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# Citrus Greening (HLB) Quarantine and Control

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Animal and Plant Health Inspection Service  
Plant Protection and Quarantine  
USDA-APHIS-PPQ

Agricultural Outlook Forum  
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Arlington, VA



# CITRUS HEALTH RESPONSE PROGRAM



## Public – Private Partnership

- **APHIS-PPQ:**
  - Policy Management, Riverdale, MD
  - Science and Technology, Raleigh, NC
  - Field Operations , Raleigh, PPQ States
- **Florida Citrus Mutual**
- **California Citrus Mutual**
- **Texas Citrus Mutual**
- **California Citrus Quality Council**
- **Nursery Industry: National and State Nursery Associations**

## Departments of Agriculture

- **California**
- **Florida**
- **Texas**
- **Arizona**
- **Louisiana**
- **Georgia**
- **South Carolina**
- **Alabama**
- **Mississippi**
- **Hawaii, Puerto Rico, US Territories**

# CITRUS HEALTH RESPONSE PROGRAM



## • Partnership in Science & Technology

- **PPQ CPHST- Center for Plant Health Science and Technology**
- **California Citrus Research Board**
- **Florida Citrus Research & Development Foundation**
- **University systems in CA, AZ, TX, LA, and FL**
- **USDA Agricultural Research Service (ARS)**
- **USDA National Institute for Food and Agriculture (NIFA)**

# CITRUS HEALTH RESPONSE PROGRAM



- **Partnership to Protect our Borders  
Avoid Citrus Pest and Disease Incursions**

**DHS: Customs and Border Patrol**

**APHIS PPQ: Plant Inspection Stations**

**PPQ: International Services**

**The goal of the Citrus Health Response Program (CHRP) is to safeguard the citrus crop against a variety of citrus diseases and pests and also sustain the United States' citrus industry, by maintaining continued access to both domestic and export markets.**



# U.S. CITRUS PRODUCTION



## ■ Production Acreage/ \$Value:

- Florida 538,900 a / \$1.75 b
- California 253,000 a / \$1.37 b
- Texas 27,300 a / \$ 72.6 m
- Arizona 21,800 a / \$ 61.8 m
- Louisiana 1,400 a / \$7.0 m
- Alabama 400 a / \$1.8 m
- Total 842,800 a / \$3.3 billion



Sources: USDA NASS and & LSU



May 9, 2014

# U.S. CITRUS PRODUCTION

## THE PROBLEM:



**HLB/Citrus Greening**

**Citrus Canker**

**Citrus Black Spot**

**Sweet Orange Scab**

(FL, TX, CA, SC, GA, LA)

(FL, LA)

(FL)

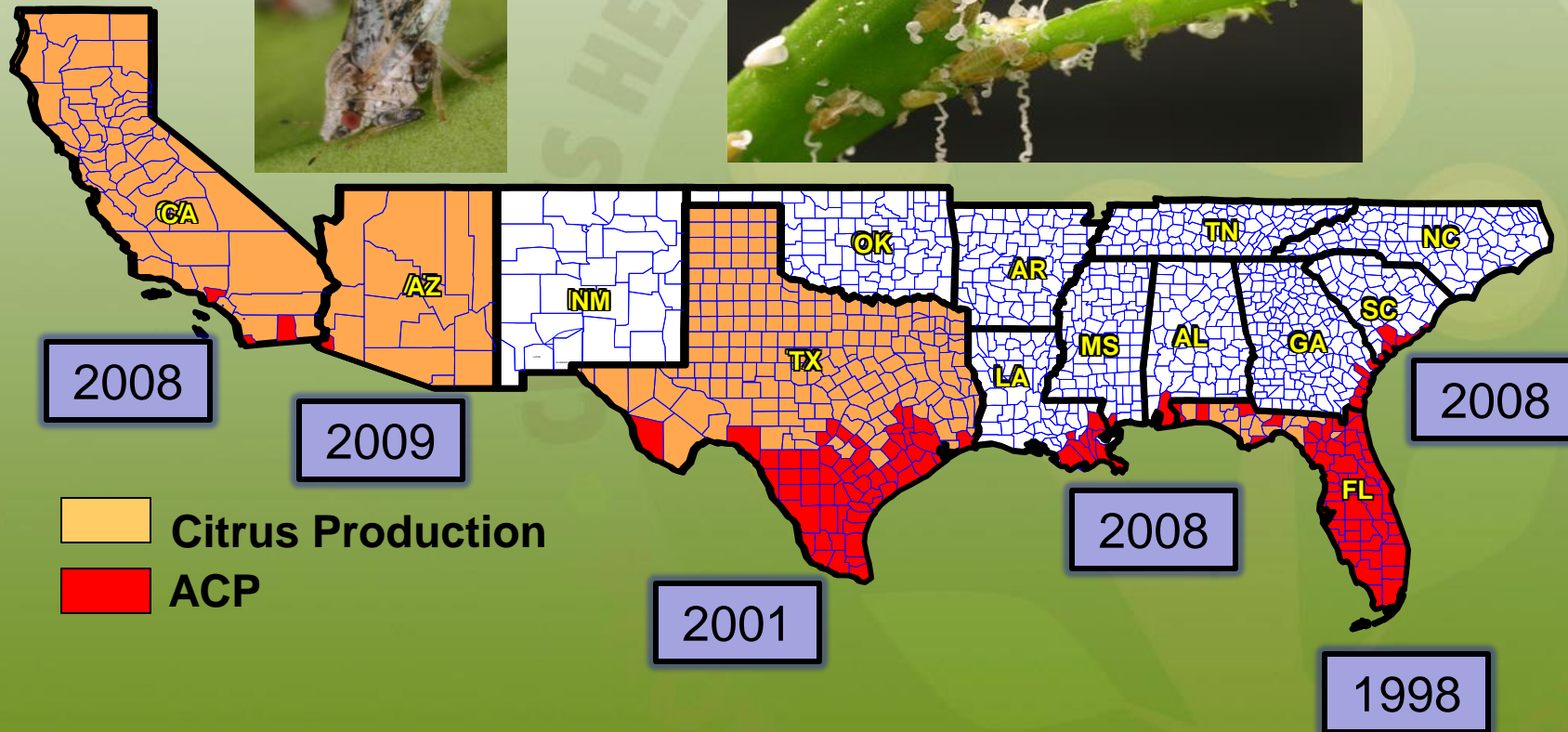
(FL, TX, AZ, MI, CA)

- Huanglongbing - CG is the biggest threat to the citrus industry
- Yield losses of \$300 million annually
- Growers are spending \$500 per acre to fight citrus pests
- The presence of citrus diseases increases production costs by 40%
- Pest and Diseases impact trade

# ASIAN CITRUS PSYLLID



- **Detections of ACP, the vector of Citrus Greening / Huanglongbing**



 Citrus Production

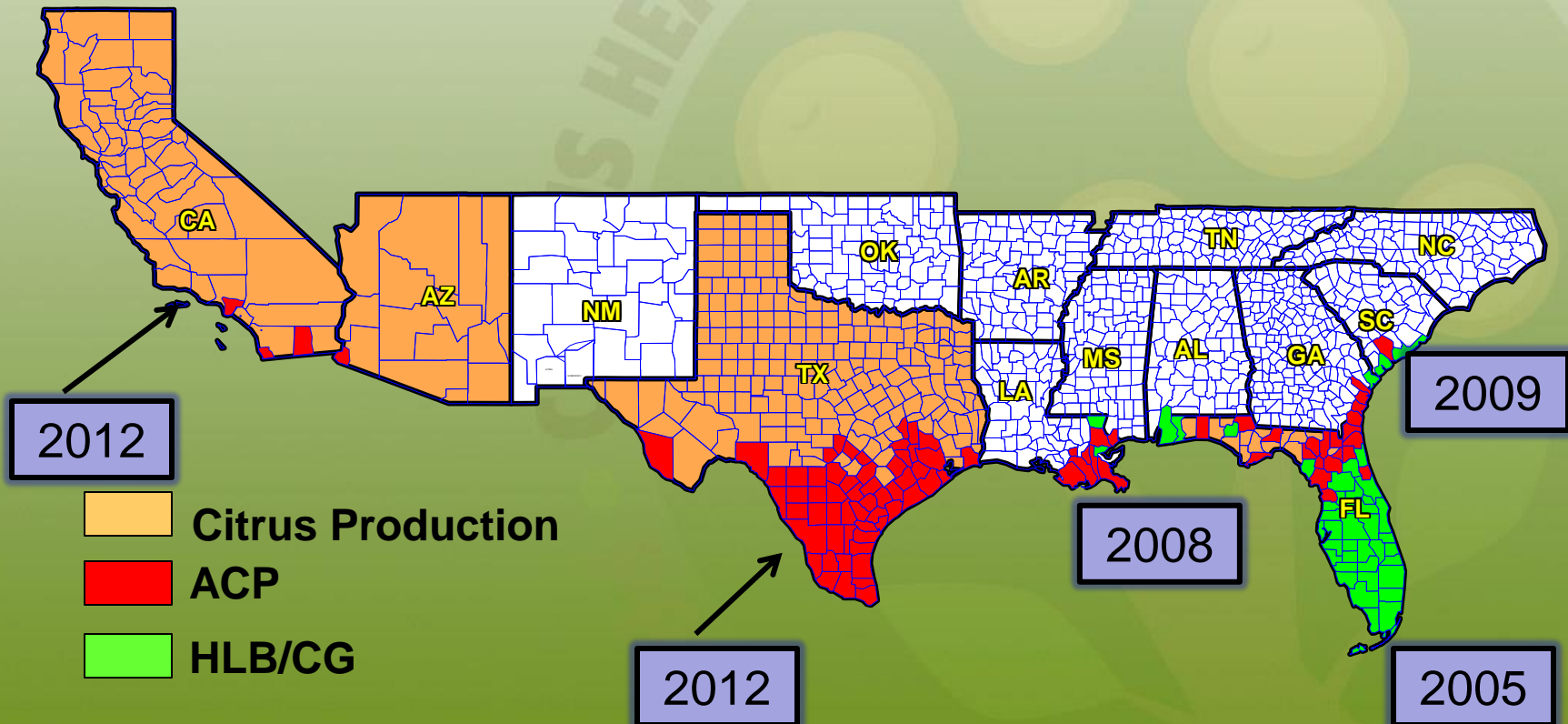
 ACP



# HUANGLONGBING / CITRUS GREENING



## Detections of HLB in Citrus Producing States

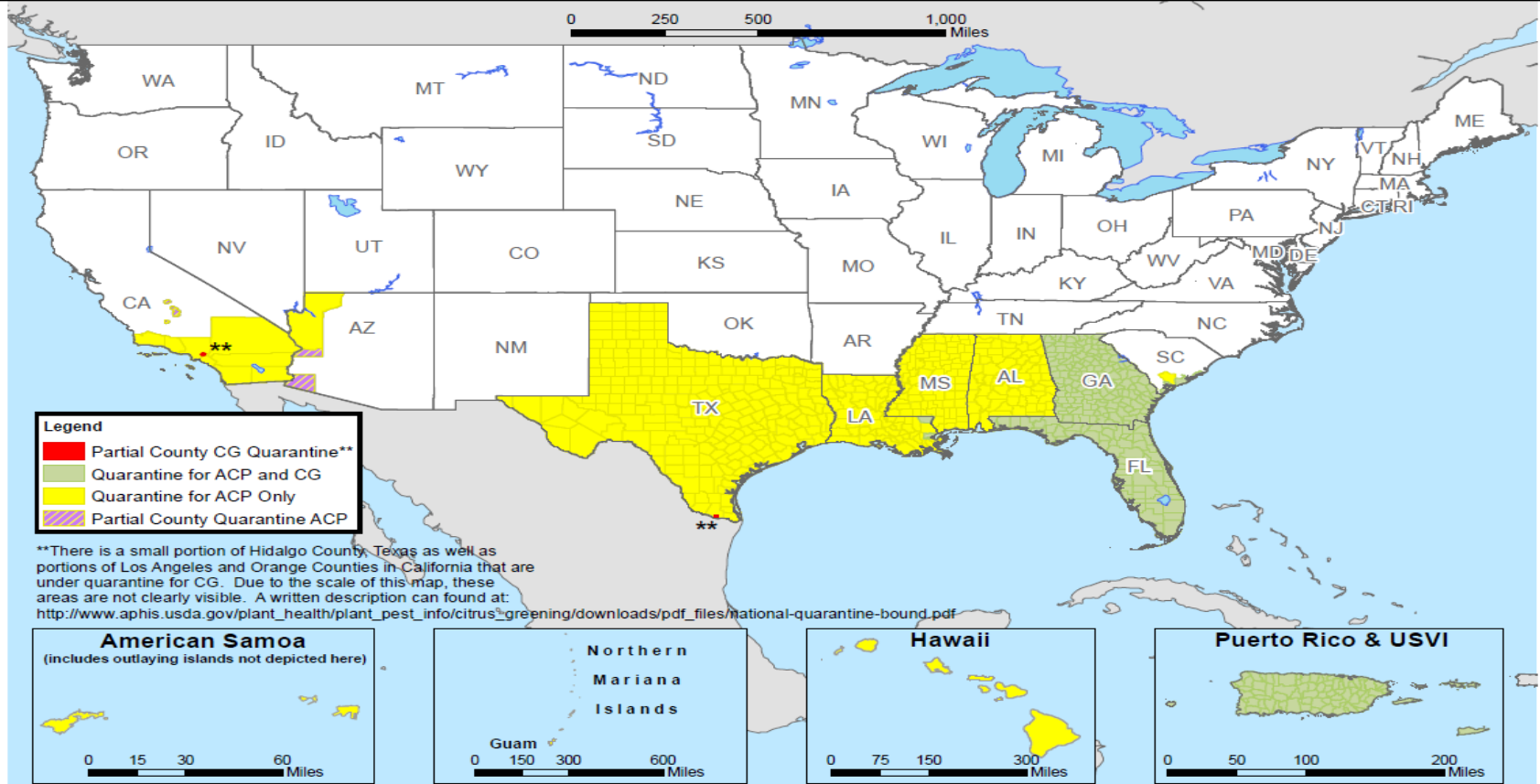


# CITRUS HEALTH RESPONSE PROGRAM

7CFR 301.76



## National Quarantine Boundaries for Asian Citrus Psyllid and Citrus Greening



USDA, APHIS, PPQ  
Jamie Perrie  
GIS Specialist  
1506 Klondike Rd Suite 306  
Conyers, GA 30094

Coordinate System: GCS WGS 1984  
Datum: WGS 1984  
Date: 11/29/2013  
Data Source: USDA APHIS PPQ, ESRI

Document Path: H:\GIS\_Data\Hubs\2013\Maps\PPQ\_USCitrusQuarantine\_20131129.mxd



These data, and all the information contained therein, have been collected by the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS), or by its cooperators on APHIS' behalf, for restricted government purposes only and is the sole property of APHIS. Data may be disseminated on a need-to-know basis only and must be used for their intended government purposes(s). All information contained within these data are subject to required Federal safeguards and shall only be shared and/or used consistent with the Trade Secrets Act [18 U.S.C. 1905], the Privacy Act of 1974, as amended [5 U.S.C. 552a], the Freedom of Information Act [5 U.S.C. 552], the confidentiality provisions of the Food Security Act of 1985 [7 U.S.C. 2276], Section 1619 of the Food, Conservation, and Energy Act of 2005 [7 U.S.C. 8791], and other applicable Federal laws and implementing regulations, as well as with the confidentiality or non-disclosure provisions of any other agreement entered into between APHIS and a cooperator.



May 9, 2014

# SHORT-MEDIUM TERM STRATEGY



- **Prevent or slow the spread of ACP and HLB to non-infested citrus producing areas**
- **Suppress and manage ACP and HLB in infested areas**
  - **Early detection & rapid response**
  - **Area-wide pest management (e.g., Citrus Health Management Areas – CHMA in Florida)**
  - **Safeguarding measures and regulatory enforcement**
  - **Targeted research and method developments**
    - **Biological Control; Early Detection methods (molecular, detector dogs, plant volatiles)**
  - **Communication and Outreach – [SaveOurCitrus.org](http://SaveOurCitrus.org)**

# MEDIUM-TERM STRATEGY



- **APHIS is investing in sustainable management strategies for HLB**

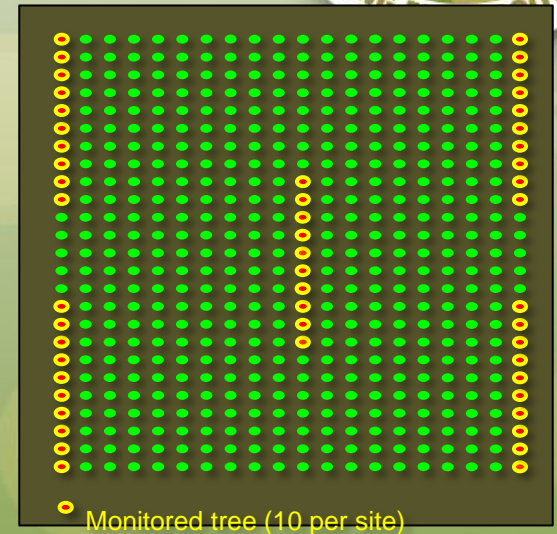
- **Epidemiological studies:** Develop models that can determine / predict the incursion and spread of HLB and other diseases – in collaboration with USDA-ARS, Ft. Pierce. Supports the regulatory survey programs.
- **Biological Control:** APHIS has established public and/or private sector partnership to develop biological control technologies – Pilots set-up in CA, TX, FL and AZ. Applicable in urban areas, abandoned groves, and organic production systems. Areas difficult to enforce regulatory programs

# CITRUS HEALTH RESPONSE PROGRAM



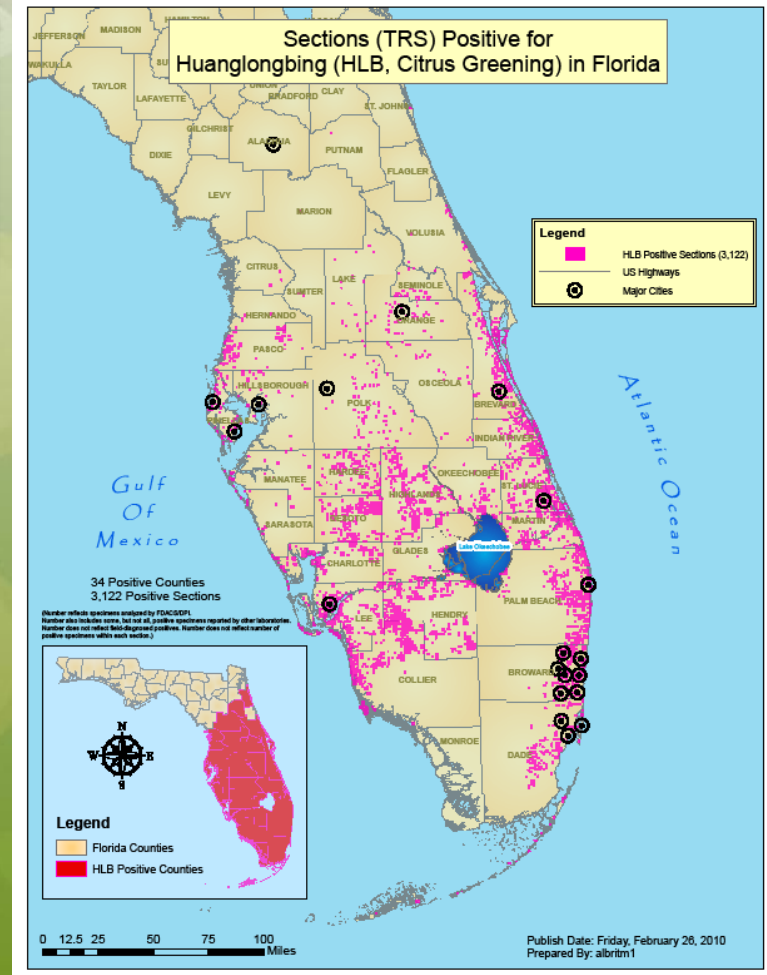
## SHORT-TERM STRATEGY

- Florida: Quarantined for ACP and HLB
- Strategy ACP/HLB survey and management
  - **ACP Population Monitoring**
    - Tap Sampling
  - **ACP Treatment**
    - Grower managed Area-wide Suppression Program
    - Timely applications with insecticides
  - **Inoculum (HLB) survey and Control**



# CITRUS HEALTH RESPONSE PROGRAM

# FLORIDA



University of Florida

## UF/IFAS Extension Solutions for Your Life

Home About Extension Local Offices FAQ Success Stories Jobs Weather Search GO

- Citrus Research and Education Center
- Citrus Extension Home
- Entomology/Nematology
- Plant Pathology
- Horticulture
- Economics
- Food Science
- Extension Publications
- Citrus Extension Agents
- Industry Links

### Citrus Health Management Areas (CHMAs)

Active CHMA Websites

**Charlotte, Glades, Hendry counties**

Gulf CHMA

**DeSoto county**

NE Desoto CHMA

**Polk, Hillsborough counties**

South Hillsborough CHMA

**Highlands county**

Central Highlands 17/27 CHMA

**Volusia, Seminole, Lake, Orange, Brevard, Osceola and Marion counties**

Volusia CHMA

### Related Sites

Citrus Health Management Areas

### Resources

Florida Citrus Pest Management Guide

Citrus Greening Disease

Citrus Black Spot

Citrus Health Management Areas (CHMAs)

Citrus Canker

Asian Citrus Psyllid

Pesticide Information

< CHMA Home

Internet

# CITRUS HEALTH RESPONSE PROGRAM



## SHORT-TERM STRATEGY

- **California: Partially quarantined for ACP and 5-mile quarantine for HLB**
- **ACP Detection and Delimiting Survey**
  - Yellow Panel Traps
  - Visual and Sweep Net Survey
- **HLB Survey**
  - Tissue sampling through Molecular analysis
  - Eradication of positive trees
- **ACP Treatment**
  - All host plants within 400 meter
  - Soil drench with imidacloprid
  - Foliar application with pesticides



# CITRUS HEALTH RESPONSE PROGRAM



## CALIFORNIA / ARIZONA

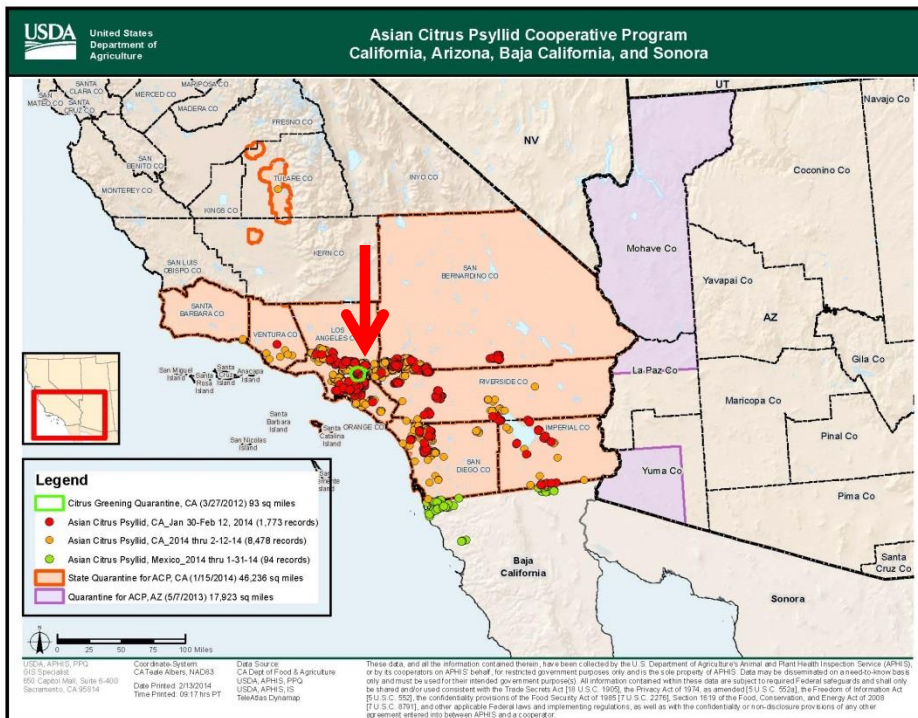
- HLB/Citrus Greening detected in a home garden in Los Angeles County in 2012. Arizona is free of CG

- CDFA is monitoring the spread of ACP and HLB.

- USDA-ARS expertise in modelling surveys

- Management of ACP in urban landscaped trees is challenging

- Citrus industry in partnership with California Department of Food and Agriculture (CDFA) and PPQ has initiated a biological control program for urban areas



May 9, 2014

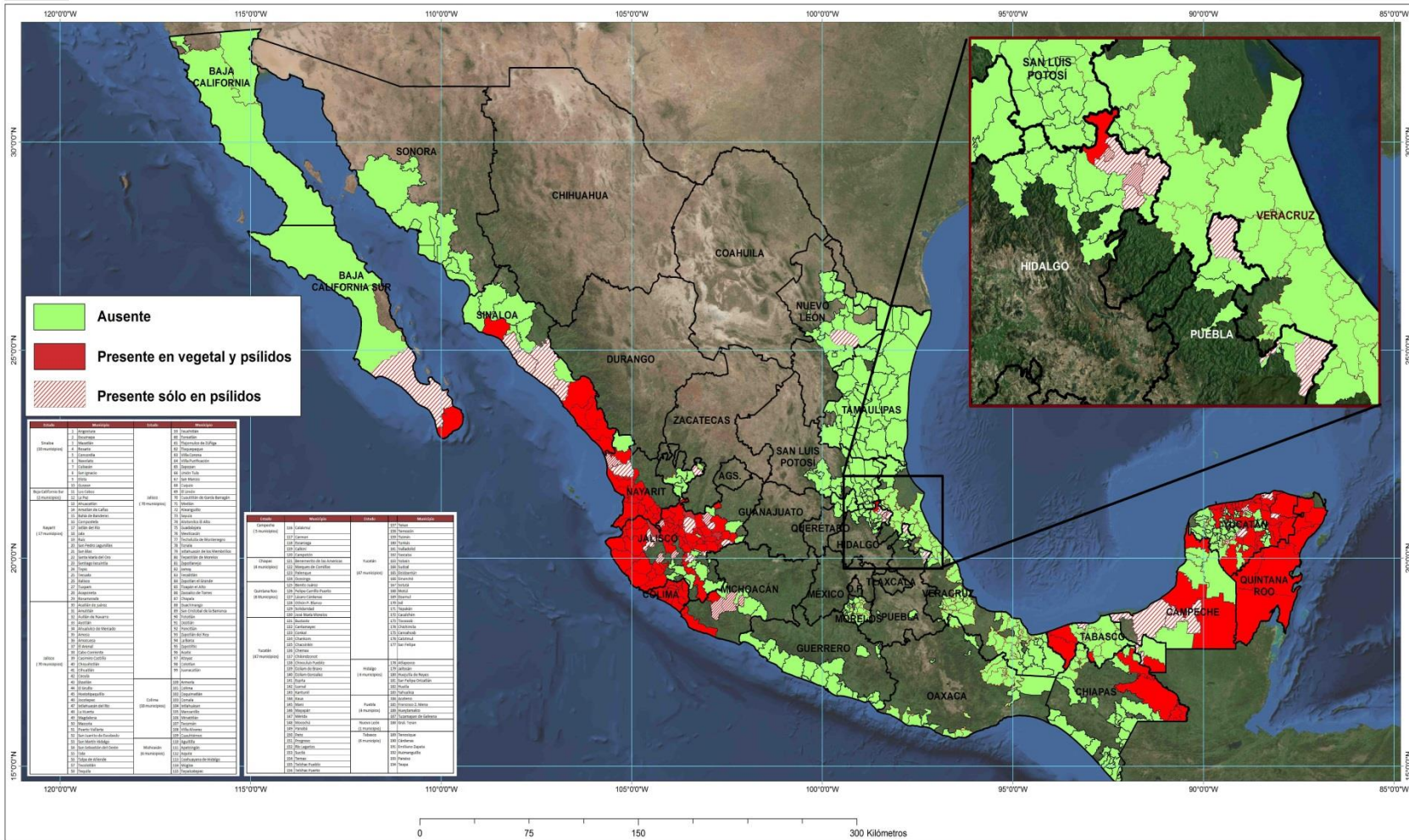


# CITRUS HEALTH RESPONSE PROGRAM

Mexico



## Threat from south of the border

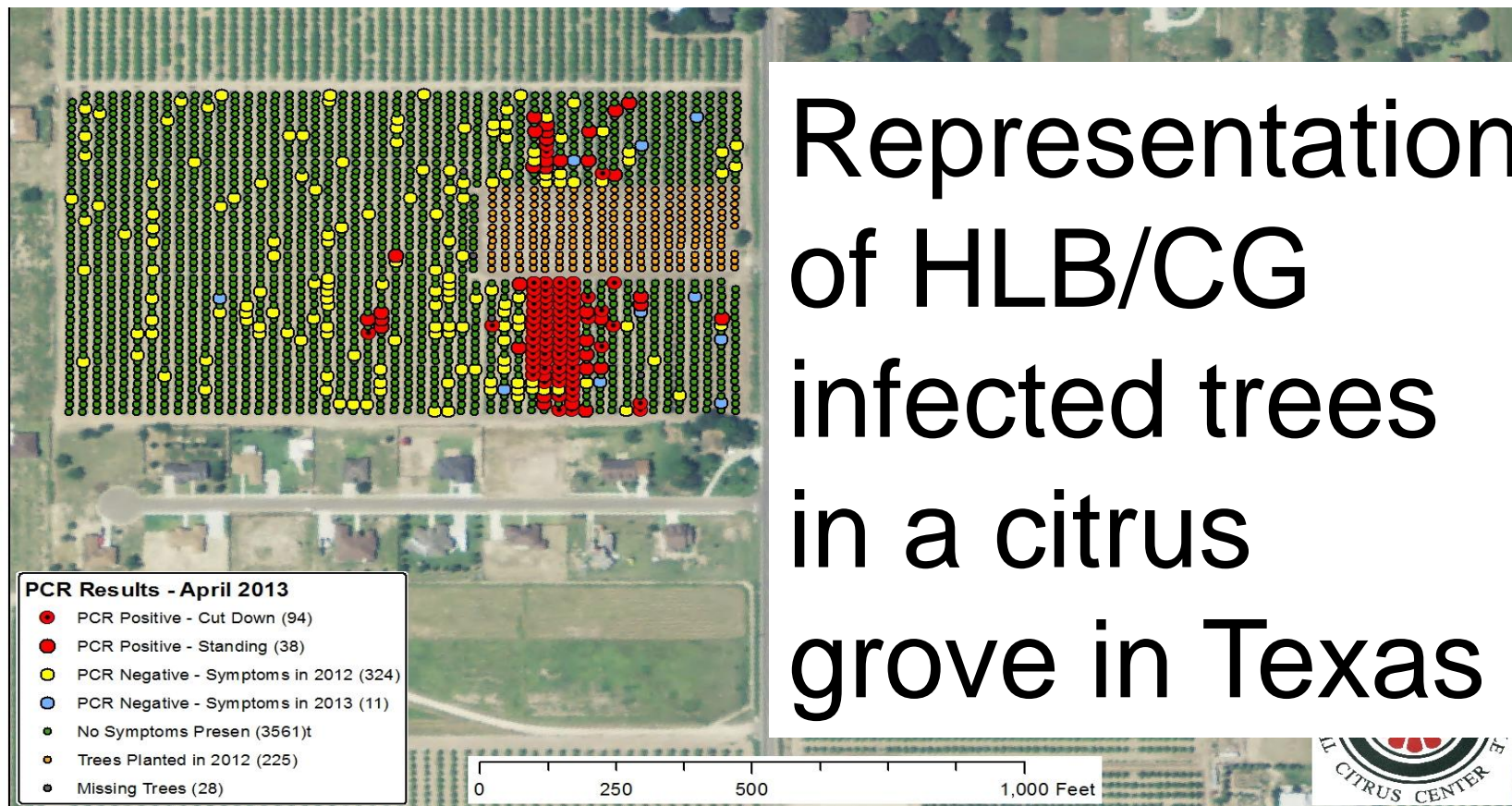


LABORATORIO NACIONAL DE GEOPROCESAMIENTO DE INFORMACIÓN FITOSANITARIA  
COORDINACIÓN PARA LA INNOVACIÓN Y LA APLICACIÓN DE LA CIENCIA Y TECNOLOGÍA

# CITRUS HEALTH RESPONSE PROGRAM



## Texas – Quarantined for ACP / Partially for HLB



Representation of HLB/CG infected trees in a citrus grove in Texas

USDA APHIS PPQ CPHST - Mission Lab  
Map by: David Bartels  
Date: 24-Jul-13  
Data Source: Drs. Mamoudou Setamou and Madhura Kunta, TAMUK - Citrus Center  
Imagery - USDA NAIP 2010

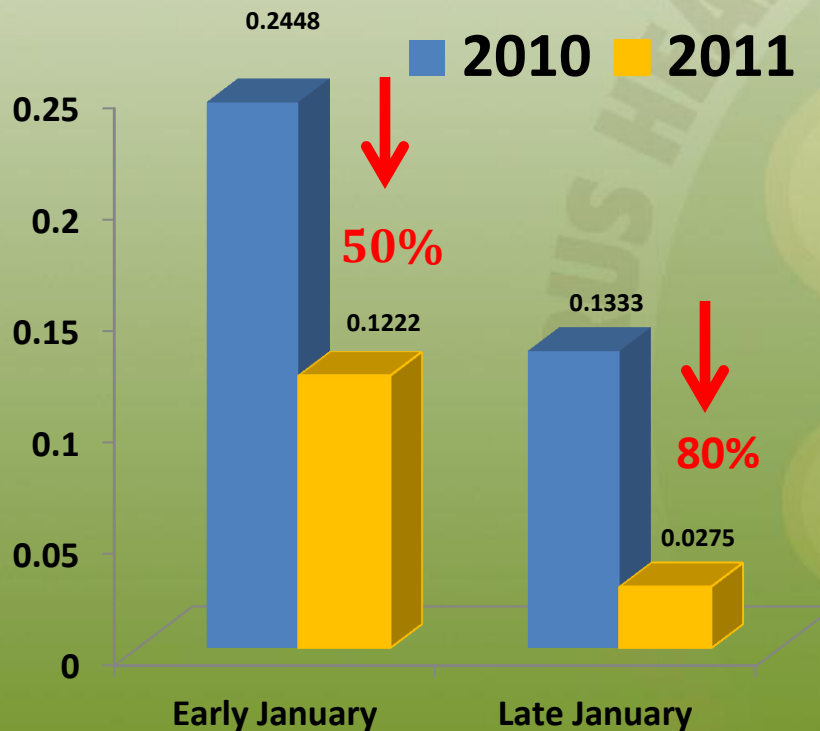
**HLB Positive Orchard Census**  
**TAMUK Citrus Center & USDA APHIS PPQ**  
HLB Emergence Program - Lower Rio Grande Valley, Texas



# CITRUS HEALTH RESPONSE PROGRAM TEXAS



## Area-Wide Management of ACP in Texas



- Area-Wide Management of ACP in Texas is promising
- Management where urban landscaped trees and commercial groves are mixed is challenging
- PPQ is currently testing biological control alternatives in urban areas and trailer parks

John V. da Graca, Texas A&M, 2011

# SHORT-MEDIUM TERM STRATEGY



## ■ ACP and HLB Quarantine: Nursery Stock



Citrus Nursery Stock  
Regulations - 2011

- Clean nursery stock program to reduce spread of Citrus Greening /HLB and ACP
- Facility - citrus nursery stock must be grown in a pest-exclusionary structure. High costs of building exclusionary facilities
- Testing - visual inspection, sampling, trapping, and testing every 30 days
- Treatment – soil drench every 6 months and foliar treatment 10 days prior to movement

# LONG-TERM STRATEGY



- **Sustainable management strategy for HLB (Coordinated Research)**
  - **Crop Improvement:** Develop resistant / tolerant citrus tree
  - **Horticulture Management:** Maintain bearing, productive tree even if infected with HLB
  - **Diagnostics/Early detection:** Detect infected trees as soon as it is infected
  - **Psyllid Research:** Track infectious psyllid populations and limit encroachment into citrus production areas

# OUTREACH



SaveOurCitrus.org

USDA United States Department of Agriculture  
Animal and Plant Health Inspection Service

EN ESPAÑOL

WHAT ARE THE DISEASES? | AFFECTED AREAS | SIGNS & SYMPTOMS | PRACTICE SAFE CITRUS

**ARE YOU PLAYING A DANGEROUS GAME WITH AMERICA'S CITRUS?**

The deadly game begins when you move a citrus plant. You could be spreading a killer citrus disease. Millions of citrus trees have already died this way. Please don't risk citrus. Don't move citrus. Find out the risks in your area and how you can help protect citrus.

**DON'T RISE CITRUS  
DON'T MOVE CITRUS**

**CITRUS GREENING TRACKER**

**CITRUS GREENING QUARANTINE INFORMATION**

- Alabama
- Arizona
- California
- Florida
- Georgia
- Guam
- Hawaii
- Louisiana
- Mexico
- Mississippi
- Puerto Rico
- South Carolina
- Texas
- U.S. Virgin Islands

Save Our Citrus on Facebook

252 people like Save Our Citrus

Caroline John Patricia

- **Comprehensive communication plan**
- **Public awareness & involvement**
- **Producer information**
- **Master gardeners, extension agents, scouts**
- **National campaign launched targeting internet sale of host plants**

# CITRUS HEALTH RESPONSE PROGRAM



**THANK YOU!**

Acknowledgements : USDA CHRP team and our Collaborators