NSW GOVERNMENT Department of Primary Industries

primefact

Surveillance and management of grape phylloxera in Australia

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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

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

Grape phylloxera

Grape phylloxera (*Daktulosphaira vitifoliae*) is a small (less than 1 mm) aphid-like insect that lives and feeds on the roots of grapevines. Root damage caused by phylloxera results in grapevine decline and eventually death.

In spring and summer, phylloxera emerge at the soil surface before crawling up into the grapevine canopy where they move around on leaves and grape bunches but do not feed or cause damage.

Phylloxera spreads with the movement of people, machinery, infested soil and grapevine material. Phylloxera has limited ability to spread on its own.

There is no control for phylloxera and once established in a vineyard the only way to manage it is to remove all susceptible grapevines.

Management and surveillance of phylloxera in Australia is necessary to detect, track and reduce the impact of phylloxera on Australian viticulture.

Phylloxera in Australia

Phylloxera was first discovered in Australia in 1877 at Geelong, Victoria. The first detection in New South Wales occurred in 1884 at Camden.

Currently, most of Australia's main vineyard regions are free of phylloxera. In order to protect these areas phylloxera zones have been declared in New South Wales and Victoria.

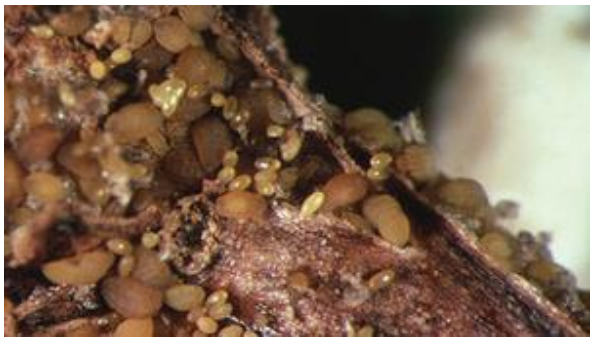

Figure 1 Phylloxera adults, crawlers and eggs on a grapevine root (adults approx. 1 mm)

Figure 2 Phylloxera infested vineyard showing a patch of declining of grapevines

Phylloxera Quarantine Areas

Quarantine boundaries have been established in Australia to prevent spread of phylloxera from known Phylloxera Infested Zones (PIZ) to phylloxera free areas known as Phylloxera Exclusion Zones (PEZ). Areas of unknown status are referred to as Phylloxera Risk Zones (PRZ).

In New South Wales, two PIZ's have been declared, one around Albury/Corowa and another in the Greater Sydney Region.

The rest of New South Wales is a declared PEZ because rigorous phylloxera surveillance in 2002−05 found no further infested areas.

In Victoria, declared PIZ's are Nagambie, Mooroopna, Whitebridge, Upton, North East Victoria and Maroondah.

The whole of South Australia and some parts of Victoria and Queensland are declared PEZ's and large areas of Queensland and Victoria have PRZ status.

Surveillance

The common form of surveillance for phylloxera is called ground surveying. Ground surveys are best conducted in vineyards between December and April when phylloxera is most active.

Surveillance should be done at the margins of deteriorating vine patches. Close inspection for phylloxera colonies and damage on fibrous roots should be carried out near the base of vines. Infested vines will have fleshy yellow galls on fibrous roots with pinhead sized yellow insects on the gall surfaces and swellings on older roots.

Vines in the centre of deteriorating patches have badly damaged root systems with no fibrous roots.

As well as ground surveys, aerial surveys using near infrared photography of the grapevine canopy can be used to identify vines showing decline or premature yellowing. If phylloxera is the suspected cause of these symptoms, always follow up with a root inspection to confirm phylloxera presence or absence.

Phylloxera trapping

Another method currently under development for detection of phylloxera is an emergence trap. This method of trapping can be used in spring and summer months as crawlers move from the vine roots onto the soil surface.

The trap involves a bucket or similar container which is moistened on the inside surface and then placed upside down at the base of a grapevine (Figure 3). The container is pegged to the ground to create an airtight seal and encourage a build up of humidity within.

As phylloxera crawlers move from roots to canopy, some will emerge within the inverted container and move up the inside walls. Condensation on the inside surface of the container catches the phylloxera crawlers.

When traps are retrieved after 3 to 4 weeks the accumulated condensation can be collected in ethanol or methylated spirits and inspected for phylloxera using a microscope. Suspected phylloxera should be verified by an expert.

Figure 3 Phylloxera trapping method using inverted containers at the base of grapevines

Management options

Prevention

Spread of phylloxera to new locations is generally a result of unintentional movement of the insect by people. Phylloxera can be transferred on grape and grapevine material, through equipment that has been used in infested vineyards and by people on their clothing or footwear moving from infested to non-infested vineyards.

Signage discouraging entry into phylloxera-free vineyards should be observed at all times.

Planting material should always be purchased from certified nurseries in phylloxera-free areas, and should be hot-water treated in accordance with state regulations.

Management

At present there is no effective and economic long-term solution for controlling phylloxera. The use of tolerant rootstock is the only effective way to prevent damage and reduce pest populations in phylloxera infested vineyards.

All vineyards in actual or potential danger from phylloxera should be planted with vines grafted onto tolerant rootstocks.

No insecticides are known to provide effective control of phylloxera. There are no chemicals registered for the control of phylloxera in Australia.

Phylloxera crawlers can be present on the leaves and fruit of infested grapevines. Any grapes, must, unfiltered or unfermented juice, harvesting machines, picking buckets, grape bins or other equipment in contact with fruit or foliage may be contaminated with phylloxera crawlers and should be treated accordingly.

For vineyards in a PIZ it is illegal to move vineyard soil, vine cuttings, rootlings, potted vines, unprocessed wine grapes or non-packaged table grapes out of the infested zone.

No viticultural equipment, including mechanical harvesters, can be moved from a PIZ without washing, steam cleaning or heat treatment and certification from quarantine authorities.

Plant Diseases Act subordinate legislation

Conditions of movement relating to phylloxera are available on the NSW DPI Plant Diseases Act web page.

The NSW Plant Quarantine Manual summarises movement conditions and is also available online.

Proclamation P176 (Plant Diseases Act 1924) prohibits the introduction into NSW of soil, grape vines (including cuttings and rootlings), whole wine grapes, must, unfiltered juice and pre-fermentation marc from a PIZ.

The Summary of Phylloxera Movement Conditions is available online to assist you in determining regulatory requirements for the movement of risk items.

Reporting

If you suspect grape phylloxera in a Phylloxera Exclusion Zone:

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

More information

Vinehealth Australia - www.vinehealth.com.au

Primefact 1383 – Grape phylloxera, NSW DPI

NSW Plant Diseases Act 1924 and subordinate legislation - http://www.dpi.nsw.gov.au/aboutus/about/legislation-acts/plant-diseases#Act

Acknowledgments

Figures 1 and 2 courtesy of Kevin Powell, DEDJTR

Figure 3 courtesy of Rebekah Niall, NSW DPI

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