



Citrus Greening (HLB) Quarantine and Control

Prakash K. Hebbar, Ph.D.
National Coordinator, Citrus Health Response Program (CHRP)

Pest Management Unit
U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine
USDA-APHIS-PPQ

Agricultural Outlook Forum
February 20-21, 2014
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



August 26, 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)

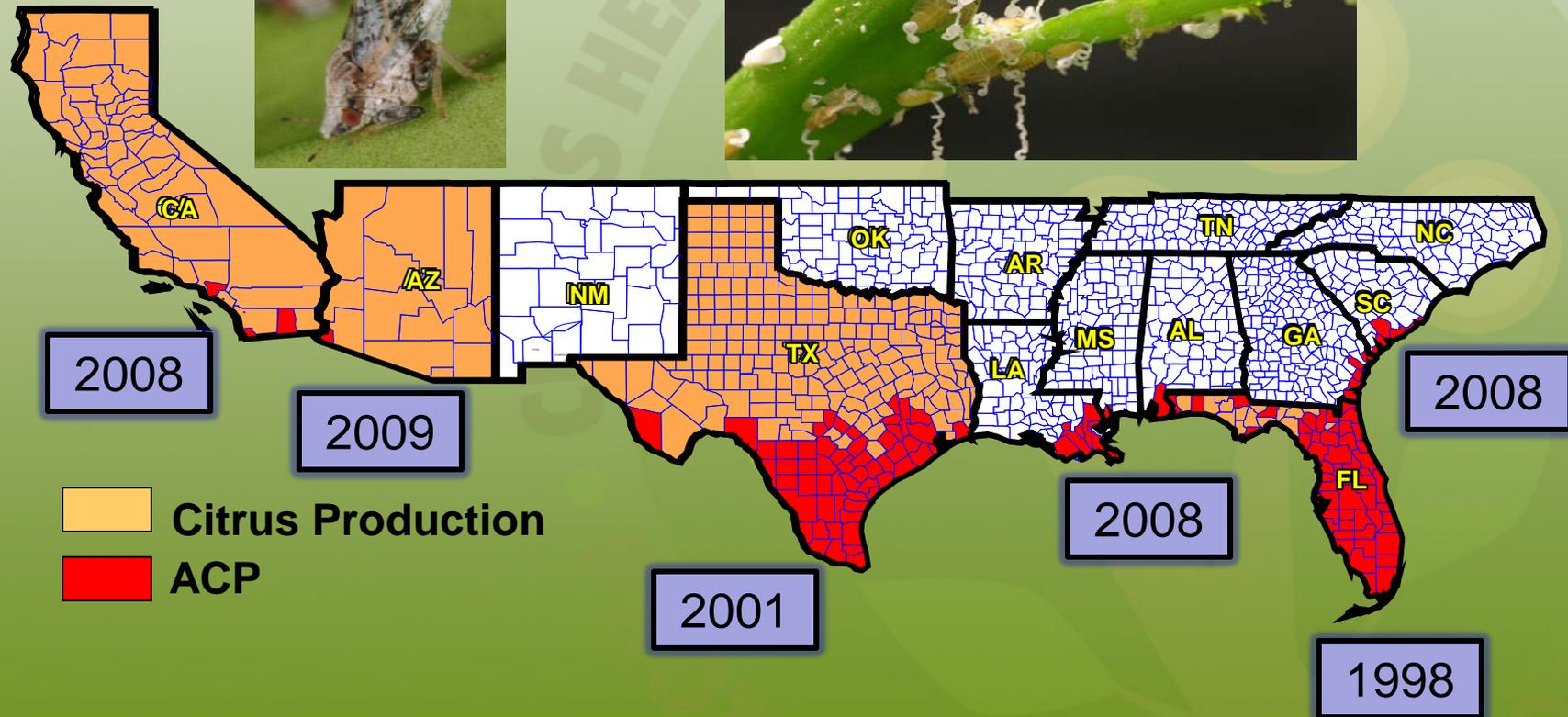
(FL, TX, AZ, MI, CA)

- 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



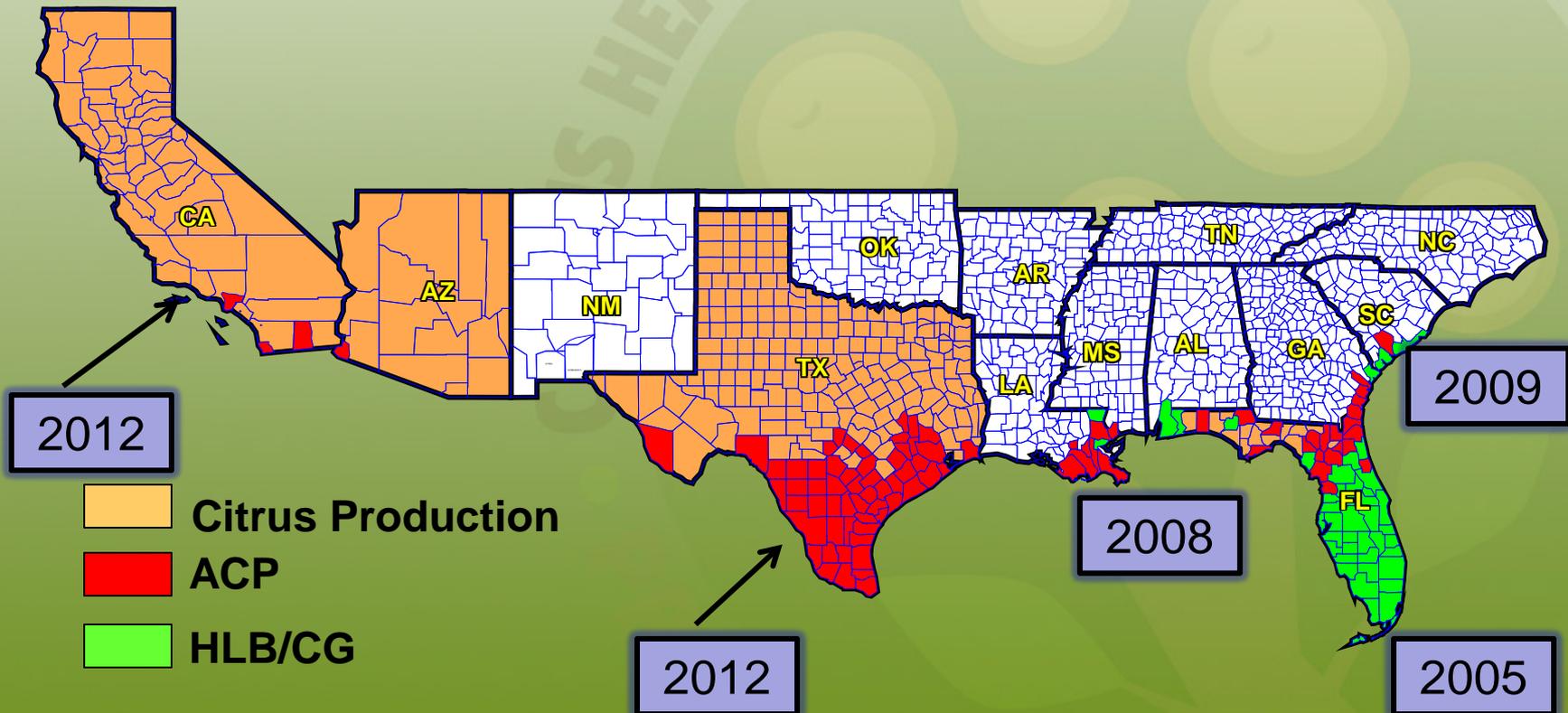
- Detections of ACP, the vector of Citrus Greening / Huanglongbing



HUANGLONGBING / CITRUS GREENING



- Detections of HLB in Citrus Producing States

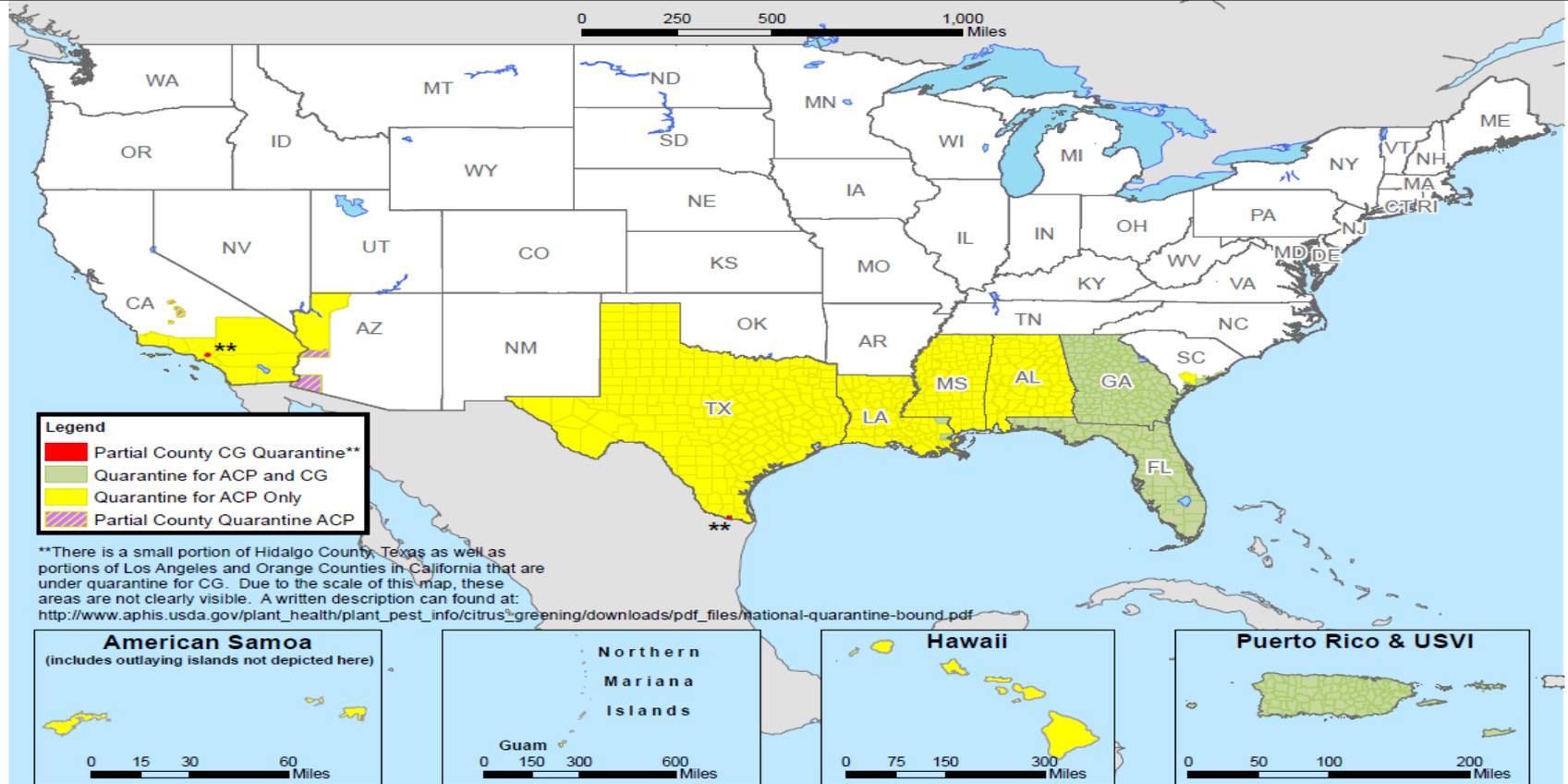


CITRUS HEALTH RESPONSE PROGRAM

7CFR 301.76



National Quarantine Boundaries for Asian Citrus Psyllid and Citrus Greening



- Legend**
- Partial County CG Quarantine**
 - Quarantine for ACP and CG
 - Quarantine for ACP Only
 - Partial County Quarantine ACP

**There is a small portion of Hidalgo County, Texas as well as portions of Los Angeles and Orange Counties in California that are under quarantine for CG. Due to the scale of this map, these areas are not clearly visible. A written description can be found at: http://www.aphis.usda.gov/plant_health/plant_pest_info/citrus/greening/downloads/pdf_files/national-quarantine-bound.pdf

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



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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**

MEDIUM-TERM STRATEGY



- APHIS is investing in sustainable management strategies for HLB

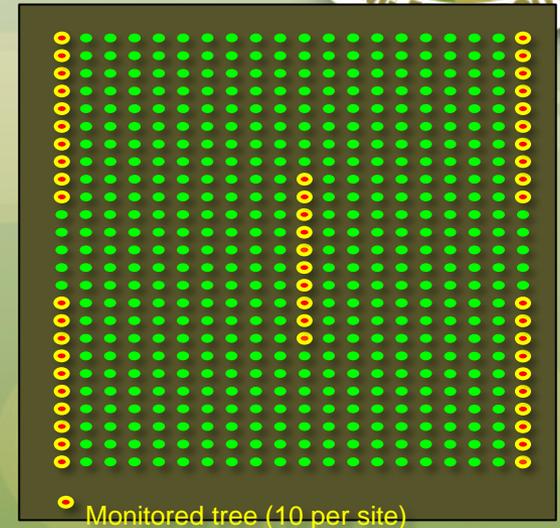
- **Epidemiological studies:** Develop models that can determine / predict the incursion and spread of HLB and other diseases – in collaboration with USDA-ARS, Ft. Pierce. Supports the regulatory survey programs.
- **Biological Control:** APHIS has established public and/or private sector partnership 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



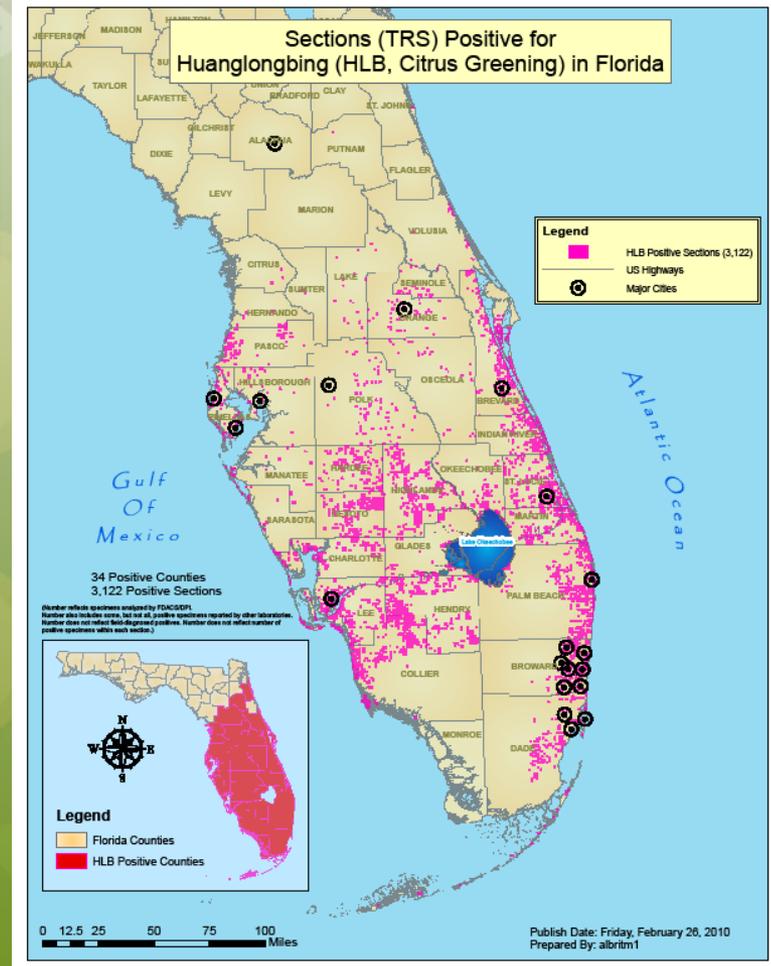
SHORT-TERM STRATEGY

- 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

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

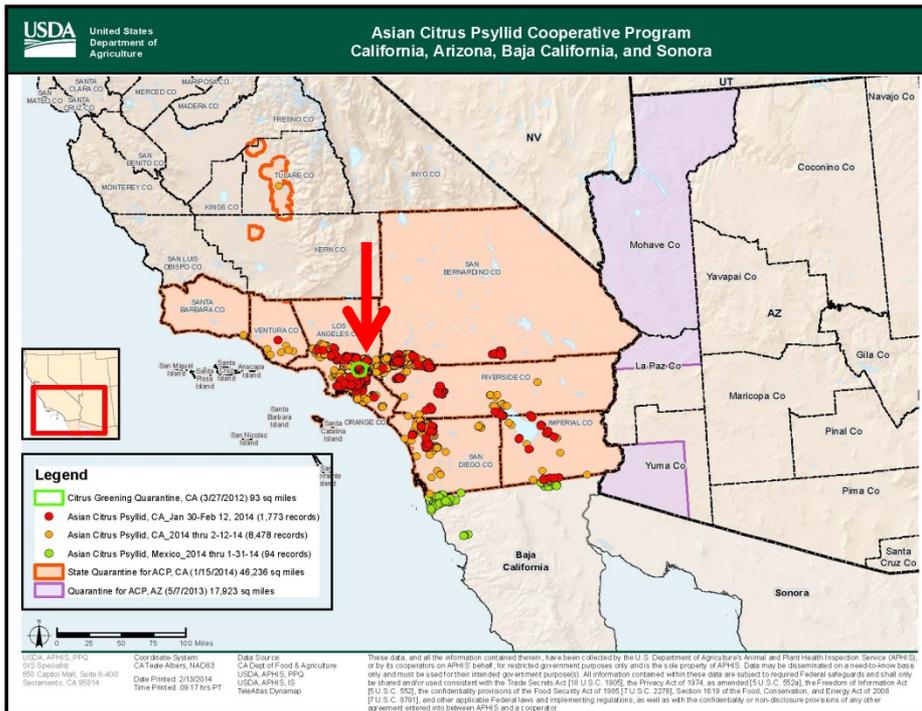
- HLB/Citrus Greening detected in a home garden in Los Angeles County in 2012. Arizona is free of CG

- 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



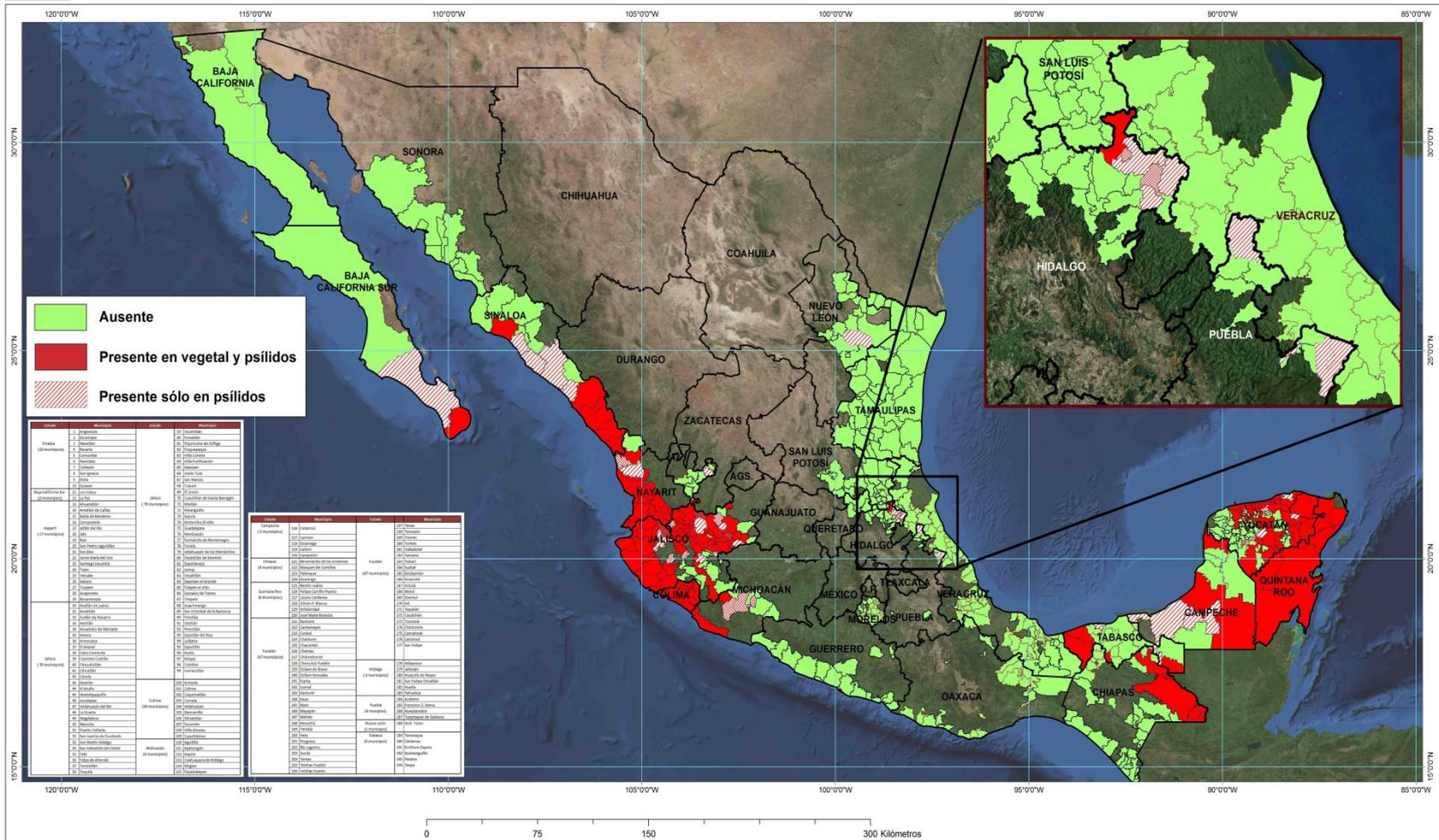
August 26, 2014

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Mexico



Threat from south of the border

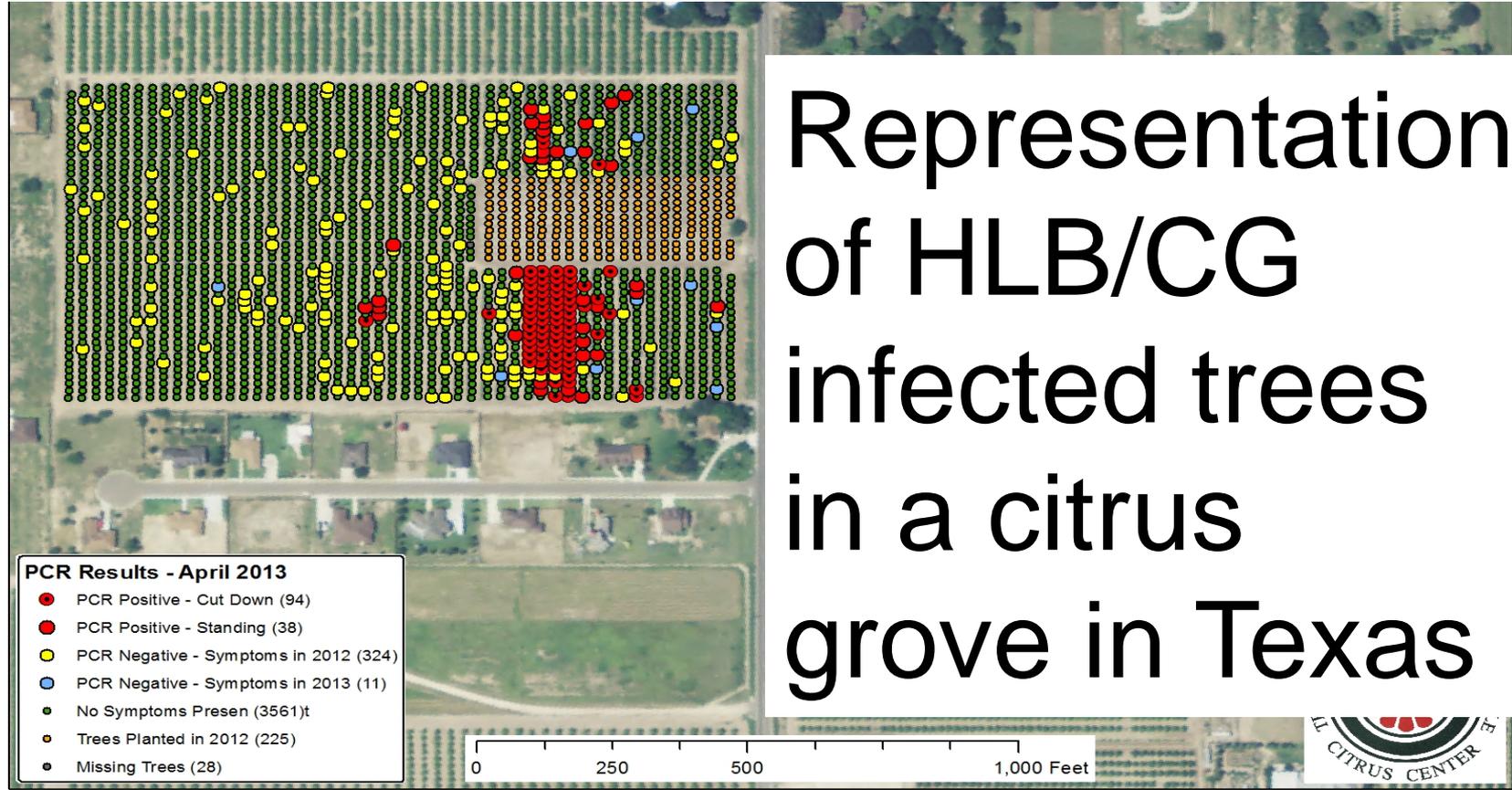


LABORATORIO NACIONAL DE GEOPROCESAMIENTO DE INFORMACIÓN FITOSANITARIA
COORDINACIÓN PARA LA INNOVACIÓN Y LA APLICACIÓN DE LA CIENCIA Y TECNOLOGÍA

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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

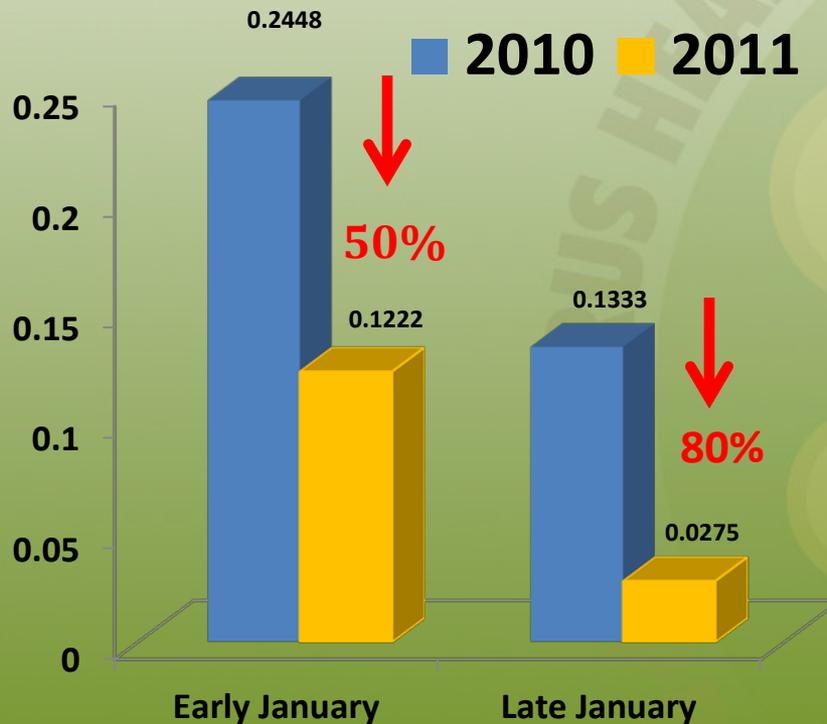
HLB Positive Orchard Census
TAMUK Citrus Center & USDA APHIS PPQ
 HLB Emergence Program - Lower Rio Grande Valley, Texas



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
Like

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**

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THANK YOU!

Acknowledgements : USDA CHRP team and our Collaborators

