TRUST biosecurity threats

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

Citrus Canker

Symptoms

Leaf lesions first appear as pin-point spots that become small, light yellow, slightly raised pustules. Initially, these appear on the back leaf surface and subsequently become visible on the upper leaf surface. Young lesions are usually translucent and initially circular but may develop irregularly. Lesions become tan or brown, and as they develop become spongy or corky, and later crater-like with a raised margin and sunken centre that may crack and/or drop out. The lesions become surrounded by characteristic yellow halos. The water-soaked, oily, or greasy margin that develops around the central necrotic tissue is characteristic.

Lesions on young twigs and stems are superficially similar to those on leaves, but there may be little or no chlorosis. Lesions are generally irregularly shaped and may be sunken.

Fruit lesions are also superficially similar to those on leaves. The yellow halo may or may not be present. Old lesions are distinctly crater-like and appear as irregularly shaped, dark-brown, scabby masses on the fruit surface.

Possible misidentification

Citrus canker can be confused with citrus scab, caused by *Elsinoë fawcettii* (lemon scab, present in SA), but scab lesions are drier than canker lesions and lack the characteristic yellow halo.

Method of spread

- **Infected plant material** Citrus propagating material (trees, budwood, cuttings, grafts, rootstocks)
- **Fruit** Movement of diseased fruit (lesions on marketable fruit), infected cull fruit, and processed fruit pulp
- **Seed** Only poorly sanitised rootstock seed extracted from canker-infected fruit.

The disease

- Citrus canker is caused by the bacterium *Xanthomonas citri*.
- It is a serious disease that results in severe economic losses, either in terms of damage to trees, reduced market value of blemished fresh fruit, reduced access to export markets, or the cost related to controlling it.
- Fruit is not suitable for consumption or processing.
- Trees infected with canker become weak and unproductive.
- There is no treatment; infected trees need to be removed.

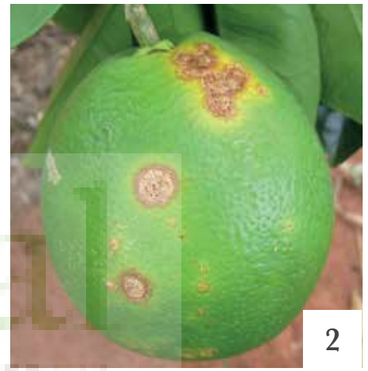
Host range

- All *Citrus* spp.

Similar fact sheets will appear in future editions to increase awareness around these perilous threats.

1 and 2: Crater-like lesions with and without yellow halos surrounding them 3: Tan raised pustules on the back of the leaf surface 4: Raised, corky lesions on the leaf surface 5: Spongy or corky lesions on the twig


1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Fruit lesions are superficially similar to those on leaves.

Current distribution

- Africa (many countries)
- America (North, Central, South)
- Asia
- Italy
- Mexico
- Oceania.

Preventative actions

- Quarantine procedures for importation of citrus propagation material and fruit.
- 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.

Citrus Variegated Chlorosis

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 back of the leaf. 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 is much smaller, very firm with hard rinds, lack juice, have an acidic flavour, and ripens prematurely.

1

2

1: Irregularly spread, small chlorotic spots between the veins on the upper surface of mature leaves 2: Fruit is much smaller than normal

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 seven 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.

Possible misidentification

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

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.

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 is 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.

Host range

- *All Citrus* spp.
- Sweet oranges are the most susceptible
- Wide range of non-citrus

Current distribution

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

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 SA and onto your farm.

These fact sheets were produced by the CRI Biosecurity Division in January 2024. For more information on these diseases, or if you find anything unusual, contact Wayne Kirkman from the CRI Biosecurity Division: waynek@cri.co.za or 084 458 0349. You may also visit www.citrusres.com

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