

# CITRUS DISEASE SPOTLIGHT

## Huanglongbing

By Megan Dewdney

**H**uanglongbing (HLB or citrus greening) is present in groves over the whole year with symptoms becoming most prominent in the autumn and winter months. Trees are thought to be susceptible all year, but the bacterium that likely causes the disease is transmitted by the Asian citrus psyllid (ACP; *Diaphorina citri*) which needs new flush to complete its life cycle. Therefore, it is suspected that trees are most vulnerable to infection at times when new flush is present.

**Scientific name:** *Ca. Liberibacter asiaticus*.

**Leaf symptoms:** The principal leaf symptom is termed blotchy mottle and is an asymmetrical chlorosis across the mid vein (Figure 1). As the disease advances, some branches can have small, upright leaves often called rabbit ears. Foliar zinc, magnesium and manganese deficiency symptoms are frequently associated with the disease but are not diagnostic.

**Tree symptoms:** The tree symptoms depend on the age of the tree when infected. If trees are infected when young, there can be

severe stunting. After several years of infection, trees can exhibit twig die back and the canopy becomes very thin (Figure 2). In some trees, a very prominent yellow limb occurs. The disease was first named after this symptom in Chinese, and is the source of the official name of huanglongbing, meaning yellow branch disease.

**Fruit Symptoms:** Fruit generally are smaller than normal on branches with symptoms. On the outside, they may appear lopsided, with a yellow calyx (Figure 3). Sometimes color break is abnormal; the fruit will become orange at the bottom, but the shoulders will remain green. When cut in half, the fruit have a curved columella with yellow staining of the veins below the calyx. The seed is often aborted. The fruit have an off taste that is similar to that of unripe fruit, and can be

**Figure 1 (right).** Leaves with blotchy mottle symptoms on a sweet orange tree.



**Figure 2 (below).** Limb die back and a yellow shoot as well as thin canopy on trees (inset) infected with HLB



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slightly salty.

HLB management has many facets and phases depending on the level of infection present in a grove and the location of the grove. Detailed



**Figure 3.** Lopsided fruit on an HLB-infected branch (above), and internal symptoms of curved columella (right), yellow veins from calyx end and aborted seed.

information and recommendations are available in the Florida Citrus Pest Management Guide (<http://www.crec.ifas.ufl.edu/extension/pest/>) and in IFAS Guidance for Huanglongbing (Greening) Management (<http://edis.ifas.ufl.edu/hs1165>). One aspect that is essential for any type of good HLB management is the control of Asian citrus psyllid and

involvement in a Citrus Health Management Area (CHMA).

Visit <http://www.crec.ifas.ufl.edu/extension/chmas/index.shtml> for more information about CHMAs in your area.

*Megan Dewdney is a University of Florida-IFAS assistant professor at the Citrus Research and Education Center in Lake Alfred.*



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