



San Diego HLB Quarantine Citrus Meeting

December 28, 2023

Meeting Agenda

1. **Welcome and Introduction**
2. **Overview of ACP/HLB** - [Sandra Zwaal](#), Citrus Pest & Disease Prevention Program (CPDPP)
3. **HLB Delimitation Update** – *Alex Muniz*, California Department of Food and Agriculture (CDFA)
4. **Establishing an HLB Quarantine & Info for Nursery Owners** – *Stephanie Fragoso*, California Department of Food and Agriculture (CDFA)
5. **Bulk Citrus Movement and Pesticide Use Needs in the HLB quarantine**, *Jasmine Lopez & Tim Holbrook*, San Diego Ag, Weights & Measures
6. **Q & A**
7. **Issue HLB Compliance Agreements, OP IDs**



Asian Citrus Psyllid & Huanglongbing

Sandra Zwaal

ACP/HLB Grower Liaison

Topics

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

The ACP/HLB Issue

The Asian citrus psyllid (ACP) pest transmits the bacteria that causes the Huanglongbing (HLB) disease.

HLB kills citrus trees. No cure for HLB!

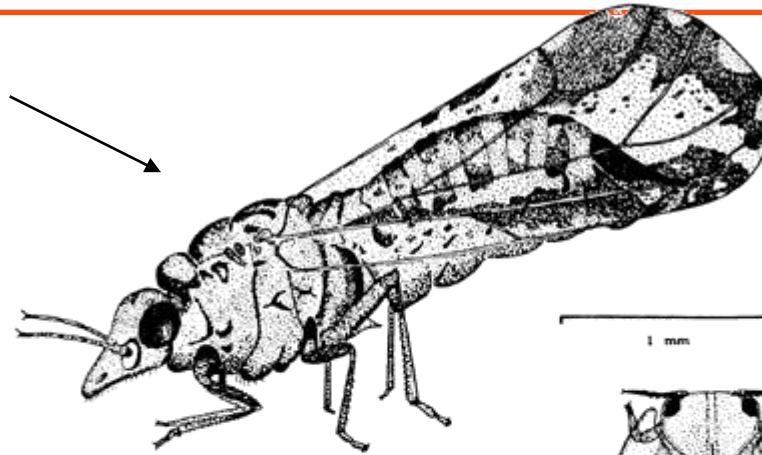
Keeping ACP populations low reduces the risk of HLB transmission.



Asian Citrus Psyllid (ACP)

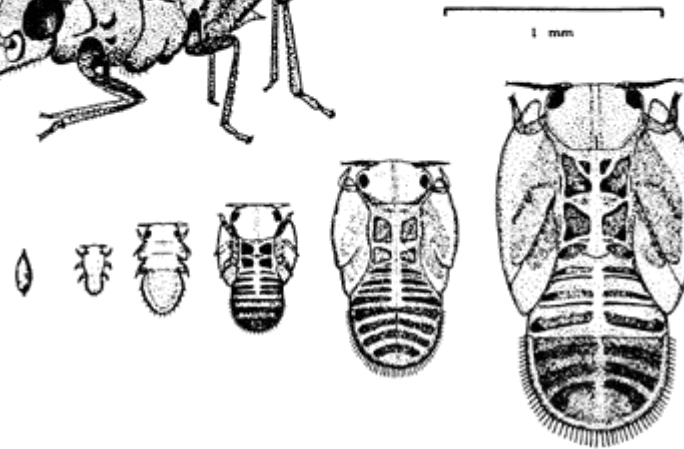
ACP Lifestages

Adult



The lifecycle takes about 4 weeks to complete

Egg



5 Nymphs

(insects molt to grow bigger)

ACP - the Pest



A small insect, about the size of an aphid

ACP Signs



Salivary toxin causes leaf tips to break



If the leaf survives, notched leaves can be a sign that ACP was there.

Huanglongbing (HLB)

How HLB Is Spread

ACP

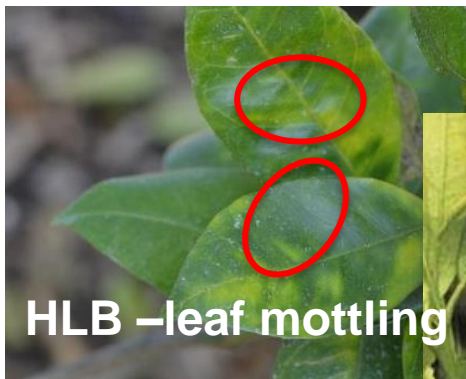
- Transmits CLas bacteria during feeding
- Flies to the next tree
- Artificially moved via transportation

Grafting

- Use certified budwood



HLB Signs



HLB -leaf mottling



Zinc



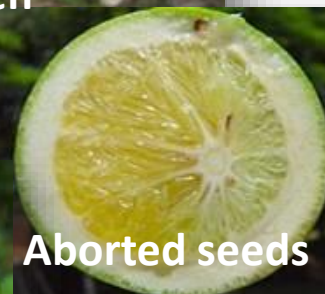
Half green



Thick veins



Crooked midrib



Aborted seeds

Finding HLB

- **CDFA Surveys/Sampling**
 - Routine risk based surveys
 - Commodity surveys
 - Delimitation survey
- **PCR Testing**
- **⚠ Pest Hotline: 1-800-491-1899**

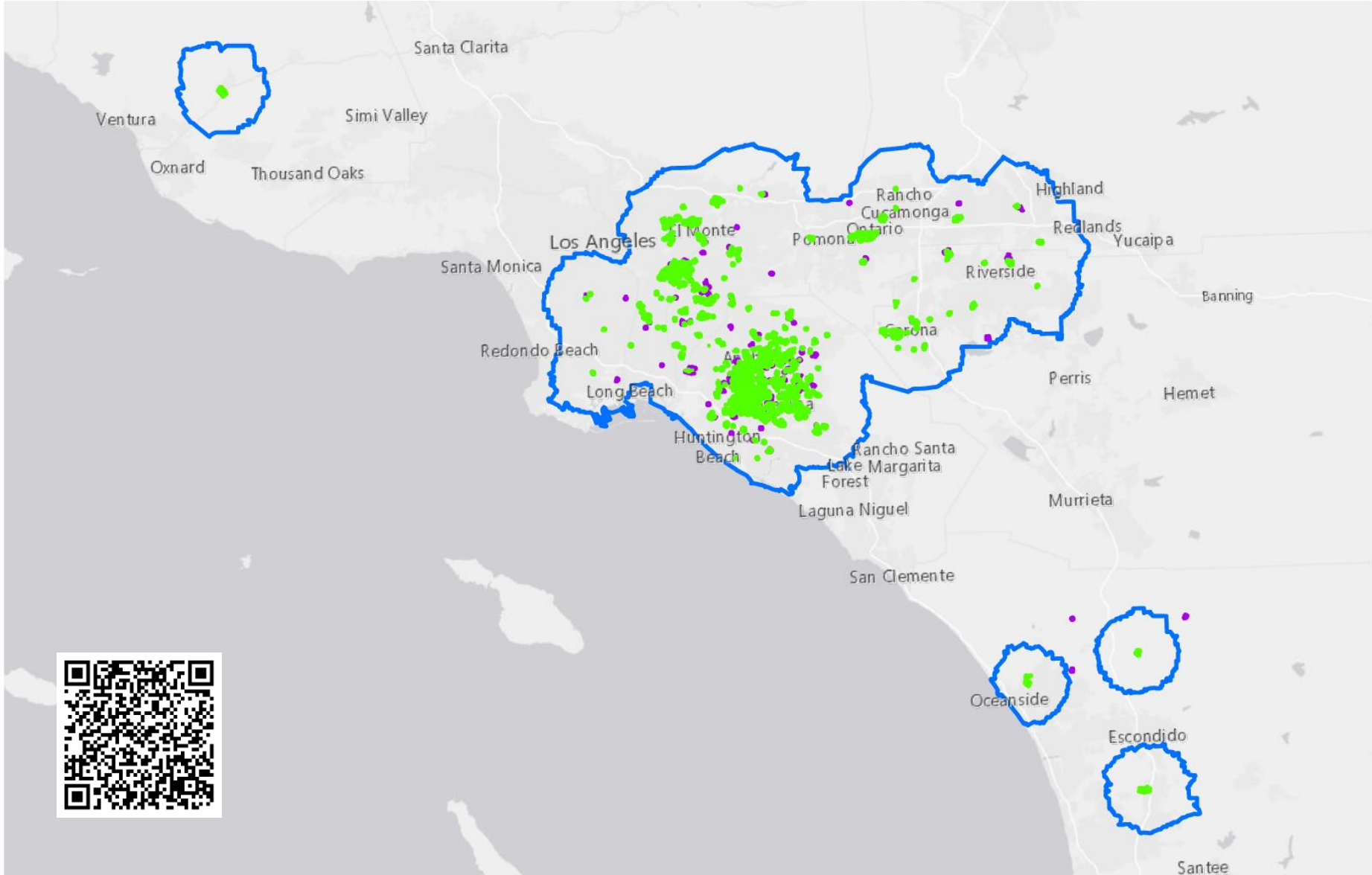
HLB Regulatory Actions

- **HLB Positive Tree Removal**
- **Survey Delimitation Properties (250-meters)**
- **Public Meeting for residential citrus**
- **Mandatory citrus treatments (250-meters)**
- **HLB Quarantine (5-mile)**
 - Restrict citrus movement
 - Destroy or enclose nursery citrus

HLB Positive Samples





As of 12/23/2023

County	# of Sites	# of Trees	# of ACP Samples
Los Angeles	1,050	1,375	193
Orange	3,155	4,977	496
Riverside	171	234	36
San Bernardino	251	391	39
San Diego	34	66	9
Fallbrook	1	0	1
Oceanside	4	9	4
Pauma	1	0	1
San Diego	26	42	0
Valley Center	1	15	2
Vista	1	0	1
Ventura	42	67	5
Grand Total	5,703	7,110	778



HLB Quarantine and Treatment Area

12/22/2023

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



Managing ACP

Reducing ACP & HLB Spread

- **NO cure for HLB.**
- **Manage ACP to reduce HLB spread**

Monitoring ACP

- **Monitor grove edges & center.**
 - Survey for nymphs on flush
 - Tap sampling for adults
- **Frequency** - monthly or more, depending on populations.
- **Goal** – keep average ACP populations below 0.5 nymphs/flush.

Coordinated Area-Wide Treatments

- IPM strategy for effectively eradicating or suppressing 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
 - **Treat all citrus at the same time**
 - **2-3 week treatment windows**
 - **Treat when most effective (3x a year)**

San Diego Area-Wide Treatments

- San Diego to treat 3x a year.
 - **All properties with 25 or more citrus**
 - **Winter, Summer, Fall**
- Winter treatment schedule **January 8 -22**
- Organics treat twice 10 days apart.
- Mandatory for properties in the pest control district (PCD).

UC Recommended Pesticides

ACP Effective Synthetic Insecticides			
Chemical group	Pesticides	Mode of Action	Selectivity
Organophosphate	Dimethoate, Imidan, Malathion	1a	Broad spectrum
Carbamate	Sevin, Lannate, Carzol	1b	Broad spectrum
Pyrethroids	Baythroid, Danitol, Mustang, Tombstone	3	Broad spectrum
Neonicotinoids foliar	Admire and generics, Actara	4a	Broad spectrum
Neonicotinoids systemic	Admire and generics, Platinum		Broad spectrum
Butenolide	Sivanto	4d	Broad spectrum
Pyrethroid + neonicotinoid	Leverage	3+4a	Broad spectrum
Neonicotinoid + abamectin	Agri-Flex	4a +6	Broad spectrum
Neonicotinoid + chlorantraniliprole	Voliam Flexi	4a + 28	Broad spectrum
Spinosyn	Delegate	5	Soft
Abamectin	Agri-Mek and generics	6	Soft
Benzylurea	*Micromite	15	Soft
Meti insecticide	Fujimite	21	Soft
Tetronic acid	*Movento (foliar systemic)	23	Soft
Anthranilic diamide	Altacor, Exirel, Verimark (systemic)	28	Soft
Anthranilic diamide + abamectin	Minecto Pro	28 + 6	Soft

UC Recommended Pesticides

Organic insecticides provide short-term reduction of ACP

Organic insecticides require direct contact with the insect body, limiting their effectiveness against hard-to-reach nymphal stages of ACP. The persistence of organic products is hours to days (not weeks like the synthetics) and so they need to be applied frequently. Of the organic insecticides tested, Entrust shows the greatest efficacy and persistence. *Treatment frequency:* For each conventional insecticide application, apply two organic treatments 10-14 days apart.

Organic insecticides		
Chemical group	Insecticide Name	Comments
Spinosad	Entrust	Apply with oil
Pyrethrins	Pyganic	Apply with oil
Oils	415-440 Oils	Deters egg laying
Kaolin Clay	Surround	Deters egg laying

www.ucanr.edu/ACP

Biocontrol – *Tamarixia radiata*

Tamarixia radiata



Exit hole left by
a parasite that
emerged from
an ACP nymph



Tamarixia are specific to ACP

Control Ants!

Ants protect ACP by feeding on
honeydew and prevent biocontrol.



Best Practices

- **Regularly inspect your citrus trees**
 - Learn to recognize ACP and HLB
- **Keep citrus local**
 - Buy citrus plants from reputable nurseries
 - Don't move citrus trees out of an HLB quarantine
- **Know where the HLB quarantines are**
- **Sign-up for quarantine updates**



Best Practices

- **Properly remove green waste**
 - Dry out for 2 weeks before disposing OR
 - Double bag OR
 - Chip and shred
- **Remove uncared/unloved citrus trees**
- **Control Ants!**

ACP/HLB Resources & Info

- **Citrus Program** www.CitrusInsider.org
- **CDFA** www.cdfa.ca.gov/citrus
- **San Diego Ag, Weights & Measures**
www.sandiegocounty.gov/content/sdc/awm
- **University of California ACP/HLB**
<https://ipm.ucanr.edu/agriculture/citrus/asian-citrus-psyllid/>
- **San Diego Farm Bureau** www.sdfarmbureau.org



Questions?

Sandra Zwaal
ACP/HLB Grower Liaison
(949) 636-7089
szwaal2@gmail.com