

## CITRUS BIOSECURITY THREAT: Citrus Variegated Chlorosis (CVC)



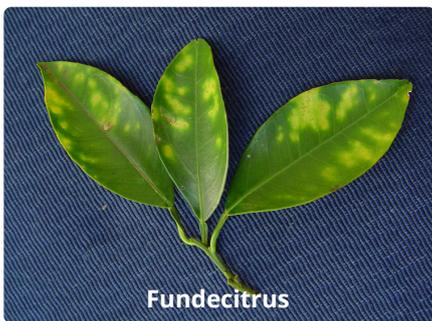
### Symptoms

Symptoms start with irregularly spread small, chlorotic spots between the veins on the upper surface of mature leaves, with a corresponding slightly raised brownish gum-like material on the lower surface. At severe stages, the brown spots on leaves coalesce and become necrotic. Defoliation of terminal twigs and small leaves can occur. Symptoms are always restricted to one or a few branches on trees. Infected trees can show twig dieback, reduced vigour and growth, and may appear stunted, but do not normally die.

Fruit are much smaller, very firm with hard rinds, lack juice, have an acidic flavour, and ripen prematurely.

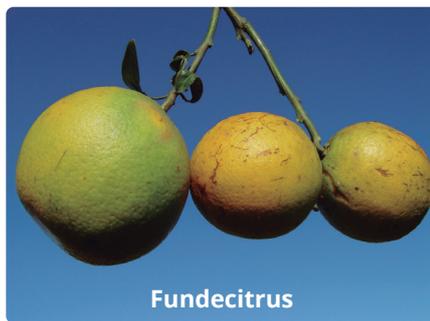
The time from infection to symptom appearance ranges from a few months to more than a year. Symptoms are easier to notice in trees between 7 and 10 years old, but many infected host plants remain asymptomatic.

Outbreaks can also remain undetected due to the non-specific nature of the symptoms.



Fundecitrus

Irregularly spread, small chlorotic spots between the veins on the upper surface of mature leaves



Fundecitrus

Fruit are much smaller than normal

### The disease

- *Xylella fastidiosa* is considered one of the most dangerous plant-pathogenic bacteria worldwide.
- CVC is caused by the subspecies *Xylella fastidiosa* subsp. *pauca*.
- The bacterium resides in the xylem of the plant and is transmitted by xylem-feeding leafhoppers, known as sharpshooters.
- Infection leads to a significant decline in tree health and subsequently fruit production.
- Symptomatic fruit are unsuitable for the juice or fresh fruit market.
- There is no known treatment for CVC once trees become infected. Infected trees need to be removed.



## Possible confusion with

Plants infected with CVC show foliar symptoms similar to zinc deficiency, anthracnose and greasy spot. Fruit symptoms can be confused with sunburn.

## Host range

- All *Citrus* spp.
- Sweet oranges are the most susceptible
- Wide range of non-citrus hosts, of which many are ornamental plants

## Current distribution

- Costa Rica
- Argentina
- Brazil
- Ecuador
- Paraguay
- France
- Italy
- Spain

## Method of spread

- **Insect vectors**

Wide vector range. Xylem-feeding hemipteran insect vectors in the suborder Auchenorrhyncha (Cicadomorpha), which includes insects commonly known as spittlebugs/froghoppers, leafhoppers, sharpshooters and cicadas. Insects become infected when feeding on the xylem of an infected plant (including asymptomatic plants), and can immediately transmit the pathogen to a healthy plant. The vectors remain infectious until the time of their next moult.

- **Infected plant material**

Citrus propagation material (trees, cuttings, grafts, budwood, rootstock seedlings) and propagation material of other hosts.

- **Host plant material containing living infected insect vectors**
- **NOT fruit or seed transmitted.**

## Preventative actions

- Quarantine procedures for importation of citrus propagation material and other hosts
- 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 South Africa and onto your farm!



For more information on this disease, or if you find anything unusual, contact Wayne Kirkman from CRI's Biosecurity Division: [waynek@cri.co.za](mailto:waynek@cri.co.za), 084 458 0349

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