

*An overview of*  
**Cuba's Phytosanitary Institutions**





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*Because of its proximity and ecological similarities, the Cuba-Florida pathway is probably the most important pest-pathway to the US from the Caribbean. Our understanding of Cuban phytosanitary policy and regulatory institutions is critical to proactively managing biosecurity risks in the region.*





# Introduction

The Greater Caribbean Region (GCR) is considered a major pest pathway for the United States<sup>1</sup>. The mounting movement of people and trade, along with hurricanes, contribute to the introduction and establishment of new exotic plant pests and pathogens. Because of its proximity and ecological and climate-related similarities, the Cuba-Florida pathway is probably the most important pest-pathway to the US from the Caribbean. It is suspected, for example, that three of the most destructive pests in Florida vectored from Cuba: the Brown citrus aphid (*Toxoptera citricida*), the Red palm mite (*Raoiella indica*), and the citrus psyllid (*Diaphorina citri*)<sup>2</sup>. Recent increase in travel between Cuba and the US- particularly Florida- increases the risk of new introductions. In addition to tens of thousands of Cuban-Americans who travel every year, in 2015 around 160,000 U.S. citizens visited Cuba, and it is expected that by 2025 this number will grow reaching up to 2 million US citizens traveling to Cuba per year<sup>3</sup>.

Collaborative efforts such as the Greater Caribbean Safeguarding Initiative (GCSI), the Caribbean Pest Diagnostic Network (CPDN) and the Caribbean Plant Health Directors Forum have aimed to offer access to collective knowledge and to facilitate information sharing, as well as to focus resources for pest management activities in the region. However, Cuba's participation in such efforts has been quite limited and obtaining information about their pests and phytosanitary regulations has remained a challenge.

A strong system of monitoring and response in Cuba, coupled with sharing of information between the US and Cuba is critical to preventing new pest invasions between the Caribbean and Florida. The need to share information on plant pests and diseases as well as to collaborate in phytosanitary issues that affect agriculture and natural resources has been officially recognized by both countries through the *Joint Statement between the United States of America and the Republic of Cuba on Cooperation on Environmental Protection* (November 2015); the *Memorandum of Understanding on Cooperation in Agriculture and Related Fields* between the USDA and Cuban Ministry of Agriculture (MINAG) (March 2016), and more importantly the *Memorandum of Understanding for Cooperation* between APHIS-USDA and the Cuban Animal and Plant Directorates (January 2017). The latter particularly acknowledges the need to share information on: (1) quarantine pests and emerging plant pests and diseases; (2) regulatory systems, especially those regarding phytosanitary inspection; and (3) best practices on plant health including research and surveillance.

Fruitful collaboration with Cuba on plant health issues involves developing a robust understanding of Cuba's phytosanitary institutional arrangements and policies to enable comparison with the US and international systems and to proactively address emerging pest threats. This report provides a broad overview of Cuban phytosanitary regulatory and policy institutions with basic information on Cuba's trends in trade, land use, and key plant pests. Information for this report comes from an extensive literature review, open interviews with Cuban scientists and staff, participation at the "VIII International Scientific Seminar in Plant Health" (April 9-17, 2017; Havana, Cuba), and field observations.



*Street in Havana, 2017*



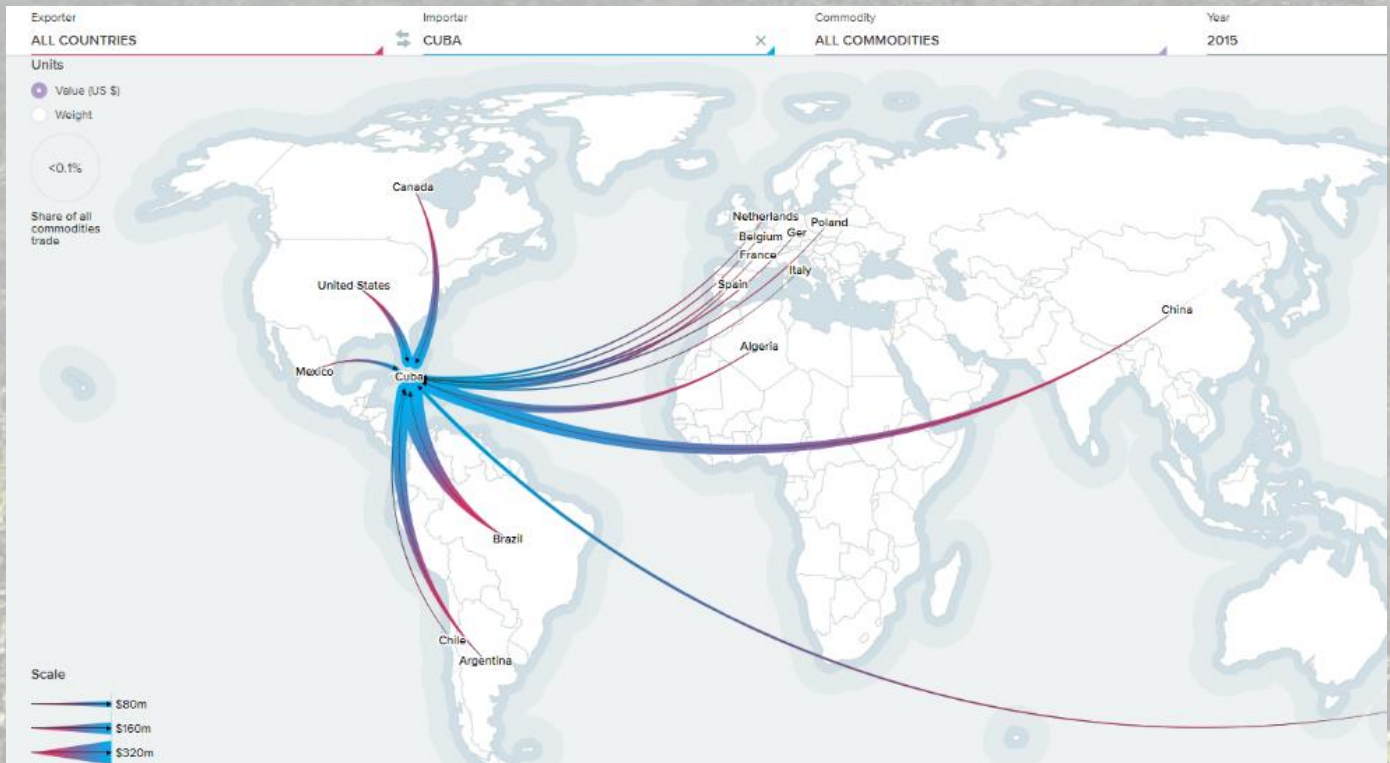
# Cuban Imports

## Snapshots of 2005 and 2015

Fig 1. 2005: Imports to Cuba (\$2.8bn)



Fig 2. 2015: Imports to Cuba (\$1.9bn)



# Cuban Exports

## Snapshots of 2005 and 2015

Fig 3. 2005: Exports from Cuba (\$1.8bn)

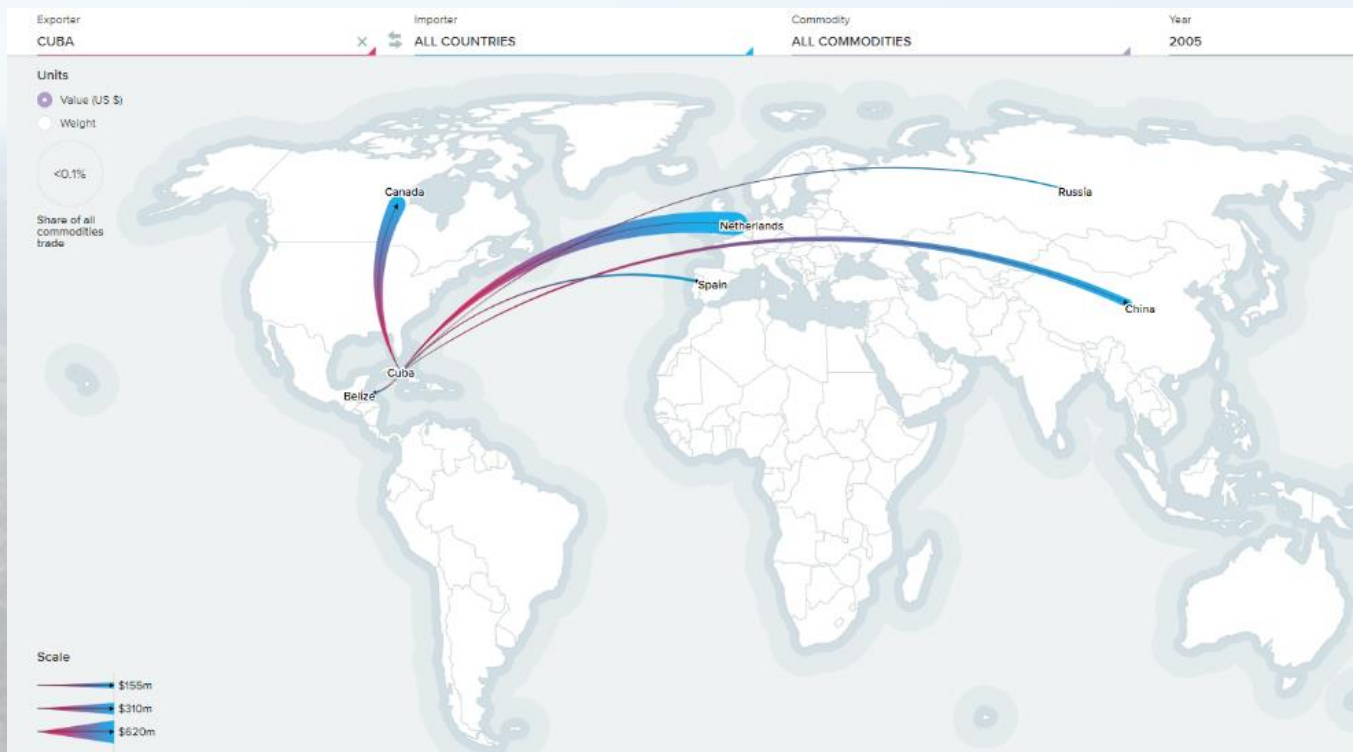
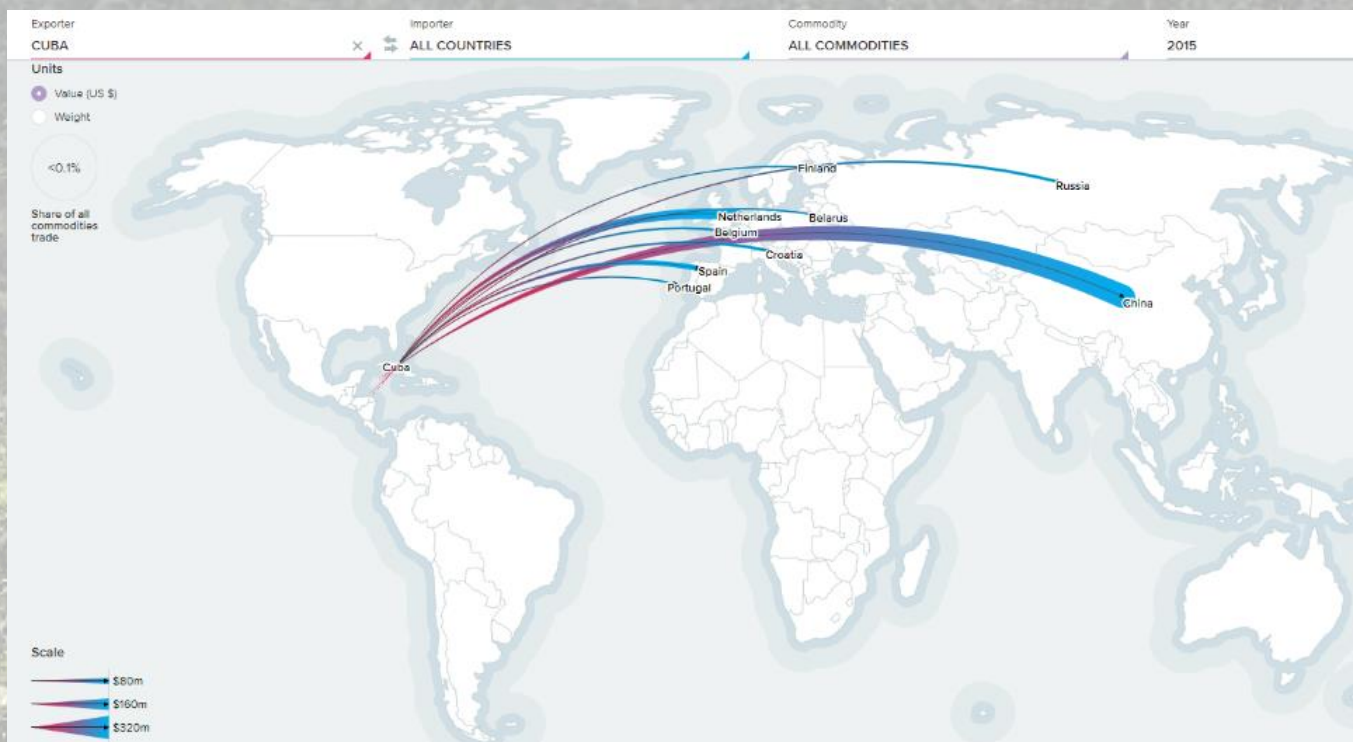


Fig 4. 2015: Exports from Cuba (\$940m)





*A strong system of monitoring and response in Cuba, coupled with sharing of information between the US and Cuba is critical to preventing new pest invasions between the Caribbean and Florida.*







**Table 1. Cuban Land Use and Major Crops**

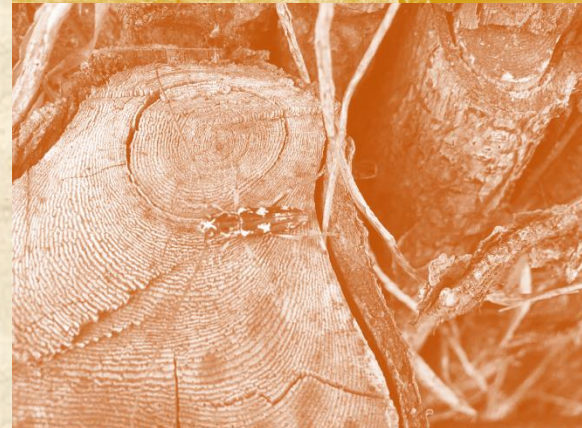
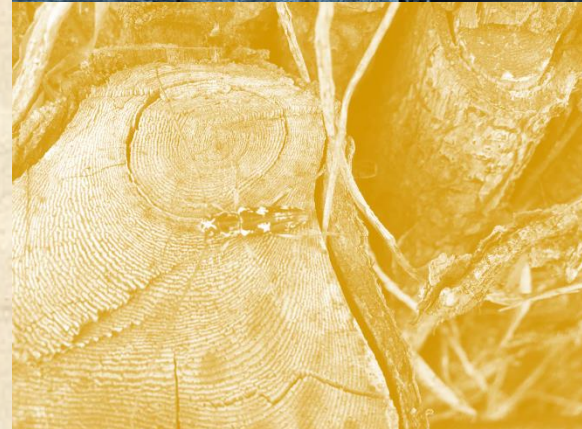
	Acres
<b>Total Land Area</b>	27,152,928
<b>Total Agricultural Lands</b>	15,386,511
<b>Cropland</b>	6,754,626
Sugar	1,076,391
Coffee	69,000
Bananas and Plantains	234,009
Citrus and fruits	282,689
Rice	345,987
Various Crops	1,995,376
Tobacco	30,374
<b>Non-cropland</b>	8,972,396
Pastures	5,926,081
Idle lands	3,046,315
<b>Non-agricultural lands</b>	11,766,417
Forest	7,554,016
Unproductive land	1,160,654
Water bodies	852,267
Urban/rural settlements	1,254,060

*Cuba's total land mass is about two thirds the size of Florida.*



**Table 2. Agricultural Crop Pests<sup>4</sup>**

<b>Plant Pest</b>	<b>Crop</b>
Blue mold	Tobacco
Sugar cane rust	Sugar cane
Virulent white flies	Tomatoes and beans
Begomovirus	Tomatoes and beans
Tarsonemid mite (Stenoetaronemus spinki)	Rice
Sheath rot (Sarocladium oryzae)	Rice
CBB (Hypothenemus hampei)	Coffee
Thrips palmi	Potato, beans, cucurbitaceae
Citrus leaf miner (Phyllocnistis citrella)	Citrus





**Table 3. Chemical applicants on exported agricultural products<sup>4</sup>**

Honey	Organophosphates, organochlorine compounds, pyrethroids, carbamates (PCBs)
Citrus fruits	TBZ, IMAZALIL, carbendazim
Concentrated citrus juice	Organophosphates, carbamates, pyrethroids, dithiocarbamates, triazoles
Coffee	Phosphorus products
Fruits	TBZ, prochloraz, IMAZALIL, dithiocarbamates

**Table 4. Official list of quarantine species in Cuba (2007)<sup>4</sup>**

	Group A1*	Group A2*	NCR*
Nematodes	17	1	7
Fungi	26	4	24
Bacteria	25	6	18
Viruses	17	-	18
Insects	93	1	-
Ticks and Mites	8	--	-
Weeds	28	1	-

\*A1: pests of economic importance that are absent from Cuba.

\*A2: pests of economic importance that are locally present and are under close monitoring and control

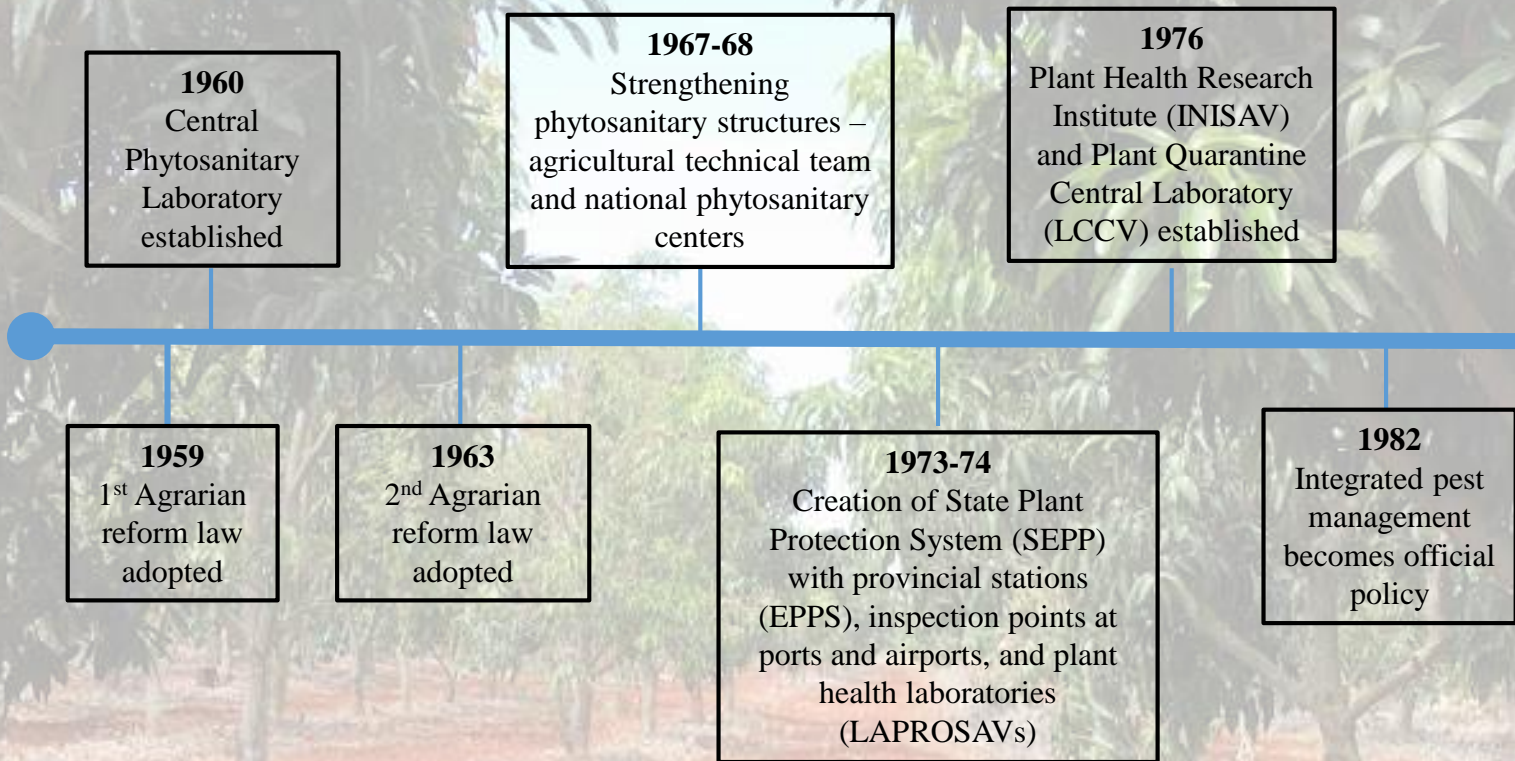
\*NCR (non-quarantined, regulated pests): pests that are closely monitored and controlled due to the potential economic impacts

*Pesticides and fertilizers are used sparingly in Cuba. International trade relations and events made it difficult for the nation to obtain agrichemicals. In response to shortages, the nation developed a system of biocontrols and integrated pest management to deal with plant pests.*





**Fig 5. Timeline of Cuba's Policies, Institutions and Approaches in Plant Health Since 1959**





**1988**  
National Program  
for Production of  
Biological  
Resources  
established

**1993**  
Development of  
urban  
agriculture

**1998**  
Advances in  
biological controls –  
more than 900,000 ha  
using biopesticides  
and entomophagous  
control

**1991**  
Ministry of Agriculture  
(MINAG) created 276  
Centers for Reproduction of  
Biocontrols (CREEs)

**1994**  
DL 153 – Regulation of  
Plant Health adopted

**2004-07**  
Adoption of 13  
agro-ecological  
pest  
management  
programs



A photograph of an orchard with green leaves and fruit. A light blue oval with a dark blue border is centered over the image, containing text. The text is in a black, italicized serif font.

*Cuba's phytosanitary policies and practices are informed by the country's commitment to integrated pest management and sustainable agriculture.*



## Cuba's Phytosanitary Institutions

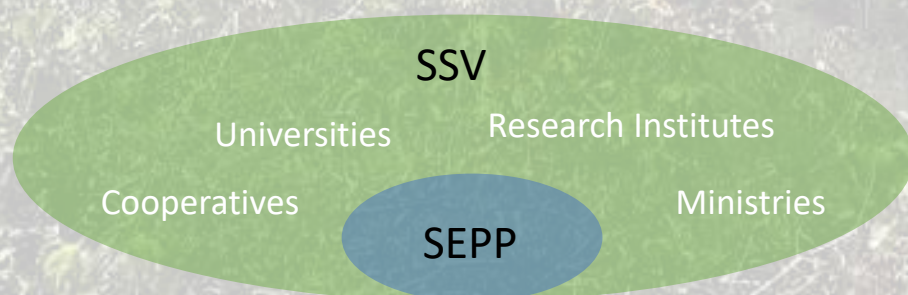
Because of geographic, historical and socioeconomic realities in Cuba, plant health is considered a top priority that is managed as a crosscutting policy. A number of government entities are involved in plant health, including the ministries of education, agriculture, science and technology, trade, interior and health. Cuba's Plant Health Service (*Servicio de Sanidad Vegetal-SSV*) is a network of institutions widely distributed throughout the country that work in close collaboration with agricultural producers through an Extension-like system that uses a train-the-trainer approach to information dissemination.

At the core of Cuba's plant health infrastructure is the Plant Protection State Service (*Servicio Estatal de Proteccion de Plantas -SEPP*), a network of plant health laboratories in charge of pest monitoring, diagnosis, management and eradication, and information sharing. The Ministry of the Agriculture (MINAG) is the entity in charge of regulating the SEPP through its National Directorate for Plant Health (DNSV), which is the country's National Plant Protection Organization (NPPO). The DNSV is composed of the Plant Quarantine Central Laboratory (LCCV), responsible for the diagnosis of regulated quarantine species and research and the Central Pesticide Registry, and has a network of 15 Provincial Plant Health Directorates (DPSV). These provincial offices are in charge of the regulatory aspects of plant protection (phytosanitary emergency and defense plans, phytosanitary surveillance), quarantine, biological control and training at the provincial level. Under the DPSV, the Provincial Plant Health Laboratories (LAPROSAV) employ interdisciplinary teams to identify pests, develop and adapt pest control methods and training.

At the municipal level, there is a network of 76 Plant Protection Stations (ETPP) in charge of pest monitoring and management, 41 Introduction Points (or points of entry) with diagnostic laboratories, and a network of 200 laboratories that produce biopesticides and biological control agents. At the heart of Cuba's monitoring and treatment network are the ~7,000 agricultural producers with some training in plant health. Producers work in close collaboration with the SEPP to monitor and control plant pests.

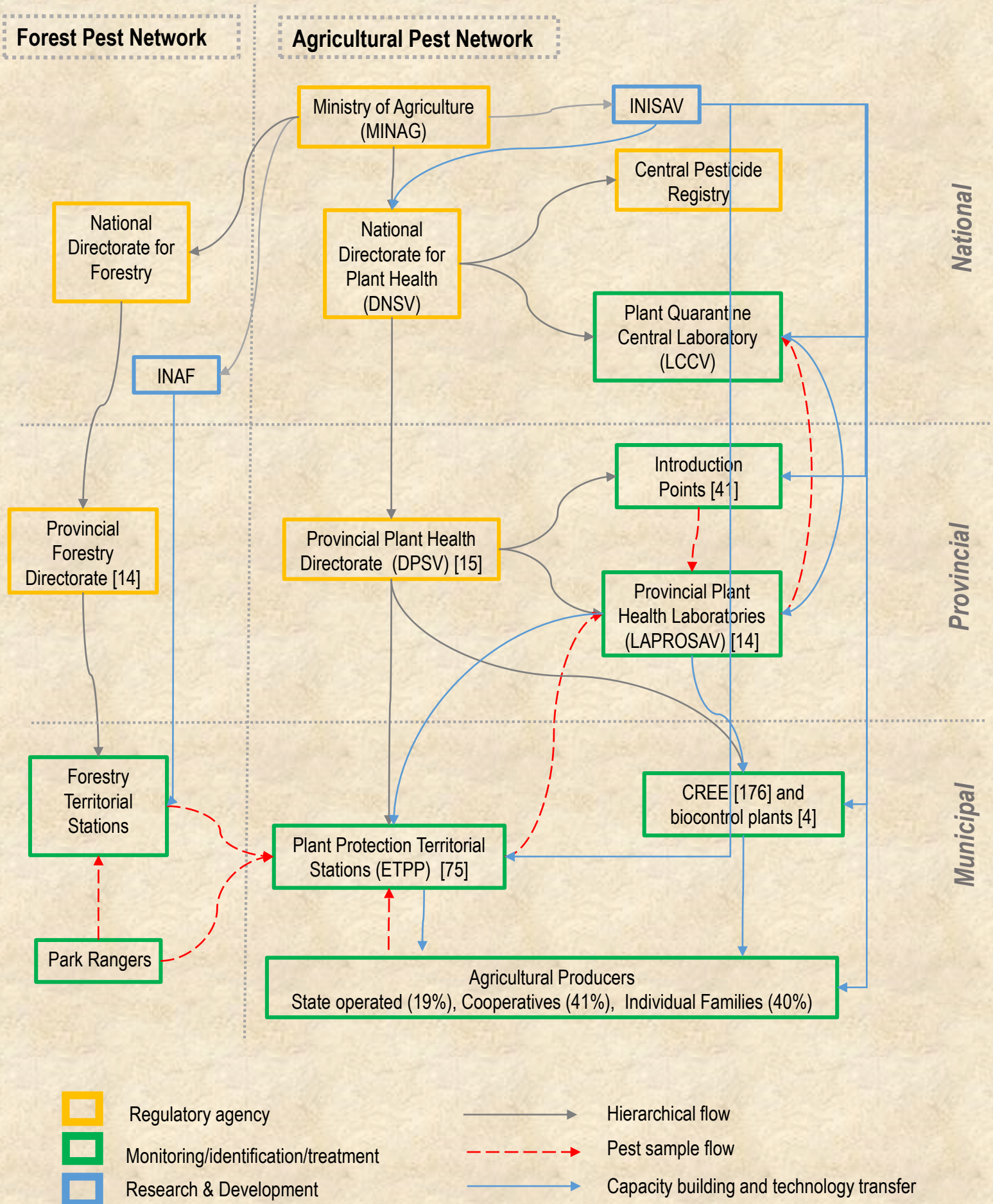
Cuba's SEPP is regulated by a Plant Health Research Institute (INISAV) that provides scientific and technical support to the entire system. In addition, the system is supported by scientific research institutes and educational centers that are part of the SSV.

In the context of forest health, the Institute of Agroforestry Research (INAF) provides scientific support and forestry territorial stations. Park Rangers monitor the forests and coordinating efforts with the SEPP.





**Fig 6. Model of Cuba's State Plant Protection Service (SEPP)**







LAPROSAV (14)



CREE (176)

**Fig 7. Distribution of Plant Health Laboratories**



ETPP (75)



Biocontrol Plants (4)



## Key Institutions

### Cuba's State Plant Protection Service

#### **Ministry of Agriculture** (*Ministerio de Agricultura-MINAG*)

The MINAG is the agency responsible for directing, executing and controlling the agrarian policy of the country (i.e., agriculture, livestock, and forestry). One of MINAG's functions is to regulate, direct, and control the State Plant Protection System (SEPP) through the National Directorate for Plant Health (DSV).

#### **Directorate for Plant Health** (*Dirección de Sanidad Vegetal-DSV*)

The DSV is the country's National Plant Protection Organization (NPPO) ensuring phytosanitary protection while maintaining favorable environmental conditions. This involves plant quarantine, plant protection (phytosanitary emergency and defense plans, phytosanitary surveillance), technical development and service, and pesticide registration.

#### **Plant Quarantine Central Laboratory** (*Laboratorio Central de Cuarentena Vegetal-LCCV*)

LCCV is the national laboratory to aid in pest identification and development of treatment methods. They are in charge of identifying quarantine pests and support difficult pest identification.

#### **Plant Health Research Institute** (*Instituto de Investigaciones en Sanidad Vegetal-INISAV*)

INISAV's main functions include developing research, innovation and technological business projects, as well as specialized scientific and technical services related to diagnostic technologies, surveillance, and management of endemic and exotic pests. Moreover, INISAV develops technologies for reproduction and application of biological resources, use of natural substances and their metabolites, analysis of chemical applications pesticide residues and quality control. INISAV provides training and capacity building on plant health issues and it generates new products and processes related to detection, evaluation, study, control, and information dissemination related to agricultural pests.

#### **Institute of Agroforestry Research** (*Instituto de Investigaciones AgroForestales INAF*)

This institute was created in 2011 as result of the merger of the Forest Research Institute (IIF) and the Central Research Station for Coffee and Cocoa (ECICC). It provides technical and scientific basis for forestry, coffee and cocoa production chains, and supports MINAG in protecting against introduction and establishment of pests and diseases in forests, coffee and cocoa plantations.

#### **Provincial Plant Health Laboratories** (*Laboratorio Provincial de Sanidad Vegetal-LAPROSAV*)

LAPROSAVs use pest and disease diagnoses and pesticides chemical analysis methods. They have annual plans to train ETPP inspectors in pest identification from the quarantine list prepared by INISAV and other institutes.

#### **Plant Protection Territorial Stations** (*Estaciones Territoriales de Protección de Plantas-ETPP*)

In each province there are 3-6 plant protection units that monitor field effectiveness and receive oversight from INISAV.

#### **Centers for Production of Entomophages and Entomopathogens** (*Centros Reproductores de Entomofagos y Entomopatogenos-CREEs*)

CREEs develop technologies for large-scale multiplication of biological control agents, mainly entomopathogenic fungi and bacteria and entomophagous arthropods. In collaboration with ETPPs, they distribute the agents to the producers.



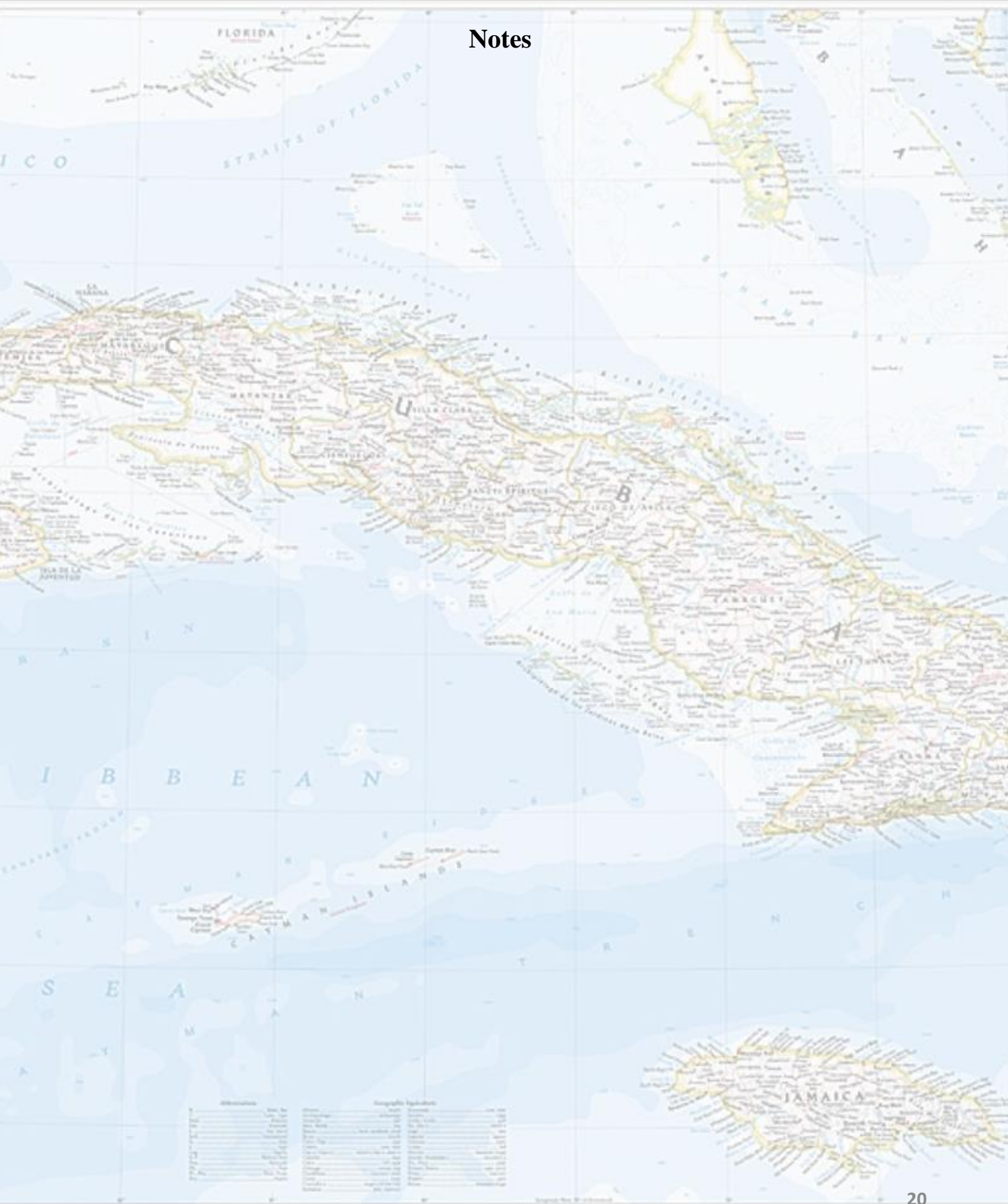
## Key Personnel

### Cuba's State Plant Protection Service

Institution	Name	Role/specialty	Email	Phone	Website
<b>MINAG</b>	Gustavo Rodríguez Rollero	Minister	web2@hab.eicma.cu	(537) 884-5427	www.minag.gob.cu
<b>DNSV</b>	Julio A. Piedrahita Portas	Chair, Plant quarantine	cuarentena@sanidadvegetal.cu	(537) 870-1024	www.minag.gob.cu
<b>National Directorate for Forestry</b>	Oscar Labrador	Director	dnforestal@oc.minag.cu	(537) 884-7518	www.minag.gob.cu
<b>LCCV</b>	Luis Liuba Prez	Director	directorlaboratorio@sanidadvegetal.cu	(537) 881-4668	none
<b>INISAV</b>	Marlene Veitia Rubio	Director	mveitia@inisav.cu	(537) 202-6788	www.inisav.cu
<b>INISAV</b>	Berta Lina Muiño Garcia	Director of Institutional Relations	bertam@inisav.cu	(537) 209-6189	www.inisav.cu
<b>INAF</b>	Pedro Pablo Henry Torriente	Adjunct Director	henry@forestales.co.cu	(537) 208-4935	www.inaf.co.cu
<b>INAF</b>	Idalmis Acosta Morejón	Director of Institutional Relations	idalmis@forestales.co.cu	(537) 208-3444	www.inaf.co.cu

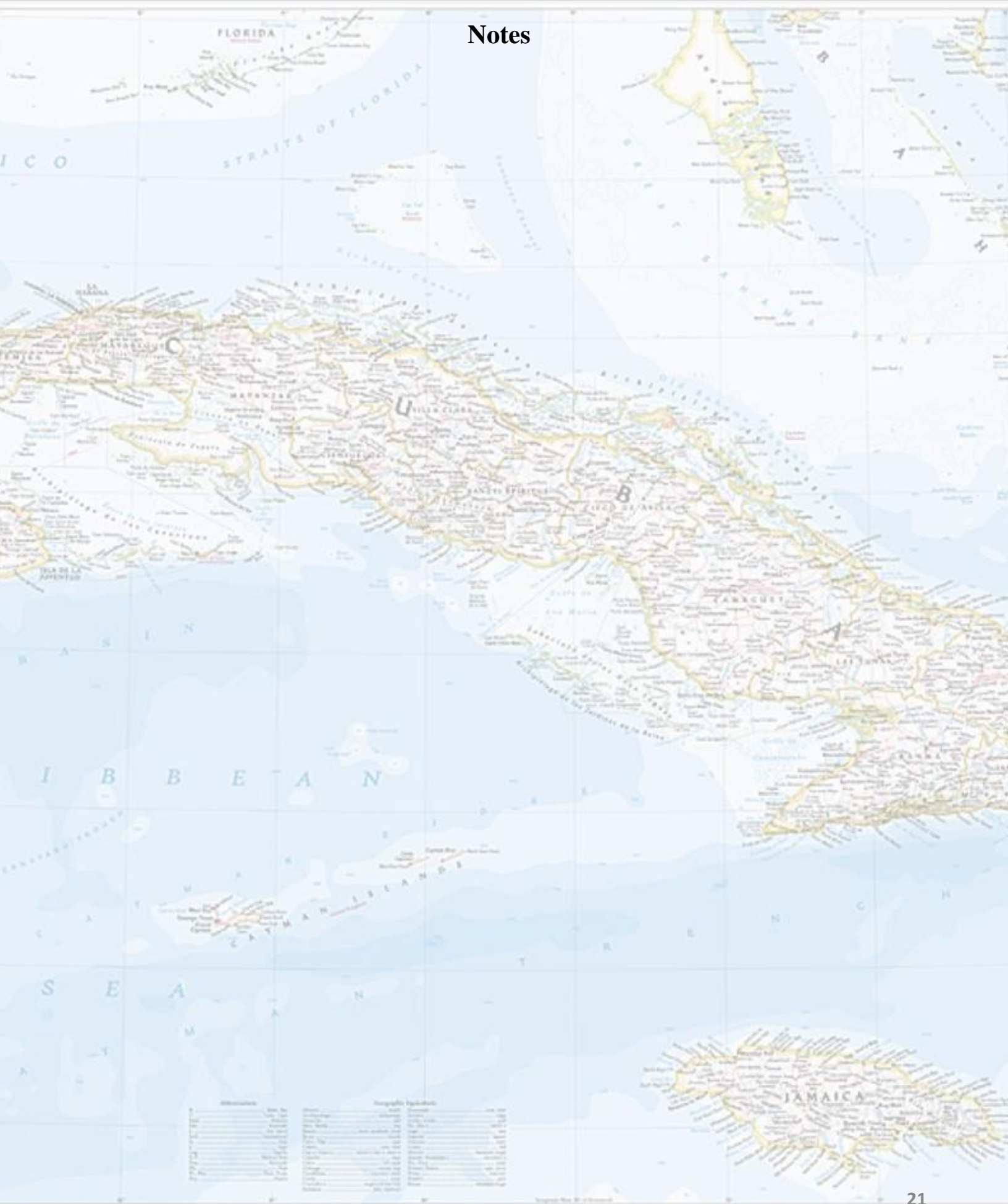


Notes





Notes







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<sup>1</sup>Momol et al. 2006. Operationalizing crisis as a regional invasive species safeguarding model: exploring multiple platform initiatives. USDA Special Workshop Edition. Caribbean Food Crops Society. July 9-15, 2006.

<sup>1</sup>Penca, Cory; Adams, Damian C.; and Hulcr, Jiri, "The Cuba-Florida plant-pest pathway" (2016). *Insecta Mundi*. 995. <https://digitalcommons.unl.edu/insectamundi/995>

<sup>2</sup>Susan Halbert, FDACS DPI, personal communication

<sup>3</sup>Werner, Johannes. 2017. Foreign investment: Playing second fiddle in tourism. *Cuba Standard Monthly*. Vol. 25, No. 4.

<sup>4</sup>Muiño, Berta Lina & Matienzo, Yaril. 2017. La gestión de la ciencia y la tecnología en el Instituto de investigaciones de Sanidad Vegetal (The development of science and technology in the Phytosanitary Research Institute). Presented at the VII Seminario Científico Interacional de Sanidad Vegetal. Habana, Cuba.

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