

Citrus Huanglongbing (greening) (230)

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'.



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 4. Late stage symptoms of *huanglongbing*: yellowing of most of the



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.

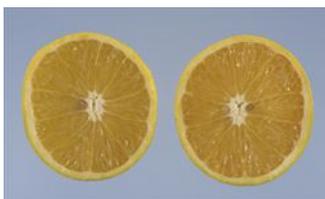


Photo 5. Fruit, affected by *huanglongbing*, cut in two to show the dark coloured seeds; the development of these seeds has aborted due to the disease.

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Information from Briansky RH, et al. (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 (2019) Citrus huanglongbing (greening) disease. Crop Protection Compendium. (<https://www.cabi.org/cpc/datasheet/16567>); and from (including Photos 1&3) Citrus Greening (Huanglongbing) (2019). UF/IFAS Citrus Research and Education Center. (<https://crec.ifas.ufl.edu/hlb-information/greening/>); and information (and Photo 2) Grafton-Cardwell EE, Daugherty MP (2018) *Asian Citrus Psyllid and Huanglongbing Disease* (2013) University of California Statewide IPM Program. Agriculture and Natural Resources, University of California. (<http://www.ipm.ucdavis.edu/PMG/PESTNOTES/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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