

Horticulture For Landscapes, Orchards, And Gardens: Classes Offered Fall 2015

For 30 years we've offered horticulture classes to the community, and we are pleased to do so again this autumn. We emphasize water conservation and non-chemical alternatives to pesticides. Upcoming classes can benefit homeowners by conveying knowledge of how to take care of turf and landscape plants as well as how to grow food, including vegetables and fruits, saving time and money. The classes have also been attended by many in the turf and landscape industry, since we offer research-based information on how plants grow and up-to-date information on pest management and irrigation practices. Representatives from homeowners associations and real estate professionals may also wish to attend to glean tips on evaluating landscapes, using appropriate terminology to request work from landscape contractors, and evaluating work that is done.

A Horticulture I class will be offered Tuesday nights, 5:30-8:30 p.m., beginning September 1, 2015, and extending 15 weeks. Topics will include water conservation, plant selection, soil science, landscape design principles, and pest management with an emphasis on organic and IPM methods, as well as sessions on vegetable crops, deciduous fruits, and citrus. A Horticulture II class is planned for Wednesday nights, also 5:30-8:30 p.m., beginning August 23, extending 15 weeks. Topics will be additions to those covered in the introductory class. Syllabi for both classes are available on my web page on the cekern website, <http://cekern.ucanr.edu>.

We ask those interested in either class to contact the Cooperative Extension office at cekern@ucdavis.edu or 868-6200, to pre-register to reserve a space and help us track class size. Cost of each class will be \$75. Actual registration will be handled at the first class meeting.

P.S. For those who want a level V class, let's consider that for spring, 2017.

Future Classes and Horticultural Tours

Our heritage of landscape and garden design includes the rich tradition of gardens of several parts of the world, including Europe and the Mediterranean, and some of the world's most interesting and beautiful plant arrangements and collections may be found there. A number of gardens and landscapes exquisitely illustrate design principles and have withstood the test of time. These sights are well worth sharing. The overall tour objective is to broaden participants' knowledge and appreciation for landscape design and plant selection. The tour also provides an opportunity to experience the flavor of specific countries. I have outlined my intentions for future horticulture classes AND horticultural tours on my web page found at cekern@ucdavis.edu. The next tour I plan to offer is to northern Italy (Lago Maggiore) and Tuscany (likely Lucca, Siena, Pisa, Firenze (=Florence)) in spring, 2016. When I have an itinerary including dates, I will make a further announcement and post the itinerary. Our tour group sizes have ranged from nine to twenty-six.

Update on the Asian Citrus Psyllid and Citrus Greening

by Craig Kallsen, Citrus and Pistachio Farm Advisor, Kern County

Huanglongbing (HLB) is a mouthful for most English speakers. Huanglongbing means 'yellow shoot disease' in Chinese. We also used to call it 'greening' disease, but this was confusing to some since 'going green' is thought to be a positive thing. But for those of us who love to grow and eat citrus fruit, there is nothing positive about this disease. Prior to March, 2012, HLB had not been found in California, but was subsequently isolated from a tree with an associated insect at a home in the Los Angeles area. An additional infected tree has been found in San Gabriel (the tree has been removed). The disease has not arrived in the Central Valley, and vigilance is needed to keep it out.

HLB is caused by the *Candidatus Liberibacter asiaticus* bacterium. An infected citrus tree may take two years to show symptoms, but once symptoms appear the tree is usually dead within two years. For any disease to be a problem in an orchard, an agent is required to spread the disease from tree to tree. For HLB, an insect called the Asian citrus psyllid (ACP) has been the agent of transmission in many citrus growing areas of the world. These psyllids quickly become

infected by feeding on a diseased tree, and all that is required to spread the disease is the feeding of one infected psyllid on an uninfected plant. ACP has multiplied in the Los Angeles basin, and natural enemies are being released to suppress them.

In Florida, the disease has devastated the state's citrus industry. From Florida it moved into Georgia and South Carolina, and eventually to Texas. The states of Arizona, Mississippi and Alabama have detected ACP but not the disease. More worrisome, perhaps, is the northward advancement of the disease through Mexico.

Historically, whenever ACP has shown up in a citrus growing area, HLB disease has usually become a big problem within five years. Currently, the citrus industry, the California Department of Food and Agriculture and the local Agricultural Commissioner's offices have a large network of psyllid traps located throughout the Central Valley. You may have a trap hanging in one of your trees. If an ACP shows up in the Central Valley, a plan of action is in place to begin eradication efforts immediately. This psyllid has been found in Tulare County, and the entire county is quarantined with regard to movement of any citrus foliage. An ACP was recently found in the Westchester area of Bakersfield, leading to spraying in the vicinity.

Huanglongbing could arrive in the Central Valley in several possible ways. HLB could be inside the body of an ACP that flies into California or is transported by humans on fruit, leaves or stems of citrus relatives. Another possible source is from illegally imported citrus trees or buds. HLB could be infecting a citrus tree (or close relative) that is already planted in a yard or orchard in California--or it may arrive in the future this way. It is illegal to bring citrus trees or propagative material, such as buds, into California from other states or countries because they may be infested with ACP or infected with HLB. Existing trees that were propagated from budwood that was brought into California illegally should be destroyed immediately.

So what should a person look for? The symptoms of HLB include the appearance of shoots with yellow leaves on the tree. Leaves will show various levels of yellow mottling and the pattern of mottling will be different on opposite sides of the midvein. Fruit will become small, hard, crooked, sour, and will not color evenly.



Figure 1. Fruit from a tree infected with Huanglongbing disease. Note small, off-colored fruit.

These symptoms can easily be confused with many other maladies of citrus, especially in Kern County, where our calcareous soils, high boron levels and high summer temperatures can all cause significant leaf yellowing. For example, stubborn disease of citrus, caused by a bacterium-like organism, and which has been present in California for at least 50 years, can cause significant leaf yellowing, and result in small, hard, sour, greenish-yellow fruit.

Detailed descriptions and pictures of ACP, its feeding activities on leaves, and pictures of HLB disease are available on the web at www.californiacitrusthreat.com and <http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74155.html>. ACP is smaller than some aphids, and much smaller than a grasshopper, so don't let its apparent size in the close-up pictures fool you. Like aphids, it feeds on young leaves. The waxy tubules that they create while feeding are very distinctive, and will easily separate them from aphid feeding. As the psyllid feeds, it injects a salivary toxin that causes the tips of new leaves to easily break off. If the leaf survives, then it twists as it grows.



Figure 2. Citrus fruit showing Asian citrus psyllid with waxy feeding tubules and petioles remaining from leaves that have fallen.



Figure 3. Close-up of one of the nymphal stages of Asian citrus psyllid showing waxy tubules.

Huanglongbing disease is not limited to citrus, but does appear to prefer relatives of citrus. Many host plants are symptomless carriers of the disease. Some of the host plants are the following:

- Citrus (limes, lemons, oranges, grapefruit, mandarins, others)

- Fortunella (kumquats)
- Citropsis (cherry orange)
- Murraya paniculata (orange jasmine)
- Bergera koenigii (Indian curry leaf)
- Severinia buxifolia (Chinese box orange)
- Triphasia trifolia (limeberry)
- Clausena indica (wampey)
- Microcitrus papuana (desert-lime)

The recent appearance and spread of another invasive pest within the Central Valley, the citrus leafminer (see following article), demonstrates how quickly something new can become a problem. However, the citrus leafminer simply attacks new growth. Unlike ACP and the disease it vectors, citrus leafminer does not kill the tree. The same systemic pesticide, which contains imidacloprid and which homeowners have been using to control the citrus leafminer, is also effective in providing control of ACP over a period of months.

Someone concerned about a beloved backyard citrus tree, or the one billion dollar Central Valley citrus industry, can do the following things to reduce the threat of this pest:

- Don't bring plant material, including things like bouquets, into the Central Valley from other parts of California, other states or countries
- Only buy certified disease-free plants and trees from reputable nurseries.
- Learn to recognize the pest and disease symptoms
- Check flush foliage of citrus wherever you are
- Call your County Agricultural Commissioners office or the CDFA hotline (1-800-499-1899), if you have good reason to suspect you have either the pest or the disease. Please note, though, that the simple presence of a sick or dead citrus tree with yellowish leaves, is probably not sufficient reason to call.

Citrus Leafminer

by David Haviland and Craig Kallsen

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A relatively new exotic pest, citrus leafminer, is spoiling the natural beauty of citrus foliage in the southern San Joaquin Valley. This worldwide pest, first found in California in Imperial County in 2000, has now moved up the coast and inland to sites throughout Kern County. Adult moths lay eggs that hatch into small worms that feed and cause mines in citrus leaves. In the summer and fall, when citrus trees begin to put out new growth, the new leaves become

completely distorted, stunted and misshapen. (This leafminer has no connection to the Asian citrus psyllid, a potentially damaging vector of citrus yellow shoot disease.)



Figure 1. Close-up photo showing 'mines' or feeding tracks made by the larvae in citrus leaves. (Photo by David Haviland.)

In most situations, citrus leafminer will likely be nothing more than a nuisance. Research has shown that mature trees can tolerate damage without affecting the number or size of fruit. However, damage from feeding by the leafminer can severely stunt young trees, and can reduce the aesthetic quality of citrus trees used for landscaping.



Figure 2. Leaf curling from feeding of citrus leafminer. (Photo by David Haviland.)



Figure 3. Feeding of citrus leafminer results in leaf curling. (Photo by David Haviland.)

In most cases control is not needed. Where the homeowner feels that it is, control can be difficult to achieve with foliar sprays because larvae are protected within the leaf from beneficial insects or pesticides. Some reduction can be achieved by keeping new leaf growth to a minimum by removing sucker growth at the base of the tree and by not over-pruning or over-fertilizing. For both bearing and non-bearing trees, homeowners can use products containing imidacloprid to help alleviate the problem. This is a systemic pesticide that can be used once during the season. Read and follow label directions closely. Generally, because lemons and grapefruit tend to produce many new leaves early in the spring and throughout summer and fall, they often show the earliest and, eventually, some of the worst symptoms. However, since the product may only be effective for three months or so, postponing treatment of all citrus until July (when the symptoms usually appear in navel orange) may help extend the effective life of this insecticide. Infestations of citrus leafminer peak in August, September and October. Citrus leafminer is not active during the winter, and treating this pest during the winter, early spring or during bloom will not be effective and/or will be contrary to the label.

It is also important not to confuse citrus leafminer with citrus peelminer. Citrus peelminer is another new pest of citrus and is usually found on the fruit and stems of citrus and many other

landscape plants. Citrus leafminer, on the other hand, feeds almost exclusively on the leaves of citrus. Both pests produce mines that cause primarily cosmetic and superficial damage.

In other countries, citrus leafminer and citrus peelminer are attacked by several small parasitic wasps that are barely visible to the naked eye. Efforts are underway to import more of these natural enemies to California. Once here, the hope is that these beneficial insects will become established and spread throughout urban and agricultural sites to feed on and control these pests. For the meantime, it is important to learn to tolerate less than beautiful backyard citrus trees until a long-term solution can be achieved.

More information on citrus leafminer and its control can be found at the University of California Integrated Pest Management website at <http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74137.html>

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Disclaimer: Discussion of research findings necessitates using trade names. This does not constitute product endorsement, nor does it suggest products not listed would not be suitable for use. Some research results included involve use of chemicals which are currently registered for use, or may involve use which would be considered out of label. These results are reported but are not a recommendation from the University of California for use. Consult the label and use it as the basis of all recommendations.

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