NSW GOVERNMENT Department of Primary Industries

primefact

Grape phylloxera

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Plant Biosecurity & Product Integrity Orange

Grape phylloxera (*Daktulosphaira vitifoliae*) is a plant pest of grapevines in parts of New South Wales and Victoria

Phylloxera is a soft bodied insect, often described as aphid like in appearance

This insect is a serious threat to Australia's grape and wine industry

Grape phylloxera

Phylloxera feeds on the roots of grapevines. In the summer months phylloxera moves from the roots to the soil surface and into the grapevine canopy where crawlers loiter but rarely cause damage. Phylloxera has a poor tolerance to heat and low humidity.

In North America there is a winged form of phylloxera however it has rarely been seen in Australia and appears to be sterile.

Signs of infestation

The first signs of a phylloxera infestation in a vineyard are yellowing and stunted growth of individual grapevines (Figure 1).

Another sign is an increase in weed growth under an infested grapevine. These symptoms usually appear 1−3 years after the initial infestation.

Damage

Phylloxera feeds on grapevine roots by puncturing the root surface. The grapevine responds by forming galls on the root hairs and swellings on older roots.

Galls on the root hairs have a characteristic hook shaped form and hinder the growth of feeder roots. On larger roots there can be swelling of the root tissue and subsequent decay through secondary fungal or bacterial infections.

Figure 1 Phylloxera infested vineyard showing yellowing of grapevines

Figure 2 Phylloxera crawlers on a grapevine root (approx. 1 mm)

Root damage and the loss of feeder roots causes the grapevine to decline and eventually die.

Once phylloxera is established in a vineyard the only way to remove phylloxera is to remove all the grapevines and not replant.

Description

Phylloxera adults are 1 mm in length. They are yellow in colour in the summer, tending to brown in the winter.

Immature phylloxera are called crawlers or nymphs and resemble the adult in shape.

Eggs are yellow and less than 0.3 mm long.

Lifecycle

Phylloxera is able to reproduce asexually. An adult female is capable of laying up to 200 eggs per year without mating.

Phylloxera crawlers hatch from eggs laid on the grapevine roots during spring and summer. Crawlers may remain in the root system or climb up the vine into the leaf canopy where they undergo four development stages.

Peak population numbers in Australia occur in January and February. Phylloxera survives the winter in the form of eggs or crawlers on the nodules or galls on the grapevine roots.

Hosts

Host plants of phylloxera are grapevines in the genus *Vitis*. *Vitis* species differ in tolerance or resistance to phylloxera.

Roots of European grapevine (*Vitis vinifera*) are susceptible to attack by the root feeding form of phylloxera, but the leaves are resistant.

The American grapevine (*Vitis riparia)* withstands extensive galling of the leaves but is resistant to root attack by phylloxera.

Spread

Phylloxera has spread worldwide with the movement of infested plant material.

The natural spread of phylloxera within an infested vineyard is approximately 100 m a year.

Once established in a vineyard phylloxera can be spread by:

- grapevine foliage and cuttings
- soil from vineyards
- vehicles and machinery used in a vineyard
- equipment used in the growing and harvesting of grapes, including bins, buckets, vine guards and vineyard posts
- whole fresh grapes, grape marc, unfiltered juice and unfermented grape must
- people and clothing

Phylloxera can survive for up to eight days without feeding on grapevines.

Distribution

Phylloxera is native to North America and has spread to most of the world's wine regions including in Australia.

Australian distribution

Phylloxera Infested Zones (PIZ) are gazetted zones which have vineyards infested with phylloxera. Victoria and New South Wales are the only Australian states with PIZ.

New South Wales PIZ are declared as the Albury/Corowa region and the Greater Sydney region.

Victoria PIZ are declared as Nagambie, Mooroopna, Upton, North East Victoria and Maroondah.

Quarantine and movement restrictions apply to all PIZ regions.

Actions to minimise risks

Put in place biosecurity best practice actions to prevent entry, establishment and spread of pests and diseases:

- practice "Come clean, Go clean"
- ensure all staff and visitors are instructed in and adhere to your business management hygiene requirements
- monitor your plants regularly: the best time to check grapevines is between December and April
- source plant material of a known high health status from reputable suppliers
- keep records

Reporting

If you suspect grape phylloxera inside a PEZ:

Call the Exotic Plant Pest Hotline on **1800 084 881**

Take photos not samples to minimise the risk of spreading this pest

Email clear photos with a brief explanation and contact details to biosecurity@dpi.nsw.gov.au

A plant pest is a disease causing organism or an invertebrate which threatens agricultural production, forestry or native and amenity plants.

More information

Vinehealth Australia - www.vinehealth.com.au

Primefact 1428 – Surveillance and management of grape phylloxera in Australia, NSW DPI

Acknowledgments

Figures 1 & 2 courtesy of Kevin Powell, DEPI Victoria

This primefact replaces aspects of:

Primefact 553 – Grapevine phylloxera: the world's worst grape vine pest, NSW DPI

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