Grape phylloxera

Plant Health AUSTRALIA

REGIONALISED PEST

What is grape phylloxera?

Grape phylloxera *(Daktulosphaira vitifoliae)* is a soft-bodied insect pest of grapevines, that feeds on leaves and roots, ultimately causing death to the susceptible European grapevine (*Vitis vinifera*). There are several hundred different strains of phylloxera worldwide and 83 of these are established in parts of New South Wales and Victoria.

There are currently no effective chemical or biological control measures for grape phylloxera.

What does it look like?

Grape phylloxera adults are less than 1 mm long (with crawlers even smaller), yellow to brown and have a tapered globular shape. In Australia most adult phylloxera are wingless although sterile, winged forms do occasionally occur. Eggs are lemon–yellow, oval and less than 0.3 mm long.

Damage is caused by the nymph stage, which feeds on grape roots causing brown swellings called tuberosities on older, lignified storage roots. Younger, non-lignified feeder roots develop yellow, fleshy galls when infested while root hair feeding causes hook–shaped galls that prevent the development of feeder roots. Galls on young non-lignified feeder roots and root hairs are called nodosities. Root damage caused by grape phylloxera can lead to secondary fungal or bacterial infection and root death. Vines on tolerant rootstocks often have nodosities and tuberosities but do not have above ground symptoms. Infested susceptible vines gradually lose vigour, turn yellow and become stunted. New shoots fail to emerge and infestation results in the gradual death of the vine.

Depending on grapevine species, cultivar and environmental conditions, phylloxera can also feed on leaves. In Australia, this is rare. Galls caused by leaf feeding are spiny, pocketlike protrusions on the lower surface of leaves. These galls develop continuously until the leaf is fully expanded.

Colony of grape phylloxera, showing multiple life cycle stages

Jack Kelly Clark, University of California Statewide IPM Program

Grape phylloxera adults, crawlers and eggs on a match head

Agriculture Victoria

What can it be confused with?

Grape phylloxera symptoms, including leaf yellowing and stunted growth, can be confused with water stress and bacterial and fungal root infection. Leaf galls caused by grape leaf blister mite (*Colomerus vitis*) could be confused with leaf galls caused by phylloxera, however, grape leaf blister mite galls protrude to the upper surface of the leaf rather than the lower surface. Parasitic nematodes also form galls on vine roots but are circular in shape and are usually smaller than phylloxera nodosities.

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What should I look for?

Look for vines with yellowing and stunted growth. Damage in vineyards begins in a small area where the insect first invades, and continues to spread outwards, widening the zone of infected vines over several seasons. Infested vines commonly have weeds growing under them due to the inability of the vine to compete for soil moisture. Inspect the roots of plants which have symptoms of water stress. Look for galls on the lower surface of leaves, these are currently rare in strains established in Australia and could indicate an incursion of an exotic phylloxera strain.

How does it spread?

Spread of grapevine phylloxera largely occurs through human-assisted movement of infested grapevine material and soil, on footwear, clothing, equipment, machinery, and in grapes and grape products.
The crawler stage is the most mobile and involved in dispersal. In some instances, grape phylloxera can be dispersed by wind and flood waters.

Where is it now?

Grape phylloxera is native to North America but is now widespread throughout the Americas, Europe, Asia and the Middle East and some parts of Africa, New Zealand and Australia. Grape phylloxera is present in parts of New South Wales and Victoria. The states of South Australia, Western Australia and Tasmania have not become infested with phylloxera and Queensland is also phylloxera-free.

How can I protect my vineyard from grape phylloxera?

Plant a proportion of your vineyard to phylloxera tolerant rootstocks as a risk management strategy. Always adhere to state quarantine regulations on requirements for cleaning and sterilisation of items you import from interstate or from another phylloxera management zone. Record who comes onto your property and assess the risk they pose. Practice a clean in, clean out policy for vehicles, machinery, equipment and footwear. Regularly check your vines for symptoms and if you see anything unusual, call the **Exotic Plant Pest Hotline** on **1800 084 881**.

Loss of vigour due to grape phylloxera infestation

Paul Dennis, Agriculture Victoria

Galls on underside of grapevine leaves caused by grape phylloxera

Whitney Cranshaw, Colorado State University, Bugwood.org

IF YOU SEE ANYTHING UNUSUAL, CALL THE EXOTIC PLANT PEST HOTLINE

1800 084 881

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