KEEP PHYLLOXERA OUT OF THE MURRAY VALLEY

APRIL WINCKEL - MURRAY VALLEY WINEGROWERS' INC.

The first detection in Australia of the destructive vine louse Phylloxera was at Geelong in 1877, after which it spread to other districts of Victoria and to vineyards in southern NSW at Corowa and Camden near Sydney. Phylloxera is considered the world's worst grapevine pest because it is currently impossible to eradicate. It gradually spreads through the vineyard killing all vines. Once you have phylloxera, your only options are to remove the vineyard or replant vines on phylloxera resistant rootstocks to reduce the impact of the pest. While resistant rootstocks can better cope with phylloxera, they do not eliminate the pest from the vineyard.

Phylloxera

Phylloxera is a 1mm long small yellow insect, that lives and feeds exclusively on grapevine roots and sometimes on the leaves. The insect reduces the vigour and growth of vines and eventually kills them.

Adults are all female and reproduce asexually. One adult female is capable of laying up to 200 eggs per cycle several times in her life. This means only one insect is needed to infest a vineyard.

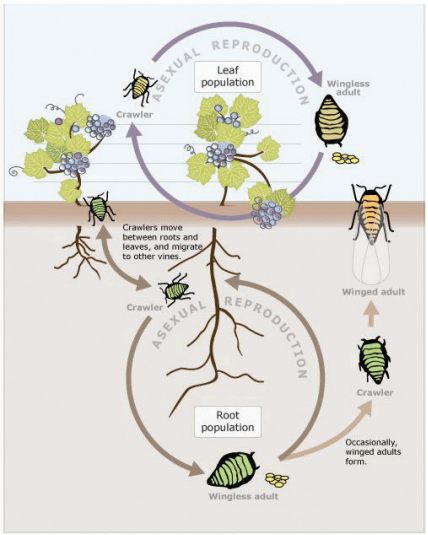
The eggs hatch during spring into nymphs, and then develop into crawlers. The crawler stages are from 5 to 8 weeks to adulthood, depending on the nutrition and environmental conditions. Once adult they lay eggs continuously during their life. Small numbers of phylloxera survive over winter, sheltering underground on vine roots and occasionally under the bark at the base of the vine. Crawlers are most abundant from November to March, with the peak populations in January and February.

Phylloxera only survives for up to 8 days without feeding on grapevines. It is a soft bodied insect with poor tolerance for heat and prefers high humidity.

Why We Need To Keep Phylloxera Out Of The Murray Valley

Currently only 60 % of grapevines in the Murray Valley are grown on rootstocks. Not all rootstocks are equally resistant to phylloxera and recent experience in California has shown some rootstocks previously thought resistant are now considered susceptible.

There are significant and escalating costs of phylloxera being found in a vineyard, beginning with $175 per ha to survey for the pest, based on recent surveys. Additional cost to growers would include removal of vines, declining yields and loss of crops – as an area which has been confirmed to have a phylloxera infestation cannot be replanted with vines until all vine root material is dead. Another major impact is reduced market access through restrictions on the movement of fruit from an infested vineyard and surrounding quarantine zone. All fruit within a quarantine zone would have to be processed locally, and current movement of large volumes of fruit for processing outside the Murray Valley would be compromised or prevented – meaning the economic impact of an infestation is not isolated to the infested vineyard.



Phylloxera Lifecycle

Phylloxera Crawlers
Photo courtesy of Kevin Powell, DPI - Victoria

Phylloxera Symptoms

Phylloxera can be present and remain unseen in vineyards for years. The first symptom is decline in vine vigour which may not be obvious for a number of years, particularly if vines are well watered and fertilized. Phylloxera lives on roots, causing galls to develop on the root hairs and swellings on older roots and root tissue, with subsequent decay through secondary fungal and bacterial infections. Other symptoms include permanent yellowing of vines, crop yield reduction and stunted growth due to reduced root and leaf function. Vine death may occur within 5-6 years, with decline accelerating through the increasing stress on the vine as the roots are continuously attacked.

How Phylloxera Is Spread

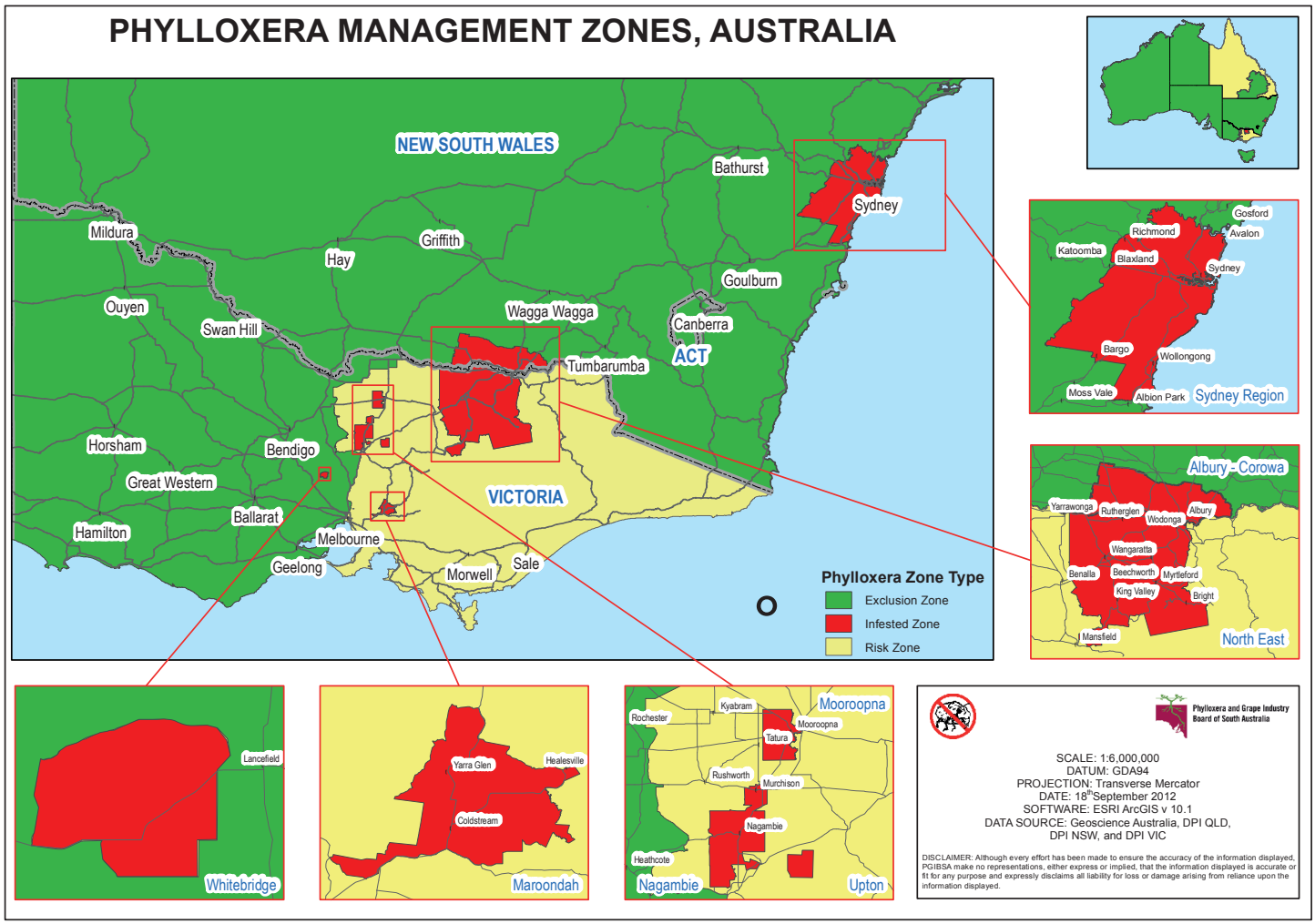
Phylloxera infestation spreads slowly from vine to adjacent vine as the insects move through the soil. In the Northern Hemisphere the winged aphid form of phylloxera is also present and can spread in the prevailing wind direction, however it is unclear whether this form of the insect has occurred in Australia. The most common and rapid spread of the insect is by people as they transport plant material, or machinery and vehicles through infested areas.
Phylloxera is most commonly spread via:

- Whole grapes and other grapevine materials (eg. rootlings, cuttings, leaves, stems)
- Grape products such as must and juice
- Vineyard soil
- Movement of machinery and vehicles between vineyards
- Grape bins and other vineyard equipment
- People and clothing (e.g. shoes, secateurs).

Phylloxera Zones

Phylloxera is currently known to be in parts of Victoria and NSW, shown on map below. All of South Australia, Tasmania and the **Murray Valley Wine Regions of Murray-Darling and Swan Hill** are declared Phylloxera **free** and declared as Phylloxera Exclusion Zones (PEZ) based on historical data. Most of Western Victoria has recently been surveyed and declared as a new consolidated PEZ incorporating the Victorian areas of the Murray Valley wine regions. There are three defined phylloxera management zones used in Australia. The movement of grapevine plant material from the different zones have different requirements depending on their phylloxera status.

- PIZ (Phylloxera Infested Zone) is a region that is known to have the pest and is treated under regulation as if all vineyards within the boundary are infested. Regulations prohibit the movement of whole grapes, soil or grapevine material as well as machinery out of a PIZ to a PRZ or PEZ except under strict conditions and Government inspection protocols.
- PRZ (Phylloxera Risk Zone) is an area that has not completed a strict survey regimen to show that all vineyards in the Zone are Phylloxera free and are considered at risk.
- PEZ (Phylloxera Exclusion Zone) is an area that is considered Phylloxera free either through historical and geographical evidence or by completing the rezoning survey protocol.



Stopping The Spread Of Phylloxera

Grape growers are strongly encouraged to monitor their vines regularly to look for signs of vine damage or low vigour which may be attributable to a phylloxera infestation. The best time to check for signs is between December and April. Look for stunted growth, permanent yellowing and check the roots for signs of damage. The insects will not always be evident as they are microscopic. Farm gate hygiene practices by grape growers and vineyard staff are vital in protecting against phylloxera by inspecting vineyards for signs of its presence on a regular basis and reporting any suspicions straight away. This can be done while you and your staff or contractors are in the vineyard – spraying, checking irrigation, yield forecasting or pest and disease monitoring.

Procedures to reduce risk of infestation:

- Best biosecurity practice is to ensure that all host materials are disinfested - even when transported from another vineyard within a PEZ. Keep records for at least 6 years of all movements of vine materials, soil, machinery and vineyard equipment either on to your vineyard or to another grower's vineyard to allow traceback / trace forward in the event of an infestation.

At a minimum:

- Prevent unauthorised entry into vineyards using signs, directed access and designated visitor parking. Keep and provide access protocols & instructions for visitors & contractors.
- Check employees, contractors and visitors for recent travel in Phylloxera Infested Zones (PIZ). Restrict access if they have travelled directly from a PIZ to your vineyard. Deny access for any machinery transported from a PIZ without DPI/DEPI certification allowing its movement.
- Provide and use disinfestation procedures – particularly for footwear (check for and remove mud and soil prior to dipping in a bleach bath for a minimum of 30 secs).
- Only remove grape bunches for testing that are free of leaves and plant material and secured in sealed plastic bags.
- Under no circumstances accept any grapevine material including grapes, untreated cuttings and grapevine rootlings, or any soil from either a PIZ or Phylloxera Risk Zone (PRZ).
- Purchase vines only from reputable nurseries within a PEZ.
- Immediately report suspected infestations or poor vigour vines.

For more information read the National Phylloxera Protocol (www.phylloxera.com.au).

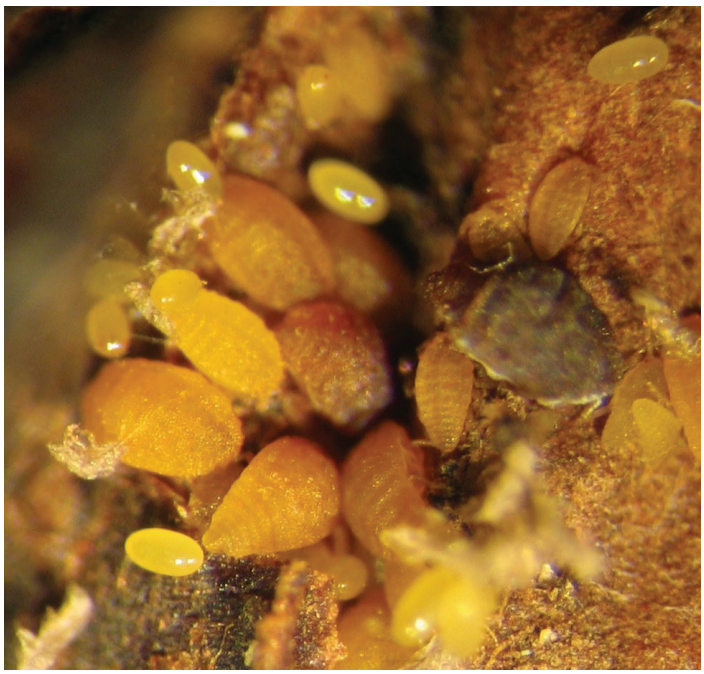
What If Phylloxera Is Discovered In The Murray Valley?

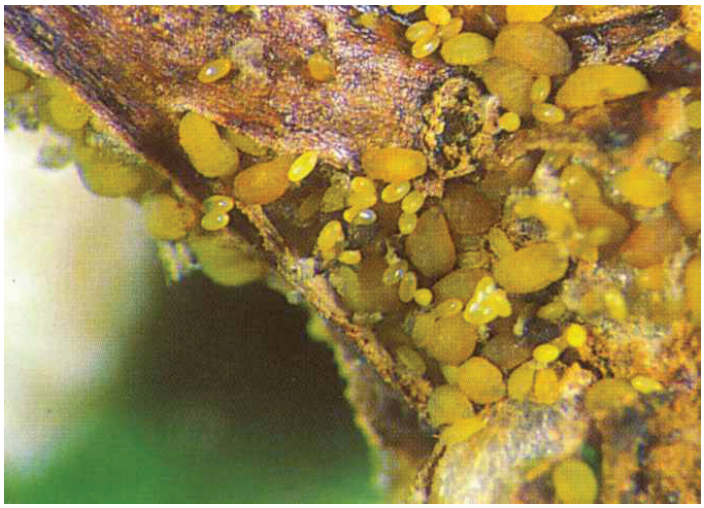
Phylloxera discovery in a new region will start a process to prevent further spread and attempt to discover its origin. Phylloxera is confirmed by DPI/DEPI officers, and an Infested Land Notice is placed on the property.

- All movement of fruit, vine material or soil from the vineyard must cease immediately.
- DNA typing and a trace-back / trace-forward operation are carried out to confirm identification of phylloxera biotype (indicating likely regional source) and try to find how the pest arrived on the property.
- All vineyards within 5km and any which have had contact with the original property are then surveyed to see if there are further infestations.

- Records of planting material, machinery and contractor movements are inspected.
- Vineyards that have used machinery, contractors or personnel who have had contact with the infested property are checked.
- Permission to move fruit to another PIZ may be given under strict protocol conditions. (experience has shown all buyers from outside the region suspend purchases immediately from the infested vineyard and any vineyards nearby)
- Public meetings will be held to inform growers and contractors of the process.
- If no further infested properties are found, a final quarantine zone (PIZ) is declared with a radius of approximately 5km from the detection, determined by consultation with the local industry and by the geography of the area - with local features such as roads or rivers used to delineate the zone.
- As soon as the extent of Phylloxera outbreak is confirmed, the PIZ is gazetted and becomes law. All movement of whole grapes from the new PIZ to any PRZ or PEZ must cease. This requires that all red grapes be fermented to dry wine and all white grapes must be processed to cold settled juice filtered to 0.5 micron, within the zone.
- Movement of all other grape material, rootlings and soil etc out of the zone is prohibited. Movement of machinery is subject to heat treatment and DPI/DEPI inspection before being allowed out of the zone.

There is no restriction of grape material, vineyard soil or machinery movement within the PIZ but they cannot cross the PIZ boundary without processing, or heat treatment and DPI/DEPI certification. Nevertheless in the event of a PIZ declaration, growers with uninfested vineyards within the PIZ should implement strict movement and vineyard hygiene protocols to minimise the risk of phylloxera being spread to their vines.





Phylloxera Quarantine Contacts

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