



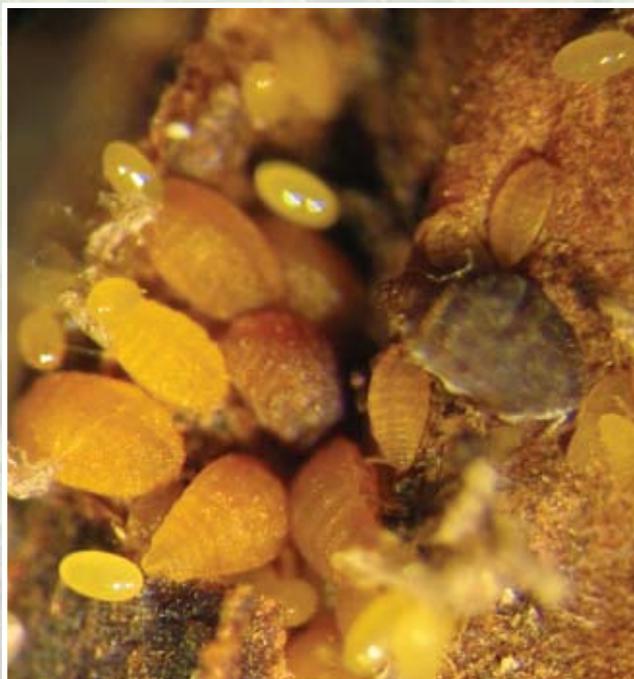
# Inspecting Vineyards for Phylloxera

## OVERVIEW

one of the most important facts to emerge from recent phylloxera outbreaks is that grapegrowers and vineyard staff are generally the first to notice the signs of phylloxera attack. typically, however, the first symptoms are ignored or passed off as something else, which gives the phylloxera more time to spread both within the vineyard and beyond. If phylloxera can be detected early, the chances of containment, or at least minimising the extent of the infestation and slowing its spread, are greatly improved. this in turn would mean far less economic impact on grapegrowers in the infested region.

Grapegrowers and vineyard workers can play a vital role in protecting South Australia from phylloxera, by inspecting their vineyards for signs of its presence on a regular basis and reporting any suspicions straight away.

this should not be a difficult or time-consuming job, as you would carry out the inspection while you, your workers or contractors are in the vineyard anyway – spraying, checking irrigations, yield forecasting or pest and disease monitoring.



## WHAT TO LOOK FOR

For phylloxera detection, vigilance is required from bud-burst to leaf-fall.

### 1. Spring/early summer

#### Slow and stunted shoot growth

the shoots of the first infested vines will usually be slow to grow and will be noticeably stunted soon after budburst. From December onwards they will appear both stunted and stressed (Figure 1). the neighbouring vines will be beginning to show the earliest symptoms, which will become more obvious as the season progresses.

If the infestation has been present for another 12 months without detection, then the following symptoms will be detectable soon after budburst:

#### failure of buds on the first infested vines to burst (figure 2).

the shoots on adjacent vines will be slow to grow and by December will appear both stunted and stressed (Figure 3). Vines next to them will be beginning to show the earliest symptoms.

*Figure 3 demonstrates many symptoms consistent with early phylloxera infestation: stunted shoot growth, leaves malformed and small, internode length reduced when compared with adjacent vines, poor % budburst, spurs dead, slight apical dominance.*



FIGURE 1



FIGURE 2



FIGURE 3



FIGURE 4

### 2. Late summer/early autumn

this is when the earliest symptoms of phylloxera damage in the canopy can be seen. these are:

#### yellowing and/or marginal reddening of the leaves and early autumn defoliation (figure 4).

Leaf yellowing is an early symptom in all grape varieties. this will normally be seen in two to three neighbouring vines – usually, but not always within the same row. this is because phylloxera tends to spread out from the roots of the vine where it was first introduced, causing an “oil spot” pattern of symptomatic vines which increases progressively in size as more vines become infested.

## Detecting Phylloxera in grafted vines

If you have vines grafted to phylloxera resistant rootstocks, then visual symptoms in the canopy do not occur, with the exception of leaf galling (see below), making early detection more difficult. however, it is important to monitor grafted vines, as they can sustain small populations of phylloxera insects, which can spread to ungrafted vines and cause more damage.

In humid seasons, phylloxera galls may occur on the leaves of suckers of rootstocks (Figure 5). Another useful practice is to look for phylloxera galls on vine seedlings or rooted prunings that sometimes appear in the under vine strip, particularly prior to herbicide application.



FIGURE 5



Spray operators are in a good position to observe symptoms, particularly in very large vineyards. they see the vines regularly and are often the first to note changes in the size and appearance of the vine canopy. make sure they know what to look for and report any unusual symptoms.

## WHAT IF SYMPTOMS ARE FOUND?

### step 1: make a record

Note the symptoms and report to the vineyard owner. record the vine and row location of symptomatic vines and/or tag the vines, and take photos if possible.

### step 2: eliminate other possibilities

the apparent early symptoms of phylloxera damage are often indications for other disorders such as water stress, nutrient deficiency or fungal attack to the roots or foliage. these possibilities should be considered first.

### step 3: root examination

If there is no obvious (other) reason for the symptoms, then the next step is to examine the roots to see whether any phylloxera insects or galls can be detected (see box). this is best done in spring or summer.

### step 4: contact Vinehealth Australia

If you find any evidence of root galls or phylloxera insects, you **MUST** report it to Vinehealth Australia or PIRSA immediately. even if you do not find anything, we still recommend that you contact Vinehealth Australia for advice, if you have observed canopy symptoms like those described, *and there is no other obvious explanation for them.*

## WHAT WILL VINEHEALTH AUSTRALIADO?

Vinehealth Australia will inspect your vineyard, and (if root galls or insects still cannot be found) will put out a number of “emergence traps”, which trap phylloxera moving from the vine roots up into the canopy (see figure 6).

the trap is pegged and left for 2 – 4 weeks to collect insect specimens. these are then bagged and sent to an entomologist for analysis.

If phylloxera is not found, it is still important to continue monitoring the site until the cause of the problem has been identified.



FIGURE 6



FIGURE 7



FIGURE 8



FIGURE 9



FIGURE 10

## Root examination for Phylloxera

Dig under the suspect vines within 60cm of the trunk or in the vicinity of irrigation drippers to expose the actively growing feeder roots.

Sever the roots if necessary to collect a piece of root mass containing fibrous roots at least one hand's width wide (or 10cm long) (Figure 7).

Inspect the root material using a 10x magnification hand lens (Figure 8).

Look for distinctive yellow, fleshy root galls (Figure 9) or individual insects (see page 1) on the fibrous roots.

Examine the storage roots for insect colonies or swellings (Figure 10).

*Produced by The Phylloxera and Grape Industry Board of South Australia (now known as Vinehealth Australia) with the assistance of Dr. Jim Hardie and Dr. Kevin Powell.*

*Photos supplied by the DPI Rutherglen Centre and Dan Newson (Yalumba).*



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