

the TOPICAL GARDEN

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Bursts of Springtime
Blossoms at Fairchild



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Citrus Greening Threat Goes Beyond Oranges

By Kenneth Setzer

Some attackers come at us visibly, while others take a more covert or circuitous route. The Asian citrus psyllid (*Diaphorina citri*) is sort of in between the two. A plant sucker, the psyllid gets its nutrients from the liquids it can extract with its mouthparts from mostly citrus plants. While this is not the worst attack a plant can encounter, a much more harmful, unseen invader hitches a ride.

The psyllid is native to south Asia, but over the decades has spread around the globe, invading nearly any location warm enough to support it, particularly in North and South America and the Caribbean. The adults are small—less than one-eighth of an inch long—and patterned a mottled light brown to beige. They are superficially shaped a bit like a plant hopper to my eye, sort of like the wedge-shaped sail of a ship with their tail ends angled upwards and heads down as they feed; they fall within the same order, Hemiptera, as plant hoppers. The immature psyllid nymphs, much like aphids, don't react very much when prodded and disturbed; the adult psyllid, though, can fly for short distances.

The Stowaway

Here's where the stowaway appears, wreaking serious damage. While the psyllid itself feeds on the plant, the damage it causes would otherwise be minimal, or at least survivable, were it not for a bacterium called *Candidatus*

Liberibacter asiaticus. The psyllid serves as a vector for this bacterium, infecting citrus with it when feeding. The bacterium may also be spread through infected plant cuttings. It is *Candidatus* that ultimately harms the plant. The resulting condition is known as citrus greening, yellow shoot disease, or what it's been called in Chinese horticulture: Huanglongbing, also known as HLB.

The psyllids' eggs are yellow and teardrop shaped; these are laid on new, emerging shoots and foliage. Note to the home gardener: if you find small yellow eggs on your citrus, be aware they may be of the giant swallowtail butterfly (*Papilio cresphontes*), for which citrus is a host plant. The butterfly eggs are rounder and a deeper yellow to burnt orange, but you need to get very close to tell the difference. You do not want to destroy the butterfly eggs.

A more reliable way to tell if you have psyllid problems—besides having the tiny adult insects identified by an expert—is by observing plant damage, unfortunately. First-glance symptoms are similar to those caused by many other diseases and nutritional problems: yellowing of new shoots; pale, yellow or yellow-white leaves (known as chlorosis); or leaves displaying "blotchy mottle" appearance—a mingling of greens and yellows. Fruit is often stunted, discolored, poor tasting and, when cut longitudinally, will appear asymmetrical inside. Seeds are also often stunted and non-viable. Branch

dieback and tree death ultimately occurs. In June 1998, the insect was detected on the east coast of Florida. By September 2000, this pest had spread to 31 Florida counties. In 2008, it was detected in California, possibly moving by means of infected nursery stock.

Insecticides applied to non-bearing trees have been proven effective against the psyllid, thus reducing the spread of HLB. Reducing the psyllid population has also shown to reduce the severity of HLB on already-infected trees, though total elimination and a cure for HLB are still out of reach. While foliar sprays may sometimes be necessary, they should be avoided as much as possible to avoid killing psyllid predators like ladybugs, lacewings, syrphid fly larvae and the beneficial parasitic wasp *Tamarixia radiata*. Researchers are looking for naturally resistant citrus varieties, but nothing has yet been found. Experimental treatments are also testing penicillin against the bacterium.

Be aware that the tiny psyllid can feed on and infect other plants in the Rutaceae family as well, like the ornamental orange jasmine or jessamine (*Murraya paniculata*). If you plan on buying a plant in this family, make sure it is inspected for possible infestation. By not transporting potential host plants, we can help minimize the great damage HLB is doing to citrus.

