

SAFETY biosecurity threats

This is the third instalment in our citrus biosecurity threats series. By CRI Biosecurity Division

Citrus Leprosis

Symptoms of Citrus Leprosis (CL)

Round to elliptical local lesions appear on leaves, twigs and fruit.

Leaf lesions, both on the upper and lower sides, are usually not raised. They're round to elliptical and pale green to yellow with a dark-brown central spot about 2–3 mm in diameter, surrounded by a chlorotic halo, in which 1–3 brownish rings frequently appear, surrounding the central spot. Larger lesions may form by the fusion of two or more adjacent lesions. Severe infections lead to premature leaf fall.

On fruit, lesions are flat to slightly depressed necrotic spots, 5–15 mm in diameter, with a yellow halo and are distributed over the whole fruit rind. Gum exudation may be seen on the lesions. On green fruit, the lesions are initially chlorotic and darken to brown or black and become slightly depressed. A yellow halo can be observed around the lesions as they mature. In severe infections, fruit drop occurs, mainly in cases where the lesions are close to the peduncle. On twigs, lesions are cortical, grey or brown or sometimes dark reddish, later turning into crusty scabs.

Method of spread

Insect vectors

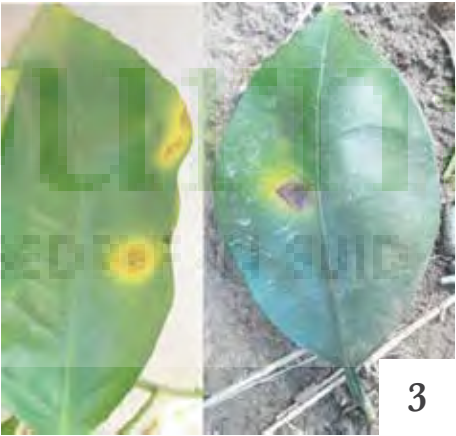
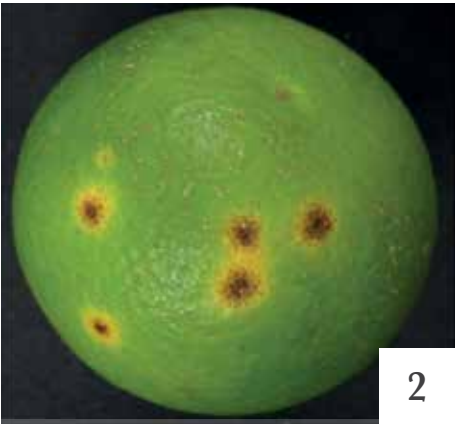
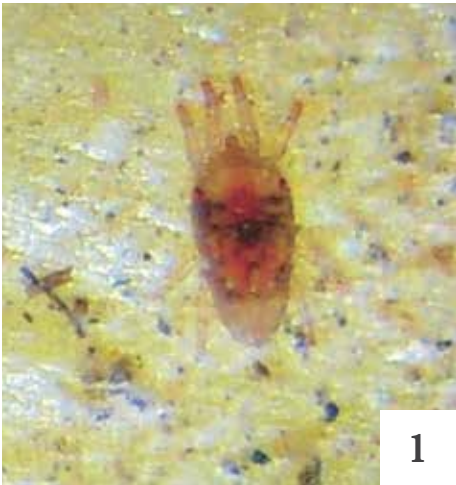
- Various species of false spider mites of the genus *Brevipalpus* (Tenuipalpidae).
- The mites feed on the foliage, twigs and

fruit. All active stages of the mites can acquire and transmit the viruses. Given the non-systemic nature of the disease, mites have to feed on lesions to acquire the virus.

Not transmitted via fruit or seed.

The disease

- CL is associated with at least seven distinct viruses, belonging either to the cytoplasmic type (CL-C) or the nuclear type (CL-N).
- The more common cytoplasmic types include the CL virus C (CiLV-C) and CL virus C2 (CiLV-C2), and the nuclear types include the CL virus N (CiLV-N), citrus chlorotic spot virus (CiCSV), citrus bright spot virus (CiBSV) and strains of the orchid fleck virus (OFV). OFV was detected on



citrus in the Sundays and Gamtoos River Valleys in the Eastern Cape Province of SA (under eradication).

- Severe losses in yield may occur, both in quantity due to fruit drop, and quality due to cosmetic damage.
- In severe cases, CL can cause 100% yield loss, mainly with oranges and mandarins.

Host range

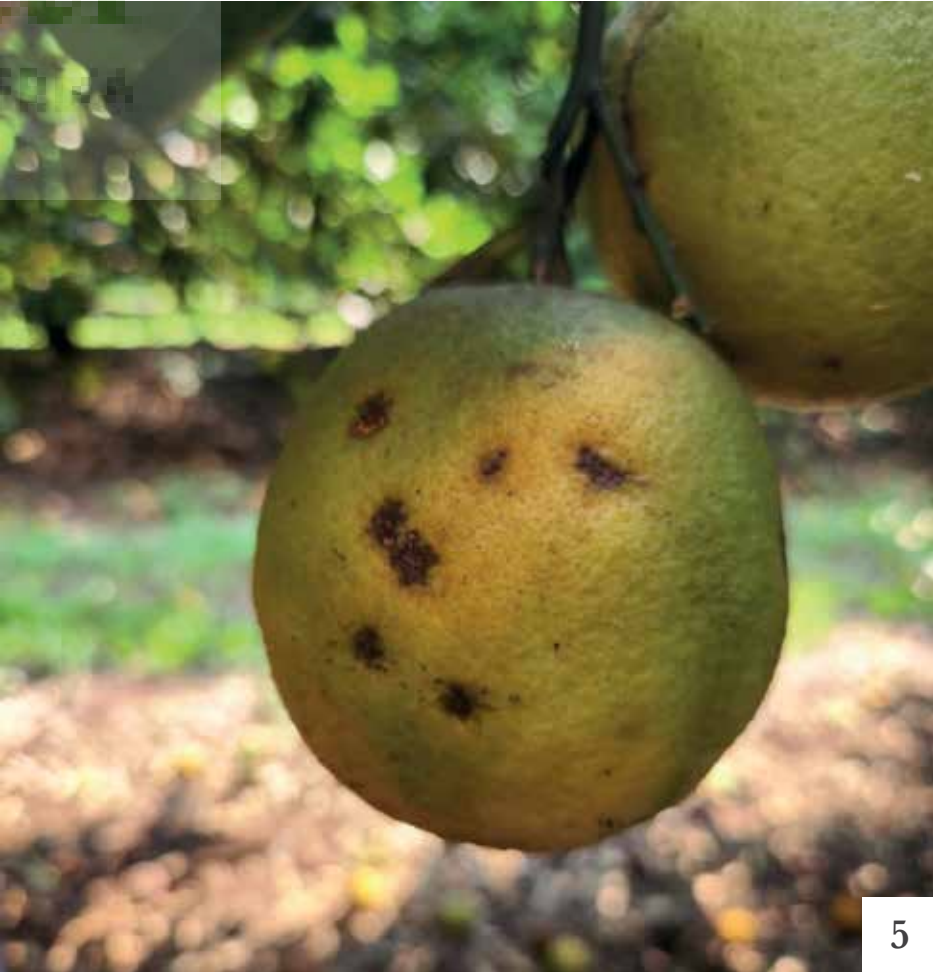
- All *Citrus* spp.
- Other non-citrus hosts, including *Cymbidium*, spp., *Solanum violaeifolium*, *Swinglea glutinosa*, *Bidens pilosa*, *Ageratum conyzoides* and *Commelina benghalensis*.

Current distribution

Some types of the virus are present in Mexico, Hawaii, Central and South America, and SA (OFV).

Preventative action

- Quarantine procedures for importation of citrus propagation material, citrus fruit and other hosts.
- Planting only certified disease-free citrus trees.
- Increasing awareness and surveillance to ensure early detection and rapid implementation of control measures.
- Do not bring illegal plant material into SA and onto your farm.



1. *Brevipalpus californicus*, one of the mite vectors of the disease 2. Slightly depressed necrotic spots with yellow halos on fruit 3. Necrotic spots surrounded by yellow halos on the upper and lower sides of the leaf 4. Cortical, grey or brown lesions on twigs, later turning into crusty scabs 5. Brown to black necrotic lesions on fruit

This series of fact sheets to increase awareness around these perilous threats, started featuring in SAFJ Apr/May '24.

Citrus Sudden Death

Symptoms of Citrus Sudden Death (CSD)

Foliar discolouration and leaf dullness throughout the canopy of the plant, loss of leaf turgidity, accompanied by partial defoliation, initially, and total defoliation at more advanced stages. Fruit usually appears normal but remains attached to the dying or dead trees.

Less sprouting, fewer new shoots, absence of internal shoots, and finally tree death. The characteristic symptom of the disease is a yellow to orange stain that develops in the phloem at the bud union of a susceptible rootstock, indicating blockage of the phloem vessels.

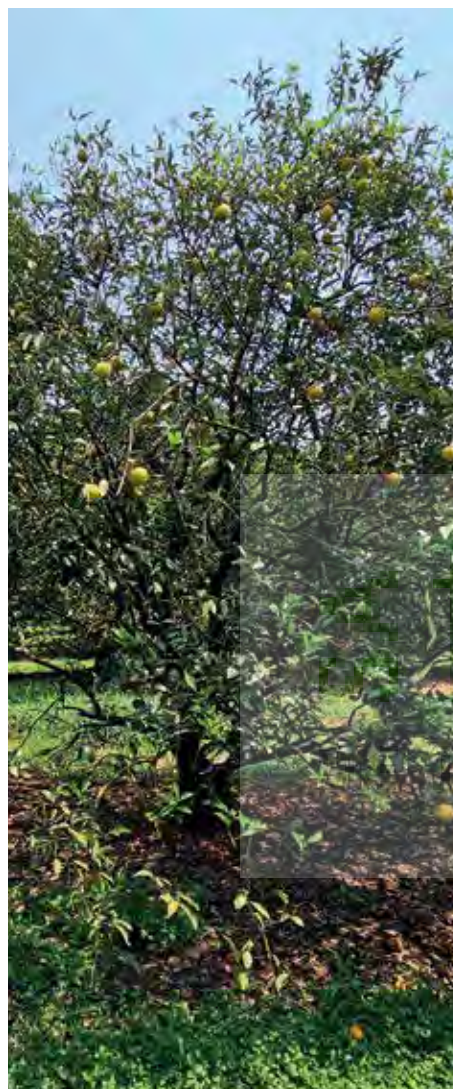
Death of a large portion of the root system that progresses from the root tips through roots of increasing size until the main scaffold roots are affected and die. Trees can die within one to 12 months after the first appearance of symptoms, depending on the time of year (there's more rapid disease progression in the spring) and cultivar (there's more rapid disease progression in late-maturing cultivars).

Possible misidentification

Symptoms are like the quick-decline symptoms caused by the citrus tristeza virus, Valley Bushveld Decline and Citrus Blight.

Host range

- All *Citrus* spp. are hosts but disease expression is only on the specified rootstocks.
- Sweet oranges (*Citrus sinensis*), Ponkan and Cravo mandarin (*C. reticulata*), tangor Murcott (*C. sinensis* × *C. reticulata*) and



others, when grafted on Rangpur lime (*C. limonia*), Volkamer lemon (*C. volkameriana*) and Rough lemon (*C. jambhiri*) rootstocks.

Method of spread

Infected plant material

- Citrus propagating material (trees, cuttings, grafts, budwood)

Viruliferous, airborne insect vectors, possibly aphids, but not confirmed

The disease

- The causal agent of this disease has not been confirmed but is associated with the CSD-associated virus (CSDaV).
- It is an infectious bud union disease of Rangpur lime, Volkamer lemon and Rough lemon rootstocks.

Fruit remains attached to the dying or dead tree

Trees can die within one to 12 months after the first appearance of symptoms.

- Infected trees on susceptible rootstocks can die in less than 12 months.
- There is no known treatment. Infected trees need to be eradicated.

Current distribution

- Brazil

Preventative actions

- Quarantine procedures for importation of citrus propagation material.
- Plant certified disease-free citrus trees.
- Awareness and surveillance to ensure early detection and rapid implementation of control measures.
- Do not bring illegal plant material into SA and onto your farm.

For more information on this disease, or if you sight anything of relevance that seems unusual, contact Wayne Kirkman from CRI's Biosecurity Division: biosecurity@cri.co.za, 084 458 0349. Or visit www.citrusres.com.

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