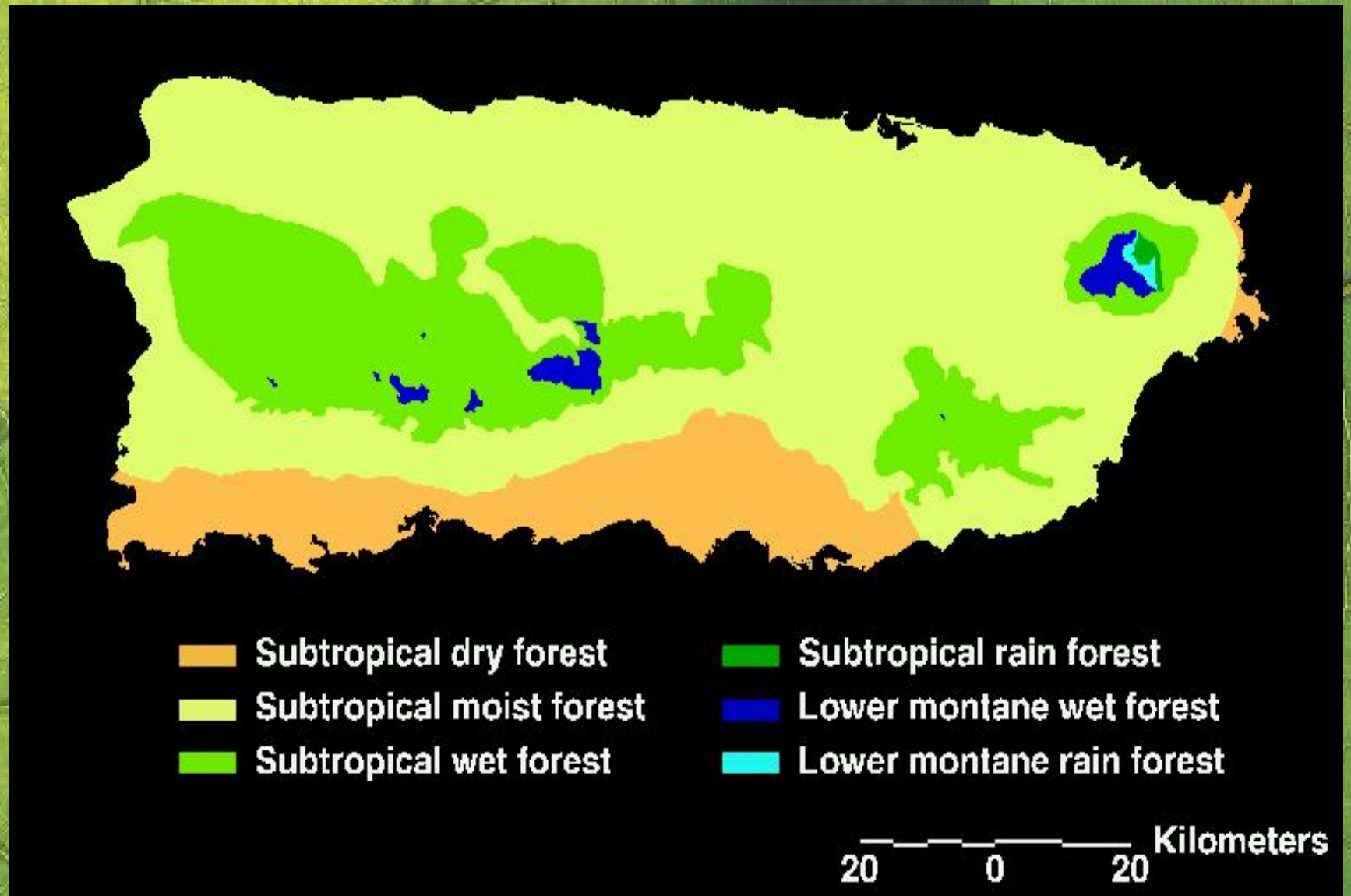
Persons/Sq Mile



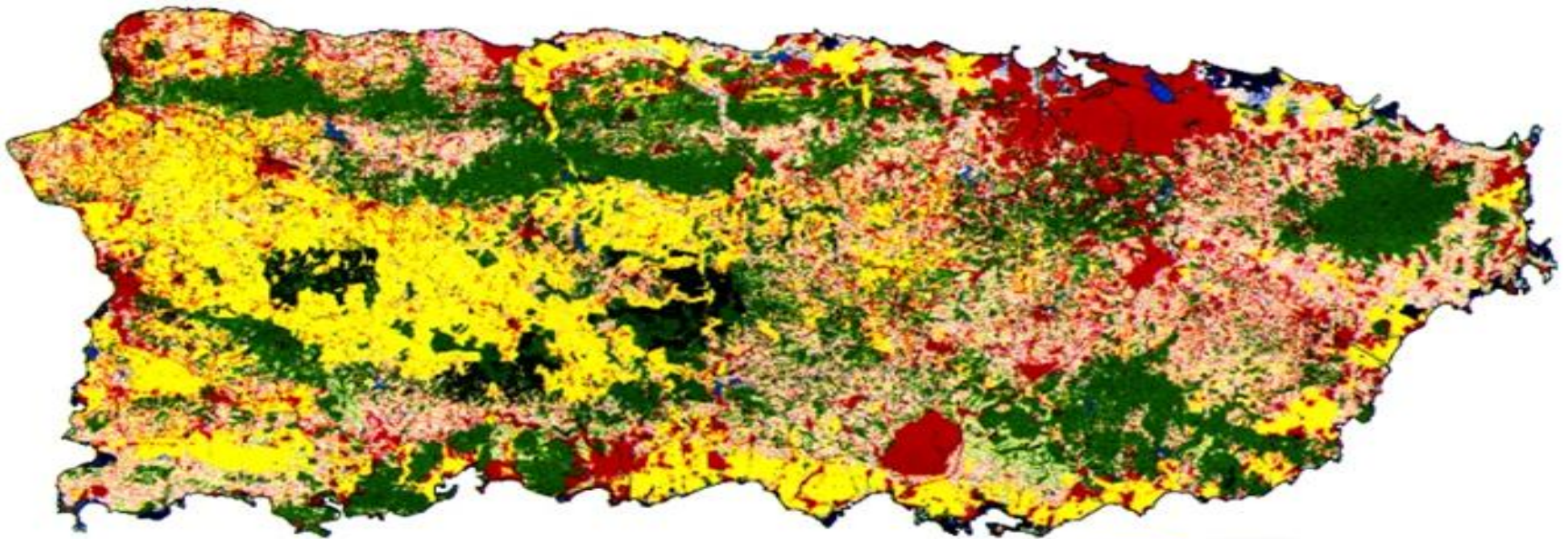
Features



General Information: Holdridge Life Zones



USO DE TERRENO GENERALIZADO: PUERTO RICO, 1977-78



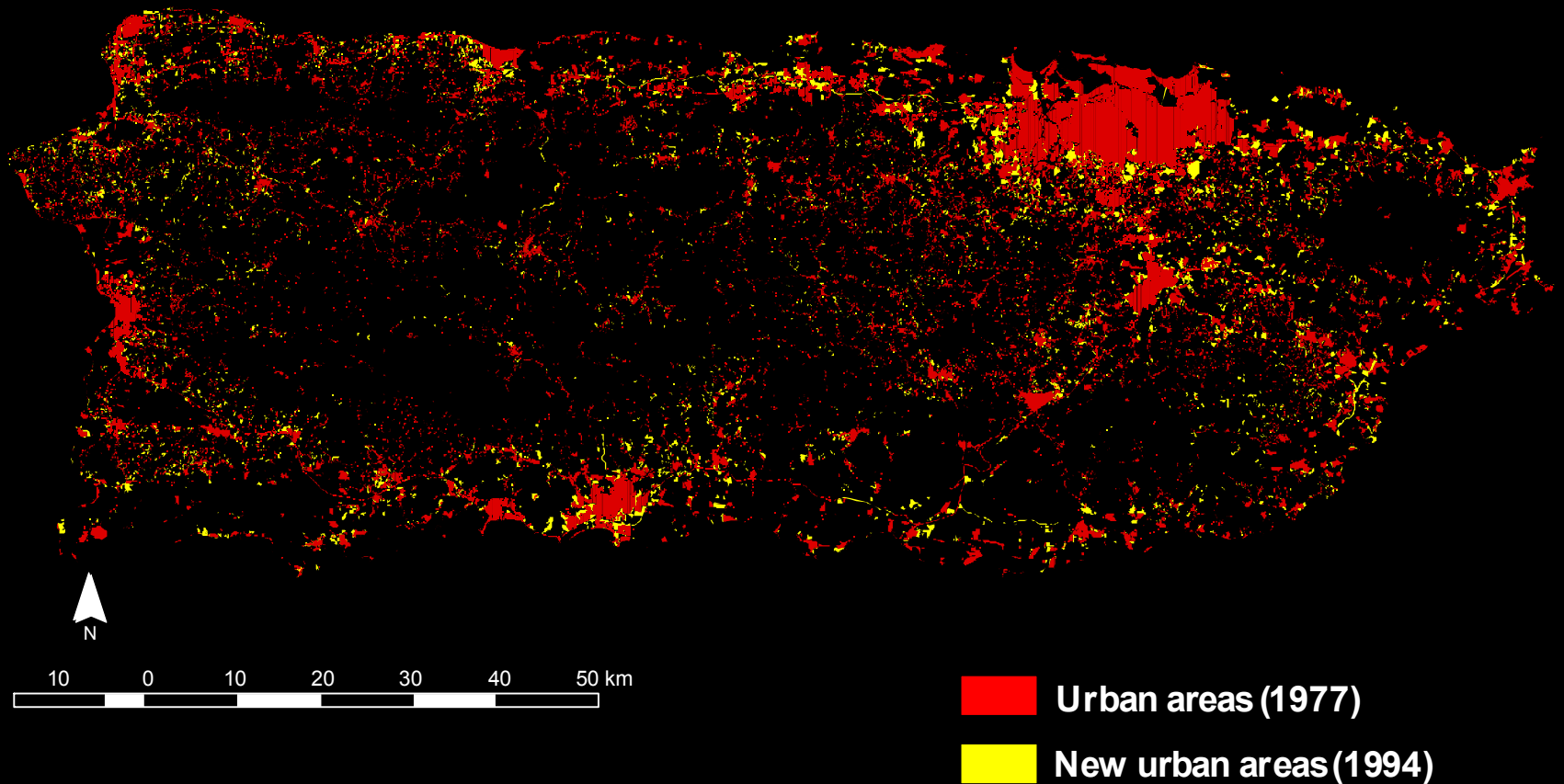
10 0 10 20 30 40 50 km

LAND USE



Foto-interpretación aérea, DRNMA
Digitización, US Geological Survey
Mapa y cobertura digital, O. Ramos IITF GIS/GPS Lab, 1995

Urban areas in 1994



Urban Expansion and the Loss of Prime Agricultural Lands in Puerto Rico
Tania del Mar López, T. Mitchell Aide, John R. Thomlinson.
Ambio Vol. 30. No. 1, 49-54 pp. Feb. 2001

USDA Forest Service
IITF GIS & RS Lab



Urban land cover derived from Landsat 7 ETM+ multidate composite scene (1999 – 2003) Puerto Rico, Vieques and Culebra



S. Martinuzzi, W. Gould, and O. Ramos. Development,
land-use, and urban sprawl in Puerto Rico. In review.
Product of PRGAP Program, July 2003.

USDA Forest Service
IITF GIS & RS Lab



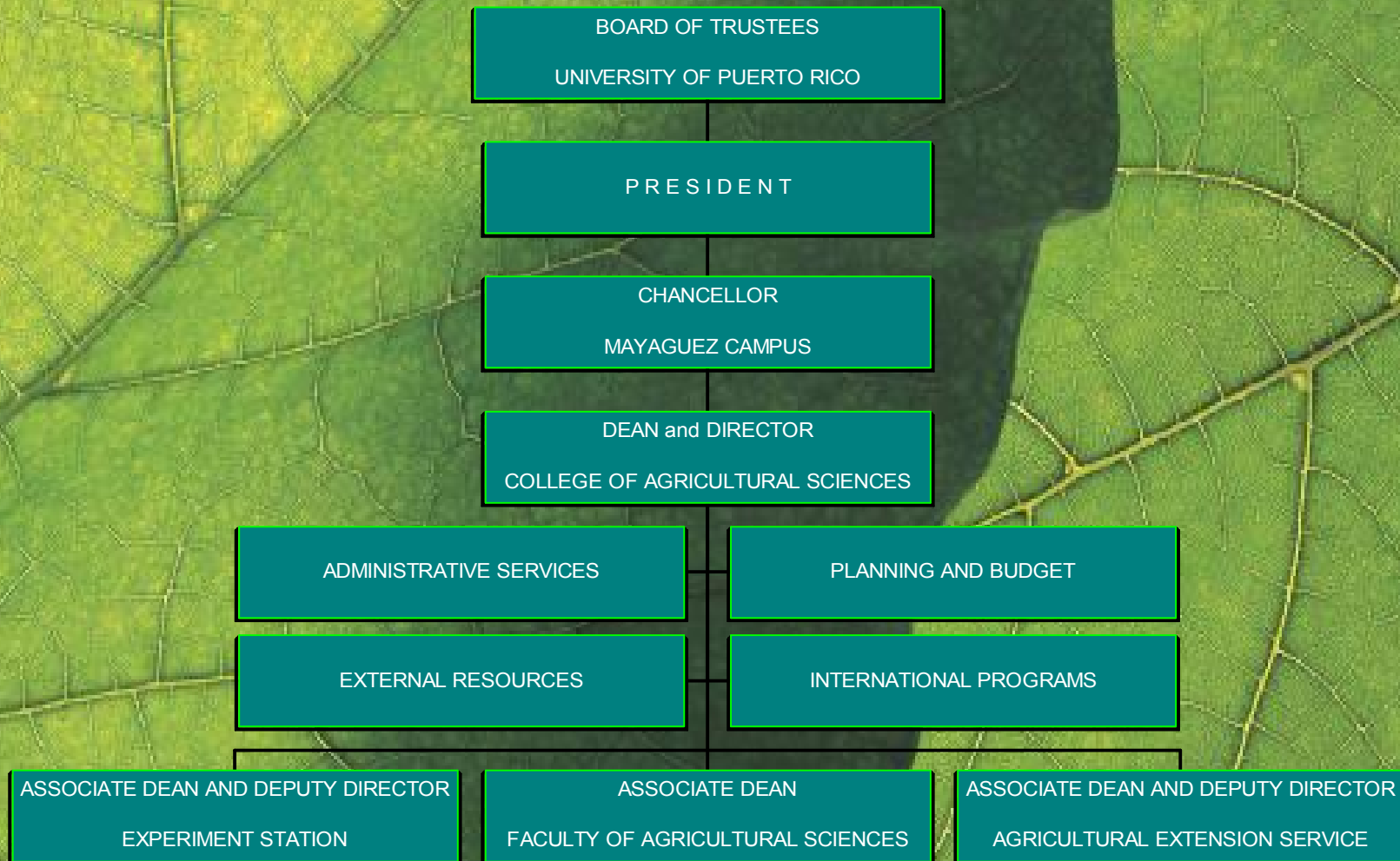
Situation of Urban Forest

- **Rapid urbanization and residential development has resulted in mass reduction of the green spaces.**
- **Urbanization and sprawl is happening into natural areas.**
- **Development has been mostly horizontal, instead of vertical.**

Situation of Urban Forest

Human demands are creating stress in the delicate natural balance of the island's ecosystem, which has already resulted in costly water shortages, flooding, endangerment of habitats of native species and loss of bio-diversity.

PR Cooperative Extension Service Organizational Chart



Puerto Rico Cooperative Extension Service

LOCAL AND REGIONAL OFFICES



LEGEND:

- LOCAL OFFICE (65)
- ← COVERED BY LOCAL OFFICE (13)
- REGIONAL OFFICE (5)
- A ADMINISTRATIVE OFFICE
- C CENTRAL OFFICE
- REGIONAL DIVISION LINE

PRCES: Urban Forestry and Arboriculture Program

- **In 1989, Sponsor by DNRE, the Southern Region of FS made a presentation to launch the Program “America the Beautiful”**
- **State and Private Program at IITF-FS, 1990**
- **First Council in urban forestry issues was organized in 1991 and reorganized on September 2003**

First 5 years: 1990 - 1995

- **A liaison between DNRE, USFS-IITF, UPR-RUM-CCA, and NGO**
- **Training of trainers in arboriculture and urban forestry**
- **PR and Virgin Island were included in the Southern Chapter of the International Society of Arboriculture**

From 1995 - 2005

- **Training and education program**
 - **Extension Agents**
 - **Seminars and workshop in tree selection, tree planting, maintenance program: pruning and fertilizing**
 - **Personnel from other agencies**
 - **Municipal employees**
 - **Workers of the electric company (PREPA)**
 - **General public**
 - **Puerto Rico**
 - **US Virgin Island**

From 1995 - 2005

- **Horticulture Department**
 - **Undergraduate courses**
 - **Graduate students, research thesis**
- **Puerto Rico Arboricultural Professional Organization, 2000**

From 1995 – 2005, Trainings



From 1995 – 2005, Trainings



From 1995 – 2005, Trainings



From 1995 – 2005, Trainings



From 1995 – 2005, Trainings



From 1995 – 2005, Trainings









From 1995 – 2005, Trainings

- **Design and implement the “Puerto Rico Forestry Conference” (1995-1999) now “Caribbean Urban Forestry Conference”**
 - **Annual Conference**
 - **Annual awards recognitions to professionals, community groups or individuals**
 - **Since 2000, alternate between PR and Virgin Island**







Accomplishments

- All extension agents has been educated on basic knowledge of arboriculture and urban forestry
- The PR Extension Service serve as counselor for DNRE in urban forestry issues

Accomplishments

- **Public awareness**
- **Planning Board regulations for tree care and planting, “Reglamento 25”, March 16, 1996, review on 1998**
- **First Urban Forest Law for PR, (213, August 5, 1999)**

A dirt path leads into a dense forest. The path is light-colored and appears to be made of sand or dry earth. It is flanked by lush green vegetation, including various trees and undergrowth. The forest is thick, with many thin tree trunks visible. The lighting suggests a sunny day, with dappled sunlight filtering through the canopy. In the lower-left foreground, a black sign with yellow and white text is partially obscured by green plants.

BIENVENIDOS
BOSQUE SAN PATRICIO
VEREDA INTERPRETATIVA

OS
TRICIO
ETATIVA





Future Plans

- **An educational program in Community leadership on urban forestry for extension agents.**
- **An educational program on tree hazard evaluation**
- **An educational program for greenhouse management in arboriculture**
- **Continue with the trainings in tree selection and maintenance**

Future Plans of the Liaison

- **Create links with others NGO's**
- **Development of the Caribbean ISA Chapter**
- **Develop links of collaborations with other Caribbean islands and Central America**



Thank you,

Sally González Miranda

Landscape and Urban Forester Specialist

Puerto Rico Cooperative Extension Service

sgonzalez@uprm.edu