Residential Asian Citrus Psyllid (ACP) and Huanglongbing (HLB) Management Strategy

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The Asian citrus psyllid (ACP) is widely established in urban and suburban areas throughout Southern California. Large-scale eradication of ACP in these environments is not feasible. Rather, the goal is to reduce psyllid populations to slow the establishment and spread of Huanglongbing (HLB) disease. In 2016-17, the number of HLB-infected trees started to rapidly increase. Dozens of HLB-infected trees have been found in residential Los Angeles and Orange counties and more recently in Riverside County. These trees have been removed, but there are likely more out there that contain the disease. Homeowners can help by reporting trees they suspect have the disease and if they are in a community where HLB-infected trees have been found, to consider removing their citrus trees.

What does the Asian citrus psyllid insect look like? The Asian citrus psyllid adult is tiny - the size of an aphid. The wings are brown along the edge, with a clear area. The psyllid feeds with its rear end tilted up at a 45° angle, making the insect appear almost thorn-like on leaves and stems. The tilted body and wing pattern is unique to this pest. Juveniles (nymphs) produce white, waxy tubules and are always found on new leaf growth or young stems. The waxy tubules are unique to this pest. The eggs of the Asian citrus psyllid are yellow and are found on the newest leaf growth, nestled among unfolded leaves. They are very tiny and hard to see without a hand lens.

Asian citrus psyllid adult is about the size of a sesame seed.

ACP nymph producing curly waxy tubules.

ACP eggs tucked in tiny leaves.

ACP nymphs and adult (inset) on citrus shoot.

What does the Huanglongbing, or citrus greening disease, look like? The first symptom in a HLB-infected tree, and the most important one to watch for is yellowed leaves. However, citrus trees often have yellow leaves because of nutritional deficiencies so it's important to know the difference. Nutrient deficiency causes a similar pattern of yellowing on both sides of the leaf. HLB causes blotchy yellow mottling and is not the same on both sides of the leaf (see this link for more photos of yellow citrus leaves). Later symptoms of HLB-infected trees include lopsided, small fruit, bitter juice and excessive fruit drop. Eventually the tree will stop producing fruit and die.

Blotchy yellow HLB-infected leaves

Citrus tree dying from HLB

How do I find the Asian citrus psyllid? Check your citrus and closely related plants monthly. Whenever you see tiny new leaves forming look closely for signs of the psyllids. Remember the adults fly and so they may be hard to observe and the eggs are so tiny they are hard to see without a hand lens. So the best stage to look for is the nymphs because they don't move very much and they produce waxy white tubules that are very unique looking.

ACP nymphs on stems of new shoots

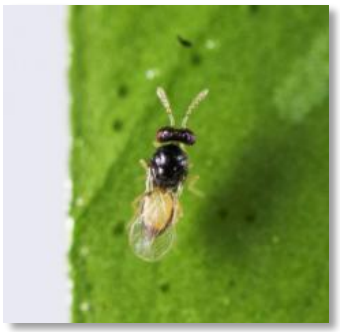
What do I do if I find the Asian citrus psyllid? You can call a licensed pesticide applicator or treat your citrus trees yourself with insecticides to keep the psyllid numbers low. The back of this document provides guidance on natural enemies and insecticide treatments. The fewer psyllids, the less likely disease will spread.

What do I do if I think my citrus tree has symptoms of the Huanglongbing disease? If you think your tree has symptoms of the disease, act fast, call the California Department of Food and Agriculture hotline 1-800-491-1899 or the Riverside County Agricultural Commissioners' office 951-955-3000 and someone will take a sample and determine if it has Huanglongbing.

Source: ucanr.edu/sites/ACP/

What else can I do to prevent the spread of Asian citrus psyllid and huanglongbing? If you no longer enjoy your citrus tree or do not want to routinely fight pests and disease, the tree should be removed. If an HLB-infected tree has been found in or near your neighborhood, consider taking out your citrus tree. Removing unwanted citrus trees helps prevent Huanglongbing from spreading in the community. The tests that determine if a tree has the disease, often don't reveal the disease until the tree has had it for many months or years, meanwhile psyllids could be spreading the disease. If the tree is removed it eliminates the need for pesticides to control the psyllid and prevents your residence from becoming a source of infection.

Biological Control for the Asian citrus psyllid. The Asian citrus psyllid is attacked by many natural enemies, including lady beetles, lacewing larvae, minute pirate bugs, parasitic wasps, spiders, and birds. These natural enemies do not eradicate the psyllid, but they will help reduce psyllid populations, which in turn will help to slow the spread of HLB. Therefore, biological control is viewed as an important part of managing ACP and HLB in California, especially in areas where pesticide sprays are not possible. One of the most promising biological control agents is the parasitoid wasp, *Tamarixia radiata*. This tiny stingless wasp, which poses no threat to people, lays an egg underneath the ACP nymph, which then hatches, feeds on and kills the nymph. It is easy to find evidence of this parasitoid at work because it leaves behind what looks like a hollowed-out ACP nymphal shell, known as a "mummy". Under ideal conditions it can reduce ACP populations by 30-50%. Since late 2011, this beneficial wasp has been mass-reared in an insectary and released into urban and suburban areas of Southern California. It is too early to tell what the ultimate impact of this biological control will be. The hope is that it can reduce ACP populations enough to at least slow the spread of HLB disease.



Tiny stingless wasp *Tamarixia*

Insecticidal Control for the Asian citrus psyllid. Because the natural enemy wasp *Tamarixia* is unlikely to completely halt the spread of the HLB bacterium, robust protection of citrus trees will require some form of insecticidal control. The most effective treatment for ACP is a combination of Tempo (cyfluthrin) spray combined with a soil drench of systemic Merit (imidacloprid) applied by a licensed applicator. Homeowners a several options to control Asian citrus psyllid. See table below.

Type of Treatment	Pesticide Name	Effectiveness against ACP	Control Duration	Application Timing
Professional treatment	Tempo, Merit	High	Months	Foliar: when psyllids are present Systemic: summer or fall
Homeowner applied broad-spectrum foliars	Sevin, Malathion	Moderate	Weeks	When psyllids are observed
Homeowner applied soil drench	Bayer Advanced Fruit Citrus & Vegetables	Moderate	Months	Summer or fall when roots are active.
Homeowner applied soft foliars	Insecticidal soaps, oils and pyrethrins.	Low to moderate; must make contact with psyllid.	Days	Every 7-10 days during leaf flushing*

*Flushing: when new leaves are first developing until they expand and harden.

Treatment Considerations

- always follow label instructions for the safe and effective use of the product
- only apply pesticides if psyllids have been observed
- only apply insecticides to host plants of psyllids (citrus and closely related hosts)
- avoid using insecticides during blooming periods to limit impacts on bees
- good coverage, including undersides of leaves, is important for foliar sprays
- If *Tamarixia* wasps have been found near your home, then use the soft insecticides (oils and soaps) that are safer for the *Tamaraxia*.

Source: ucanr.edu/sites/ACP/