



Asian Citrus Psyllid (ACP) & Huanglongbing (HLB)

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The Issue

The Asian Citrus Psyllid (ACP) pest transmits the bacteria that causes Huanglongbing (HLB) disease.



No cure for HLB! HLB kills citrus trees.

California is a fresh fruit state.

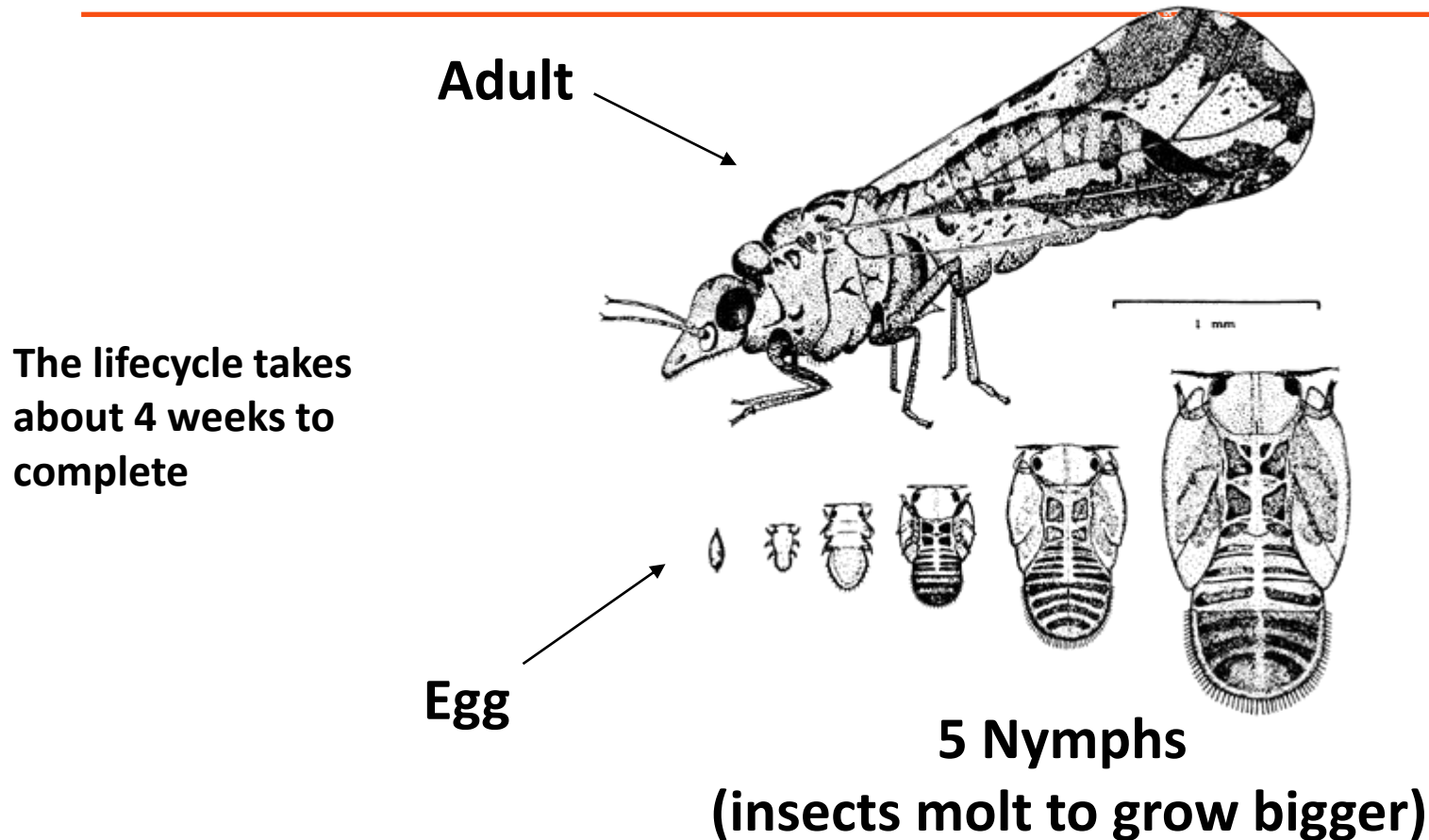
Topics

1. Asian citrus psyllid (ACP) pest
2. Huanglongbing (HLB) disease
3. Spread of ACP/HLB
4. Best Practices

Pest

Asian Citrus Psyllid (ACP)

ACP Lifestages



Egg, 5 wingless nymph stages, and a winged adult.

ACP – the Pest



A small insect, about the size of an aphid

Egg Stage



Juvenile/Nymph Stage



Nymphs feed on young, tender leaves and stems.



Nymphs produce waxy tubules that direct honeydew away from their bodies.

Adult Stage



When feeding, the adult leans forward on its elbows and tips its rear end up in a very characteristic 45° angle.

ACP Signs



Injects a salivary toxin when feeding, causing tips of new leaves to breakoff.



Twisted, notched leaves can be a sign that ACP has been there.

Host Plants

All citrus and related plants in the Rutaceae family

- *Citrus* (limes, lemons, oranges, grapefruit, mandarins...)
- *Fortunella* (kumquats)
- *Citropsis* (cherry orange)
- *Murraya paniculata* (orange jasmine)
- *Bergera koenigii* (Indian curry leaf)
- *Severinia buxifolia* (Chinese box orange)
- *Triphasia trifolia* (limeberry)
- *Clausena indica* (wampei)
- *Microcitrus papuana* (desert-lime)
- Others.....

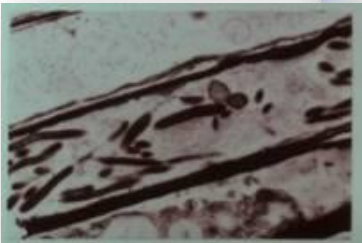
Calamondin



Disease

Huanglongbing (HLB)

HLB Signs - Tree



Candidatus
Liberibacter
asiaticus



**CLas blocks
phloem/nutrient
flow.**

**Tree stops bearing
fruit & dies in as little
as 5 years.**

**Huanglongbing
means 'yellow shoot
disease' in Chinese.**

HLB Signs - Leaves



HLB Signs - Fruit



- **HLB prevents fruit from developing properly.**
- **Lower half is green (why it is called Citrus Greening).**
- **Small fruit, crooked midrib, aborted seeds.**
- **Bad/bitter tasting fruit**

How HLB Is Spread



ACP

- Transmits CLas bacteria during feeding & carries it in its body for life.
- ACP flies from tree to tree.



Artificially moved via transportation



Grafting

- Use certified budwood

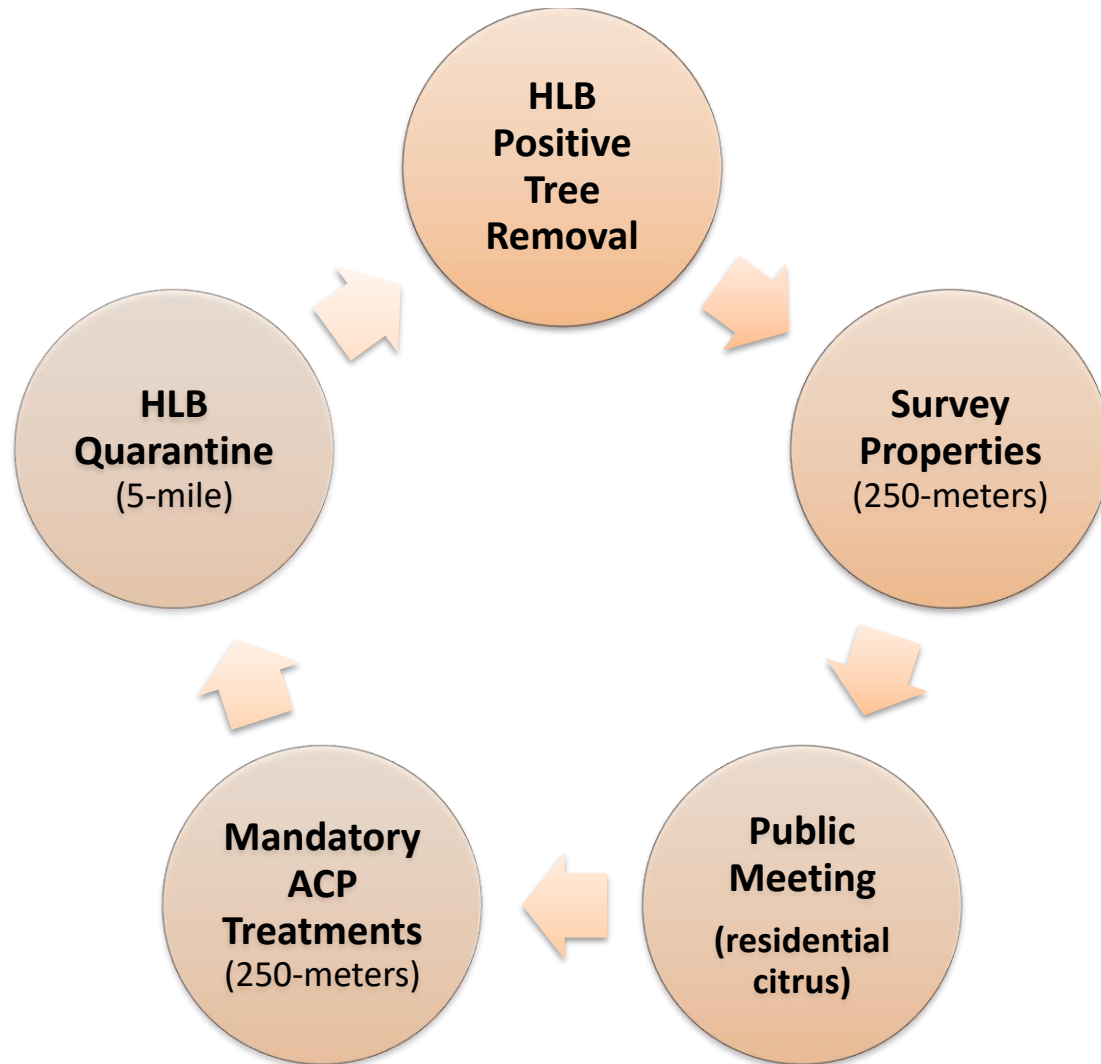
How HLB Is Found

- **CDFA Surveys/Sampling**
 - Risk-Based Surveys
 - Commodity Surveys
 - Delimitation Surveys
- **Lab Testing**
 - Plant & ACP Samples are tested
 - Confirmed via PCR testing



⚠ Pest Hotline: 1-800-491-1899

HLB Regulatory Actions



HLB Quarantine Impact to Citrus Growers

Origin	Destination	
	Within the Same Contiguous HLB Quarantine Area	Outside of HLB Quarantine Area OR Different HLB Quarantine Area
HLB Quarantine Area	Field Cleaned by Machine OR Grate Cleaned* OR Spray & Harvest AND Transport Completely Tarpred or in a Fully Enclosed Vehicle AND Complete HLB Pest Risk Mitigation Form	Wet Wash OR Field Cleaned by Machine/Grate Cleaned* and Spray & Harvest AND Transport Completely Tarpred or in a Fully Enclosed Vehicle AND Complete HLB Pest Risk Mitigation Form

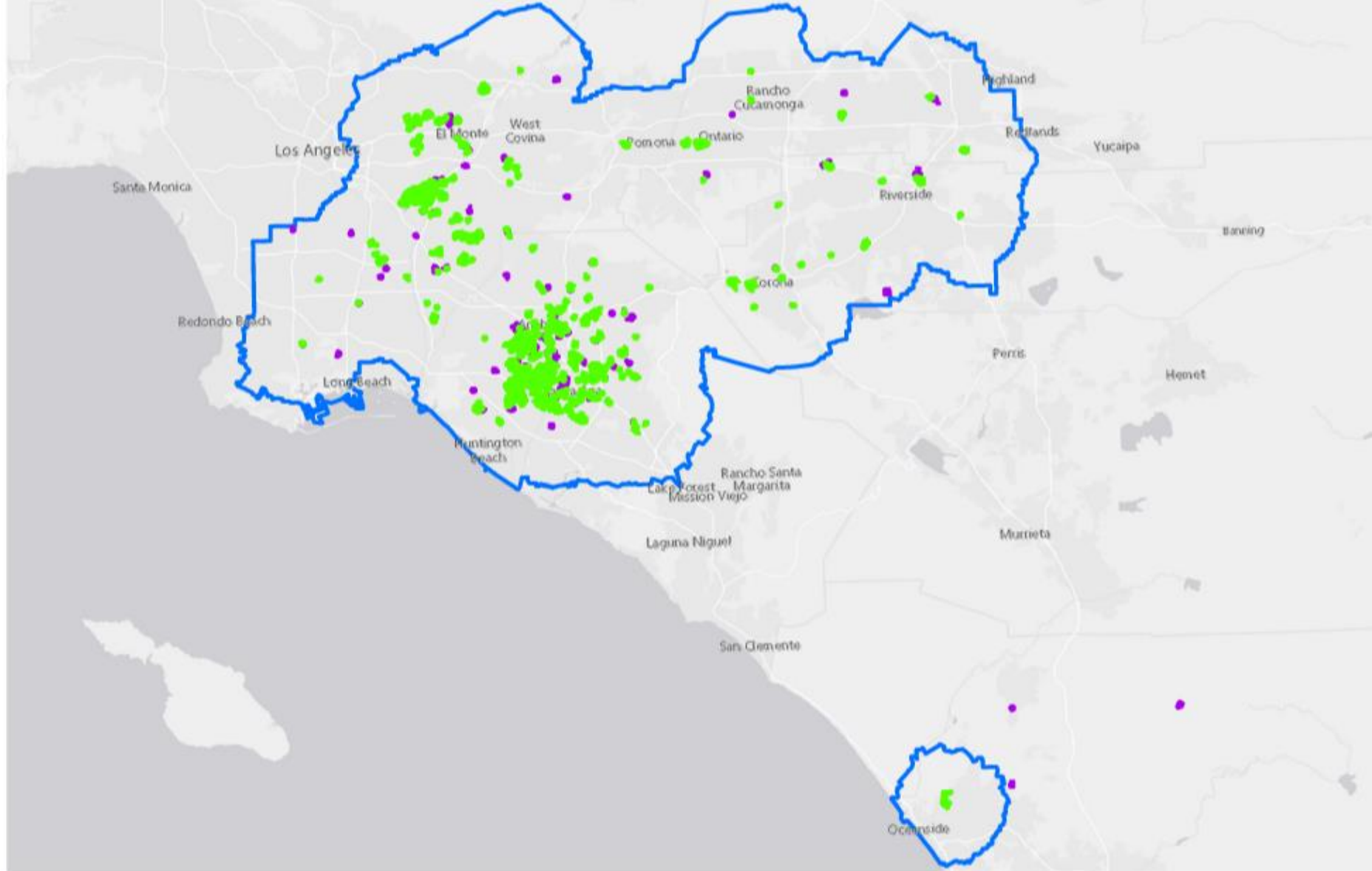
*Grate cleaned citrus must be pre-approved by CDFA per #2 on page 3 of this document.

- Mitigation costs to move citrus
- Short list of pesticides
- County approvals to move fruit
- **Can only move citrus to a packinghouse or approved location**







HLB Positive Samples as of 11/4/2022

Region	# of Sites	# of Trees	# of ACP Samples
Los Angeles Co.	659	804	150
Orange Co.	1,886	2,861	290
Riverside Co.	88	118	28
San Bernardino Co.	89	160	34
San Diego Co.	7	9	7
Fallbrook	1	0	1
Pauma Vly	1	0	1
Vista	1	0	1
Oceanside	4	9	4
Grand Total	2,729	3,952	509



HLB Quarantine and Treatment Area

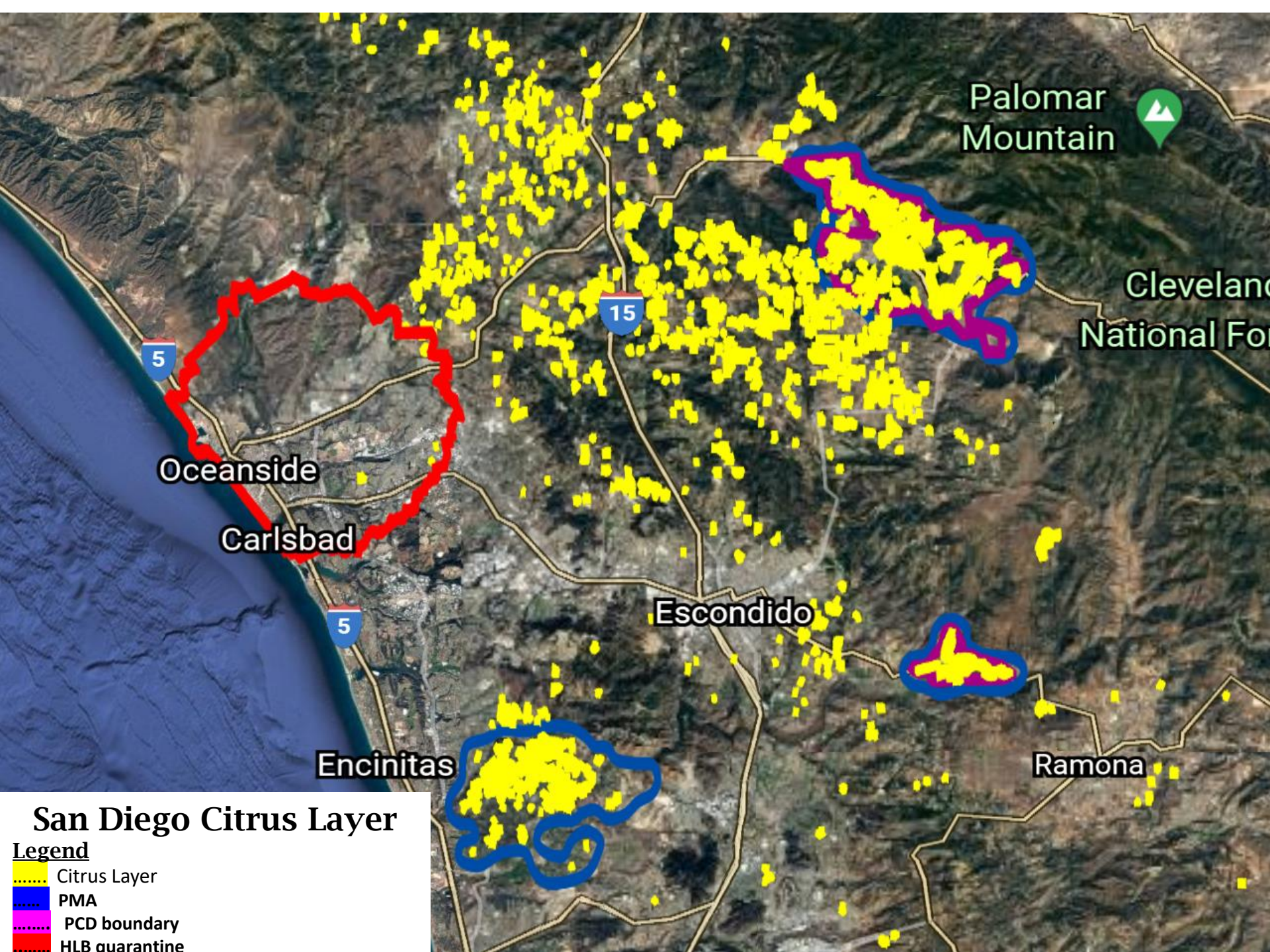
11/4/2022

-  HLB Quarantine Area
-  HLB Treatment Area
-  Mandatory
-  Non-mandatory

0 5 10
Miles






CITRUS PEST & DISEASE
PREVENTION DIVISION


cdfa
CALIFORNIA DEPARTMENT OF
FOOD & AGRICULTURE



San Diego Citrus Layer

Legend

-  Citrus Layer
-  PMA
-  PCD boundary
-  HLB quarantine

Best Practices

- **Manage your citrus – <https://ucanr.edu/ar>**

- Learn to recognize ACP and HLB
- Regularly inspect your citrus trees

- **Follow ACP area wide treatment protocols!**

- **Control Ants!**



- **Know where the HLB quarantines are**

- www.CitrusInsider.org/maps-and-quarantine

- <https://gis2.cdfa.ca.gov/Plant/CitrusQuarantines/>



- **Remove uncared/unloved citrus trees**

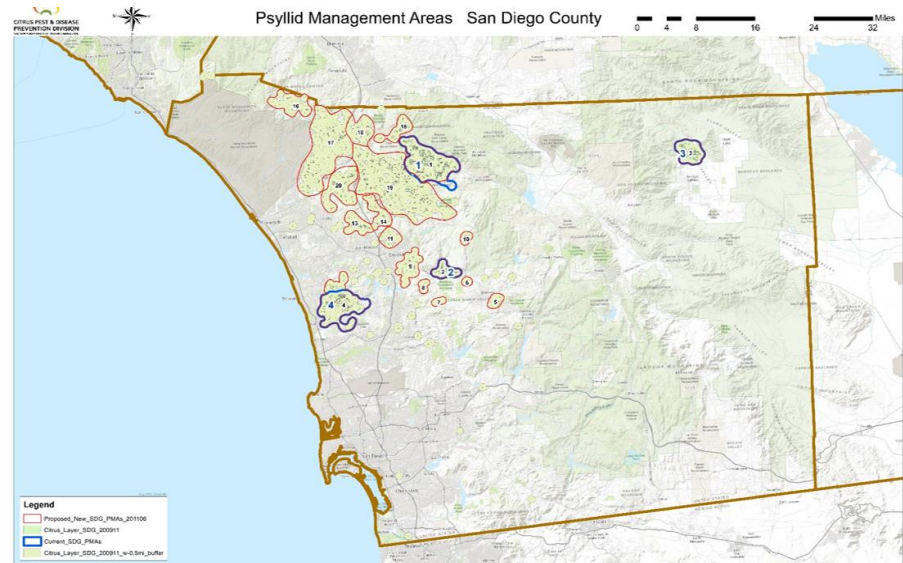


Best Practices

- **Keep citrus local**
 - Buy citrus plants from reputable nurseries
 - Don't move citrus trees out of an HLB quarantine
- **Properly remove citrus green waste**
 - Dry out for 2 weeks before disposing OR
 - Double bag OR
 - Chip and shred

IPM Area-Wide Treatment Strategy

- IPM strategy for effectively suppressing or eradicating single pest populations in a geographical area or zone.
- Greater pest suppression achieved as area-wide vs. individual orchard treatment.
(sum is greater than its parts)
- Coordinated treatments
 - **ACP treatments applied to all citrus at the same time**
 - **2-3 week treatment windows**
 - **Treat when most effective (3x a year)**



Psyllid Management Area (PMA) zones for San Diego Co.

San Diego Co. Commercial Citrus (25+)	
ACP Treatment Schedule	
Winter	early Jan
Summer	mid May
Fall	late Aug/early Sep

Combined ACP Control Strategies



Tamarixia radiata



Biocontrol Releases (*Tamarixia*)

Parasitic wasp specific to ACP.
Lays egg inside ACP nymph.
Emerges from an ACP nymph
& leaves an exit hole.

Trap Crops

Plant alyssum, buckwheat or other trap crops to attract other beneficial insects.



Control Ants!

Ants protect ACP by feeding on honeydew and kill biocontrol agents.



Barriers

Use of living windbreaks, mesh fencing, citrus under protective structures (CUPS)



ACP/HLB Resources & Info

Commercial Citrus Website – www.CitrusInsider.org

Residential Citrus Website – www.cacitrusthreat.org

CDFA website - www.cdfa.ca.gov/citrus

University of California - <https://ucanr.edu/ACP>

Thank You!

ACP/HLB Grower Liaison

San Diego, Ventura, Riverside & San Bernardino Co.

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