



Pacific Pests and Pathogens - Mini Fact Sheet Edition

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Citrus Huanglongbing (greening) (230)



Photo 1. The "blotchy mottle" symptom of huanglongbing, yellow patches that are not the same size and position on both sides of the leaf.



Photo 2. Patches of yellow on a leaf showing the "blotchy mottle" symptom of huanglongbing; note that the patches are uneven, there are more on one side of the leaf than the other.



Photo 3. Symptoms of zinc deficiency for comparison with photos 1 and 2. Note that the yellowing is even throughout the leaf, not in patches which differ from left and right sides.



Photo 4. Late stage symptoms of huanglongbing: yellowing of most of the leaves, loss of leaves in the canopy and the start of dieback. Note that some of the fruit have green patches, hence the name of the disease "greening".

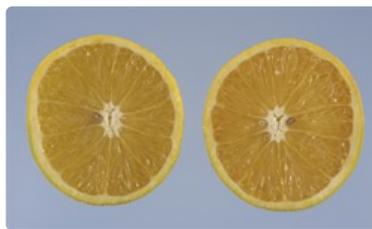


Photo 5. Fruit, affected by huanglongbing, cut in two to show the dark coloured seeds; the development of these seeds has aborted due to the disease.

Summary

- Worldwide distribution. In tropics and sub-tropics. On all species and varieties of citrus, and ornamentals, e.g., mock orange or orange jasmine and the curry tree. An important bacterial disease.
- Patches of yellow on leaves: (i) across veins, (ii) often on one side, (iii) on one shoot or one branch, (iii) seen mostly on newly hardened leaves, before fading.
- Spread by sap-sucking psyllids, and citrus plant trade.
- Within a year of infection, leaves fall, fruits are misshapen with uneven colour (bottom stays green), and trees dieback.

- Biosecurity: many countries are still vulnerable to the disease.
- Natural enemies: parasitoid wasp are known.
- Cultural control: nursery plant certification; monthly monitoring; removal of infected trees.
- Chemical control: use soap, white or horticultural oil sprays, or neem; use synthetic pyrethroids or imidacloprid. These treatments are to psyllid.

Common Name

Citrus greening, citrus huanglongbing (greening) disease.

Scientific Name

Candidatus Liberibacter asiaticus (Asian form), *Candidatus Liberibacter africanus* (African form), and *Candidatus Liberibacter americanus* (South American form). The three pathogens can only be distinguished by molecular tests. The abbreviation is HLB. The name 'huanglongbing' means 'yellow shoot disease'.

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Information from Briansky RH, Dewdney MM, Rogers ME (2014) Florida citrus pest management guide: huanglongbing (citrus greening). U.S. Department of Agriculture, UF/IFAS Extension Service, University of Florida. (<http://edis.ifas.ufl.edu/cg086>); CABI (2014) Crop Protection Compendium Citrus huanglongbing (greening) disease (<http://www.cabi.org/cpc/>); and information (and Photos 1&3) from *Citrus diseases huanglongbing* (HLB) (2013). USAD, UF. ([http://idtools.org/id/citrus/diseases/factsheet.php?name=Huanglongbing+\(HLB\)](http://idtools.org/id/citrus/diseases/factsheet.php?name=Huanglongbing+(HLB))); and information (and Photo 2) Sisan E Halbert In: *Asian Citrus Psyllid and Huanglongbing Disease* (2013) UCIPM Online. (http://www.ipm.ucdavis.edu/PMG/PESTNO_TES/pn74155.html). Photo 4 HD Catling, Bugwood.org. Photo 5 Jeffrey W Lotz, Florida Department of Agriculture and Consumer Services, Bugwood.org.

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