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The Asian Citrus Psyllid

Duane L. Schnabel
Program Supervisor IV
Primary State Agricultural Biologist

California Dept. of Food and Agriculture
Pest Detection/Emergency Projects

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Diaphorina citri Kuwayama (Homoptera: Psyllidae)

Asian Citrus Psyllid

- First found in Palm Beach County, Florida, in June 1998 in orange jasmine.
- By 2001, it had spread to 31 counties in Florida.
- In the spring of 2001, it was accidentally introduced into the Rio Grande Valley of Texas.
- In 2006, Asian citrus psyllid was reported from Sonora, Mexico.
- In 2008, detected in California; San Diego & Imperial Counties

Orange jasmine (*Murraya paniculata*)

Asian Citrus Psyllid – Host Range

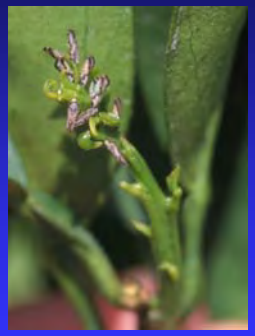
- Includes 25 genera in the family Rutaceae, but not all of the genera are good hosts
- Most preferred hosts are in the genera *Citrus*, *Citropsis*, and *Murraya*

Citrus

Murraya

Asian Citrus Psyllid - Adults

- Adults gather on new growth of stems and leaves
- Tend to feed on the underside of leaves



Asian Citrus Psyllid - Adults

- Adults can feed on both new and mature leaf flushes.
- Adult longevity ranges from about 88 days at 15°C to about 29 days at 32°C.
- Asian citrus psyllids overwinter as adults.

Asian Citrus Psyllid - Eggs

- Females oviposit only on young leaf flush.
- The number of eggs each female can lay varies with host plant and temperature.

Asian Citrus Psyllid - Eggs

- Eggs about 0.3mm long and almond shaped
- Eggs are pale when deposited, then turn yellow to orange as they mature.

Asian Citrus Psyllid – Nymphs

- Nymphs feed only on developing flush, flower stems and shoots.
- They complete 5 nymphal instars in about 11 days at 28°C.

Asian Citrus Psyllid – Life Cycle

Development time from egg to adult varies from about 49 days at 15°C to about 14 days at 28°C.

Asian Citrus Psyllid Damage

Psyllids produce copious amounts of white waxy honeydew.

Asian Citrus Psyllid Damage

Leaf distortion, shoots that snap off easily, and sooty mold

Asian Citrus Psyllid Damage

- Asian citrus psyllid transmission is the primary means of spread of citrus greening or Huanglongbing
- This disease is thought to be caused by a phloem inhabiting bacterium *Candidatus* Liberibacter asiaticus.
- In the Philippines, citrus greening was largely responsible for reducing citrus production by 60% between 1961 and 1970.

Symptoms of Citrus Greening

Chlorosis of leaves

Small, hard fruit that do not color properly

Stunted, sparsely foliated trees

Susceptibility of Citrus

- All citrus cultivars, species, hybrids, and some citrus relatives are susceptible
- Severity of symptoms on different hosts vary from geographic region

Asian Citrus Psyllid and Greening

- Fourth and fifth instar nymphs and adults can transmit the disease
- Acquisition time – 15 - 30 minutes
- Incubation period of 8 –12 days before transmission
- Fourth and fifth instar nymphs can retain the bacteria into the adult stage.

Citrus Greening (Huanglongbing)

Distribution of Asian citrus psyllid (orange) and Asian citrus greening + psyllid (green)

Possible Routes of Entry into California

- Asian citrus psyllid may come as a hitchhiker on nursery stock from Florida, Texas, Hawaii, Mexico, or Asia.
- Asian citrus psyllid may also travel in bulk citrus moved from Mexico to California for packing.
- Asian citrus psyllid will spread naturally northward from Mexico.
- Citrus greening may arrive in illegally transported infected plant material (budwood or trees).
- Citrus greening may arrive in psyllids that have acquired the bacteria.

Exclusion and Detection Efforts

- Federal quarantine that prohibits the movement of nursery stock from greening infested areas of Florida to states with citrus industries.
- Border Stations inspect commercial shipments of nursery and agricultural products. Some private vehicles are also inspected.
- Annual state survey in nurseries, commercial and backyard citrus for Asian citrus psyllid and greening.
- State and county inspection of nursery and other plant materials coming into California.

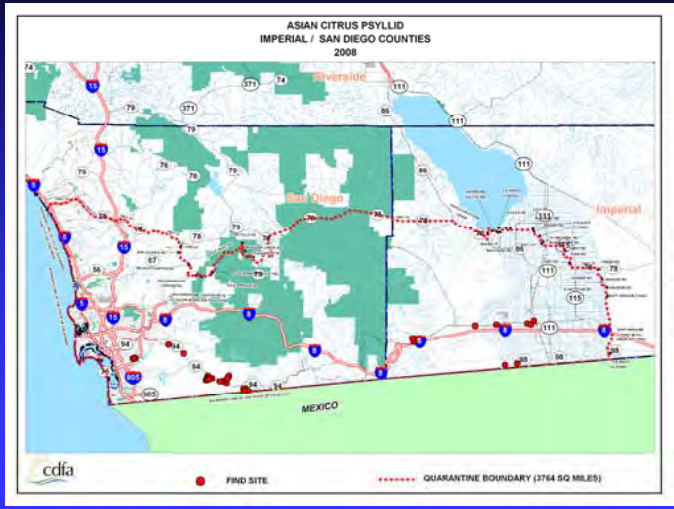
Response to the Introduction

- For both the insect and the disease, the area is immediately quarantined and no plant material, plant products, or equipment used in the area will be moved out of the area.
- For the insect, treatments (insecticides, fumigation, etc.) to eradicate the population will begin as rapidly as possible
- For the disease, plant destruction (fumigation, burning, etc.) will begin as rapidly as possible.

Response to Introduction

- For both the insect and the disease, surveys of the surrounding areas will be initiated to determine the infested area that needs treatment.
- Once treatments and surveys have been completed, the success of the treatments will be assessed to determine the need for more treatment and/or regulatory action.

Quarantine Map



Treatments

Professional Residential Use	AI	Host	Application	Maximum Use	Pre-Harvest	Non Ag REI	Comments	Prop 65	Non Target	Persistence	Mobility
Merit 2F	Imidicloprid	Ornamentals Citrus	Soil drench	.6 oz./1000 sq. ft./yr	Ornamentals NA Citrus 0 day	Immidiately	SLN CA 20007 2ee for ACP	no	bees, aquatic organisms	moderate	moderate
CoreTect	Imidicloprid	Ornamentals Citrus	Soil application	10 tablets/1000 sq. ft./yr	Ornamentals NA Citrus 0 day	Immidiately	SLN CA 080016	no	bees, aquatic organisms	moderate	moderate
Tempo SC Ultra	Cyfluthrin	Ornamentals Citrus	Foliar	Ornamentals, as necessary, Citrus 2 times/yr, 14 day interval	Ornamentals NA Citrus 0 day	Sprays have dried	SLN CA 080015	no	bees, aquatic organisms	low	low
Scimitar CS	lambda-cyhalothrin	Ornamentals	Foliar	1-2 oz./1000 sq. ft./yr. 7 day interval	NA	Sprays have dried	2ee for ACP	no	bees, aquatic organisms	low	low
Sevin SL	Carbaryl	Ornamentals, Citrus	Foliar	Ornamentals 6 times/yr, 7 day interval, Citrus 6 times/yr 14 d *ay* interval	Ornamentals NA Citrus 5 days	Sprays have dried	2ee for ACP	no	bees, aquatic organisms	low	moderate
PyGanic Crop Protection EC 5.0	Pyrethrin	Ornamentals, Citrus	Foliar	As necessary	Ornamentals NA Citrus 0 day	Sprays have dried	Organic Certification	no	bees, aquatic organisms	low	low
Professional Residential Use	**AI**	**Host**	**Application**	**Maximum Use**	**Pre-Harvest**	**Non Ag REI**	**Comments**	**Prop 65**	**Non Target**	**Persistence**	**Mobility**
Garden Tech Sevin Concetrated Bug Killer	Carbaryl	Ornamentals, Citrus	Foliar	Ornamentals 6 times/yr, Citrus 6 times/yr ¡ 4 day interval	Ornamentals NA Citrus 5 days	Sprays have dried		no	bees, aquatic organisms	low	moderate
Master Nurserymen Nature's Pest Fighter for Fruits and Vegetables	Pyrethrin	Ornamentals, Citrus	Foliar	As necessary	Ornamentals NA Citrus 0 day	Sprays have dried		no	bees, aquatic organisms	low	low

What can you do to help?

- If you see either the psyllid or symptoms of greening, contact the California Department of Food and Agriculture Exotic Pest Hotline at **1-800-491-1899**.
- Contact your local county Agricultural Commissioner's office or UCCE Farm Advisor's office. The phone numbers are listed on the county government page of the phone book.
- The sooner the infestation is found and a response initiated, the more likely the eradication effort will succeed.

Educational Materials

- There are 2 publications available for free download at http://anrcatalog.ucdavis.edu
- Publication 8205 – Asian Citrus Psyllid
- Publication 8218 – Citrus Bacterial Canker Disease and Huanglongbing (Citrus Greening)