

Citrus conditions causing symptoms similar to huanglongbing

What is huanglongbing?

Huanglongbing, also known as ‘citrus greening’, is a lethal bacterial disease of citrus.

On citrus, huanglongbing can cause a range of symptoms, including:

- uneven blotchy mottling and discolouration of leaves
- shoot yellowing
- leaf drop
- branch dieback
- small, lopsided and bitter-tasting fruit
- fruit drop.

More detailed information to assist in the recognition of huanglongbing-infected citrus trees can be found in the *Huanglongbing in citrus* fact sheet.

Conditions that can be confused with huanglongbing

A number of common citrus pests, diseases and disorders in Australia cause symptoms that can be confused with those of huanglongbing. This fact sheet outlines some of the most common causes of these ‘huanglongbing-like’ symptoms.

If in doubt, ALWAYS report cases of suspect huanglongbing symptoms to Biosecurity Queensland on 13 25 23 or the Exotic Plant Pest Hotline on 1800 084 881.

Nutrient deficiencies

Nutrient deficiencies can often cause yellowing or mottling of leaves and shoots; however, these symptoms are typically uniform on each side of the leaf midrib. Nutrient deficiencies also tend to appear uniformly across the canopy on shoots of the same age, whereas huanglongbing symptoms tend to first appear on single shoots or branches.

For nutrient deficiencies, if plants are treated with foliar or soil applications of appropriate citrus fertilisers then leaves and shoots will usually re-green.

Citrus leaves with uneven blotchy mottling and discolouration that do not respond to nutrient application should be reported.



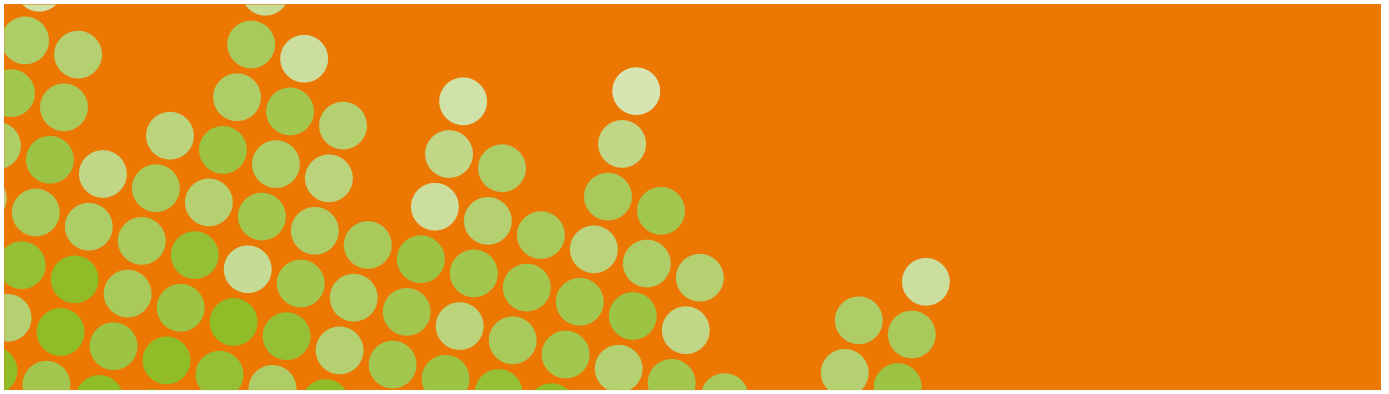
Iron deficiency symptoms

Photo courtesy of P. Barkley



Zinc (left) and magnesium (right) deficiency symptoms

Photo courtesy of S. Hardy, NSW DPI



Boron deficiency can cause corking of leaf veins

Photo courtesy of A. Beattie, University of Western Sydney

Australian citrus dieback

Australian citrus dieback can cause very similar symptoms to huanglongbing, including yellowing and mottling of leaves, reduced fruit size on the affected limb and dieback of foliage. This condition is most often seen in grapefruit varieties and Seville oranges, particularly trees adjacent to native vegetation.

Laboratory tests are required to distinguish Australian citrus dieback from huanglongbing, so any suspect symptoms need to be reported.



Australian citrus dieback

Photo courtesy of P. Barkley



Australian citrus dieback causes yellowing and mottling of leaves and reduced fruit size

Photo courtesy of P. Barkley

Winter yellowing

The sudden onset of cold temperatures in autumn can cause yellowing of the most recent leaf flush (usually the late summer or autumn flush). In young trees the whole tree may become yellow. This condition is commonly called 'winter yellows' because the foliage remains yellow throughout winter. Generally, leaves will re-green with the return of warmer weather in spring.



Winter yellowing. Generally leaves will re-green when the weather warms in Spring.

Photo courtesy of P. Barkley

Root rots

Citrus trees can often suffer root or collar rot (caused by the *Phytophthora* fungus), especially in poorly drained soils. Trees can also suffer from 'wet feet' during periods of prolonged wet weather or overwatering, characterised by blackened, rotted roots. These conditions can cause yellowing of leaves, leaf fall and tree dieback. Check the roots and trunk for signs of tissue browning and root death.



Phytophthora collar rot and dieback

Photo courtesy of P. Barkley

Crotch rot (Hickson mandarin)

This disease affects Hickson mandarins in coastal areas. Crotch rot develops in the fork or junction between the trunk and branches. Splits in the bark are invaded by fungi, causing gumming, wood discolouration, cracking and wood rot. The first symptoms commonly seen are leaf yellowing, defoliation and dieback caused by wood rot further up the branch (i.e. yellowing of one branch in an otherwise healthy tree).



Crotch rot of Hickson mandarins

Photo courtesy of P. Barkley

Citrus tristeza virus

On grapefruit and oranges, yellowish leaf mottling and leaf deficiency symptoms, shoot yellowing, production of small, lopsided fruit, stunting and twig dieback can also be caused by citrus tristeza virus.

Laboratory tests are required to distinguish citrus tristeza virus from huanglongbing, so any suspect symptoms need to be reported.



Citrus tristeza virus can cause leaf yellowing, as well as stunting and dieback of trees

Photo courtesy of P. Barkley

Insect pest or physical damage

Tree branches damaged by borers, storms or farm equipment can often show leaf yellowing or branch dieback. Examine affected branches for signs of borer holes or other physical damage to eliminate these causes.

Herbicide damage

Damage from some herbicides can also cause localised leaf mottling (the mottling is often more white than yellow), yellow veins, leaf distortion and twig dieback. Check that herbicides have been used correctly, especially around young trees.

Blight

Citrus trees older than four years can develop blight. Similar to drought stress, trees can appear unthrifty, with a thin canopy and reduced fruit size. Trees with blight may also flush and bloom out of season and show deficiency-like symptoms. The cause of blight is unknown, but can be overcome by using a tolerant rootstock.



*Citrus blight can cause symptoms similar to drought stress.
The canopy thins and fruit size is reduced*

Photo courtesy of P. Barkley

Have you seen huanglongbing?

In Queensland, huanglongbing (citrus greening) is prohibited matter under the Biosecurity Act 2014. If you believe that you may have detected huanglongbing, you must report it immediately to Biosecurity Queensland. You must also take all reasonable steps to minimize the risks of spreading the pest or making the situation worse.

Be on the lookout for huanglongbing and the psyllid insects that can spread it, and report them immediately to Biosecurity Queensland. Do not move any plant material off your property—this can spread the disease.

Call Biosecurity Queensland on 13 25 23 or the National Exotic Plant Pest Hotline on 1800 084 881.

Further information

For more information, call Biosecurity Queensland on **13 25 23** or visit www.biosecurity.qld.gov.au

Three additional fact sheets provide further information: *Huanglongbing in citrus*, *Asiatic citrus psyllid* and *African citrus psyllid*.

Disclaimer: The material in this publication was prepared from the most recent information available at the time of publication. It is intended as a guide only.