

# Mal secco

Have you seen this citrus disease?

## What is mal secco?

In the Mediterranean, mal secco is a destructive disease of lemons, with up to 100% of susceptible lemon trees in orchards infected.

Mal secco is a potential threat to lemon production worldwide. The disease reduces the quantity and quality of lemon production and limits the use of susceptible citrus scion cultivars and rootstocks.

Mal secco is a plant disease and is not harmful to people or animals.

## What causes mal secco?

Mal secco is caused by the wood-invading fungus *Phoma tracheiphila*.

## Which plants are affected?

Lemons are the principal citrus cultivars affected. Susceptible rootstocks include rough lemon, trifoliolate orange and Troyer and Carrizo citranges. Limes, citrons, bergamots, tangelos, tangors and some mandarin cultivars are also susceptible. Infection can occur in sweet orange (e.g. Newhall navel) and grapefruit, but is generally not severe.

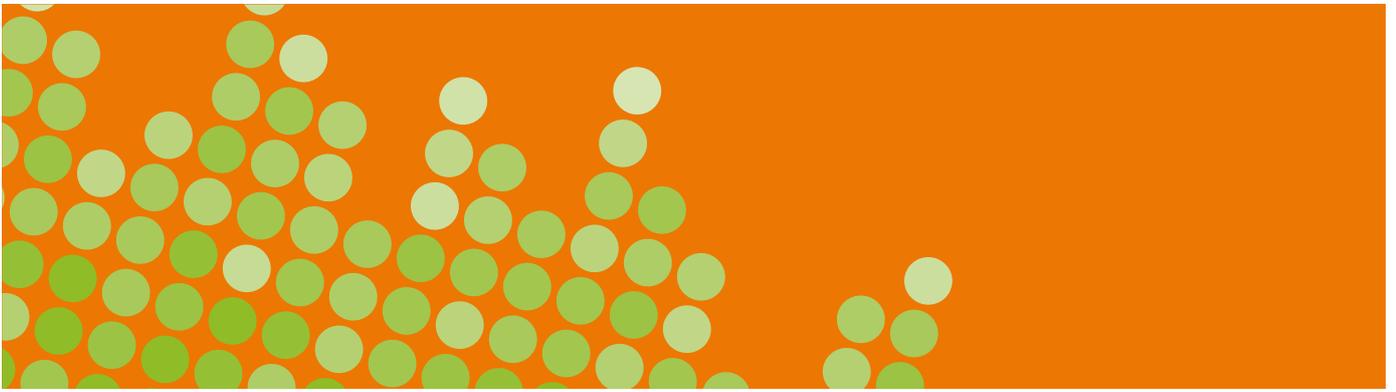
## What does mal secco look like?

Mal secco affects trees of any age, but is more severe on young trees. Symptoms may be worse in autumn or spring.



*Extensive tree dieback caused by mal secco*

*Photo courtesy of A. Kyriakou*



*Extensive tree dieback caused by mal secco*

*Photo courtesy of N. Donovan, NSW DPI*

If the disease starts in the canopy of the plant, leaves and shoots turn yellow, wilt and fall, then twigs and branches dieback. Fallen leaves may have reddish veins. Infected bark on twigs and branches may become silver-grey then rupture, revealing black fruiting bodies of the fungus within. The disease moves slowly downwards in the tree, eventually causing tree death. If the stem of the infected plant is cut open, the infected wood inside has an orange-reddish or salmon pink discolouration. The colour may be brown in older wood.

Sometimes the plant responds to infection by sprouting new shoots at the base of infected branches or producing rootstock suckers.

If the disease starts in the roots, the disease can progress rapidly and cause tree death.

Chronic infections on mature trees, probably originating from the roots, may cause a brown discoloration of the heartwood without any initial external symptoms. However, when the fungus invades the water or food conducting tissue, infected trees collapse suddenly.

There are a number of citrus disorders that can cause some of the symptoms described for mal secco, but the combination of symptoms outlined above is characteristic of the disease.



*Fungal fruiting bodies on an infected lemon stem*

*Photo courtesy of N. Donovan, NSW DPI*

## Where does mal secco occur?

Mal secco is found around the Mediterranean basin and in the Black Sea area of Europe. It is not known to occur in Australia, but there is a risk of entry through illegally imported plant material.

## How is mal secco spread?

Mal secco fungal spores can spread short distances in water or with wind-driven rain. The spores can be carried longer distances by insects, possibly by birds or animals, or on contaminated equipment (vehicles, tools, gardening equipment) or people (hands, shoes and clothing). Plant wounding can aid disease entry from contaminated pruning tools.

Etrog citron (*Citrus medica*) fruits are an important part of the Jewish cultural event known as Sukkot. Etrogs can be imported into Australia for this event, subject to strict Australian Government guidelines. To find out more about importing Etrogs or other citrus items, check BICON at [www.aqisagriculture.gov.au](http://www.aqisagriculture.gov.au).

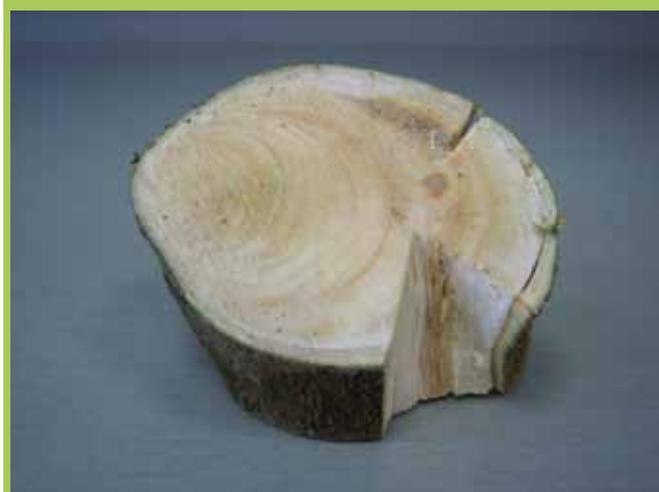
Illegal importation of infected plant material poses the greatest risk of long-distance movement of the disease. The Australian Government closely regulates approved plant imports and monitors for illegal plant movement.

## How can I protect my farm from mal secco?

There are simple steps you can take to protect your farm:

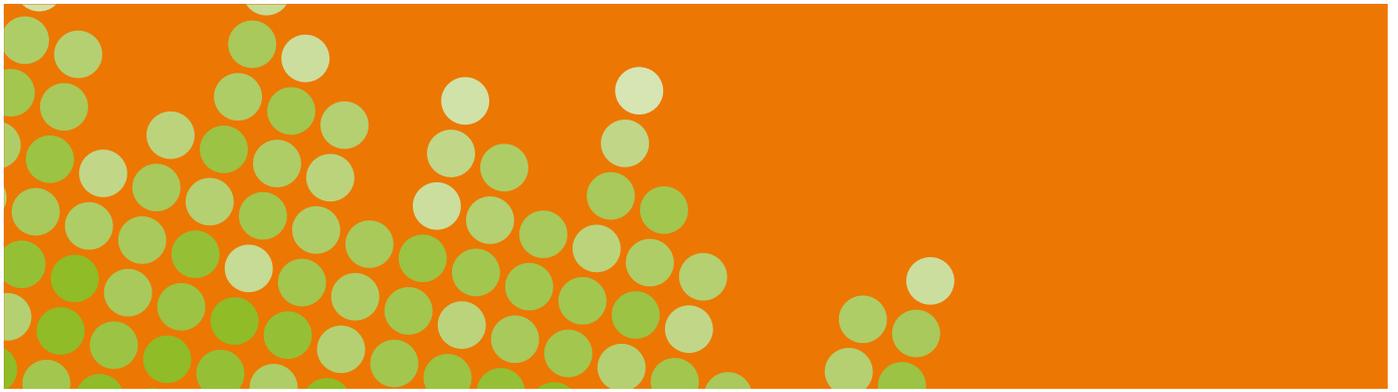
- Be aware of the mal secco threat.
- Do not illegally import citrus material.
- Purchase healthy propagation material from reputable nurseries that use Auscitrus seed and budwood, which is routinely tested for disease. On receipt of any new plants, check that they are free from pest and disease. If mal secco is suspected, isolate suspect nursery material from healthy plants until official checks are completed.

- Keep your farm clean. Use good sanitation and hygiene practices. Remember, workers, visitors, vehicles and equipment can spread diseases. Make sure equipment is clean before it enters your farm.
- Check your crop. Make sure you and your farm workers are familiar with symptoms of mal secco.
- Report anything unusual.



*Orange-brown discoloration of internal wood tissue in a lemon tree*

Photo courtesy of N. Donovan, NSW DPI



## Have you seen mal secco?

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

Be on the lookout for mal secco and report it 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](http://www.biosecurity.qld.gov.au)