



Phylloxera heads west

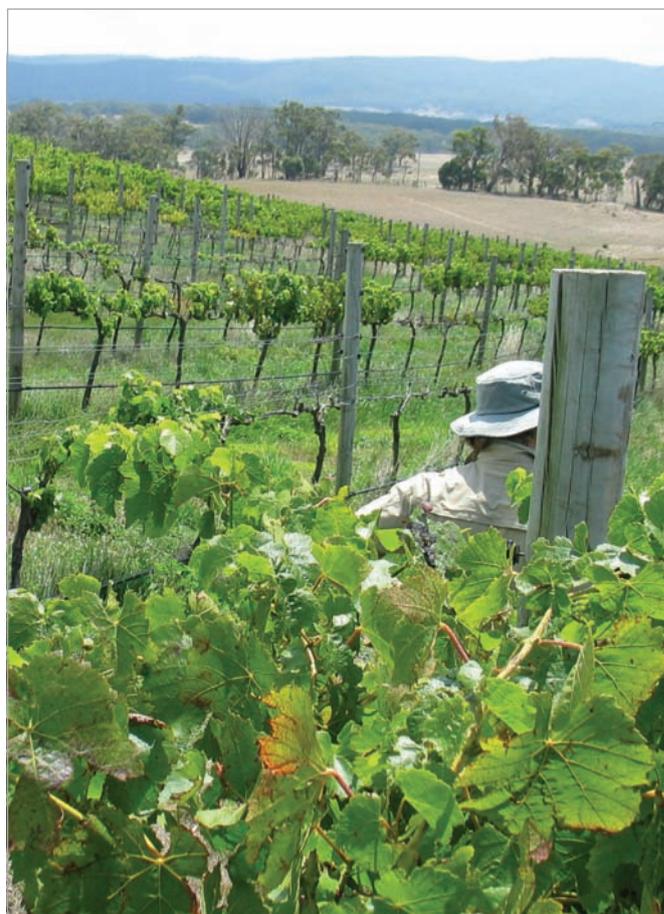
In January 2008, the Victorian Department of Primary Industries confirmed an outbreak of phylloxera on a property in the Macedon Ranges. It follows other recent outbreaks in Victoria: in the Yarra Valley and Murchison (2006), Eurobin (2004), Buckland Valley (2003), and Upton (2000). The vineyard is approximately 50km northwest from Melbourne, and 60 km from the closest Phylloxera Infested Zone (PIZ). All fruit from the 30 hectare property is processed at the Rochford winery in the Yarra Valley. Rochford's vineyards have been surveyed and have been found to be free from phylloxera.

Surveys were also undertaken of a further five commercial and two non-commercial plantings that are within 5km of the infested property and no phylloxera was found. On completion of surveys, a control area was established and officially declared as the Whitebridge PIZ in February.

DNA analysis of the insects by Dr Kevin Powell has identified them as the G1 genotype. This is the most common genotype and is also found in infested vineyards in Glenrowan, the Yarra Valley, Rutherglen, Nagambie, Upton, Murchison and Orchard Hills (NSW). Identifying the origin of the outbreak is therefore unlikely.

Formal investigations and extensive ground surveys of the infested property indicate that the vineyard may have been infested for a long time. It appears that the most heavily infested block within the vineyard has been exhibiting symptoms since early 2000, however poor vine vigour was attributed to soil profile or lack of water.

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Board 5-year plan released

Major education and awareness campaigns, expansion of rootstock trials and research into early detection and phylloxera eradication; these are some of the key features of the Phylloxera & Grape Industry Board's new 5-year strategic plan.

The plan takes into account the steady rise in the number of new vineyards recently found to have phylloxera. The most recent detection occurred at a vineyard near Mt Macedon and follows detections in the Yarra Valley and Murchison in the previous 18 months (see article above).

The Board has identified four priorities; preventing the entry of phylloxera and other pests and diseases; early detection, the capacity to respond to an outbreak and measures to minimise damage and aid recovery.

While the major focus of the plan is on prevention, the Board recognises that it must be able to respond to an outbreak whether that is phylloxera or an exotic pest such as the Glassywinged Sharpshooter. Funding is to be provided to enable research to be undertaken into an eradication trial in a phylloxera-infested vineyard in Victoria. Eradication has been attempted in the past but without success primarily because the insect has been able to spread to other vineyards before the initial outbreak was detected. However the Board, through its early detection program (combining remote sensing and vineyard inspections), believes it would be in a reasonable position to attempt eradication before the insect spreads. A phylloxera eradication policy is seen as very important to maintain South Australia's collection of aged commercial grapevines.

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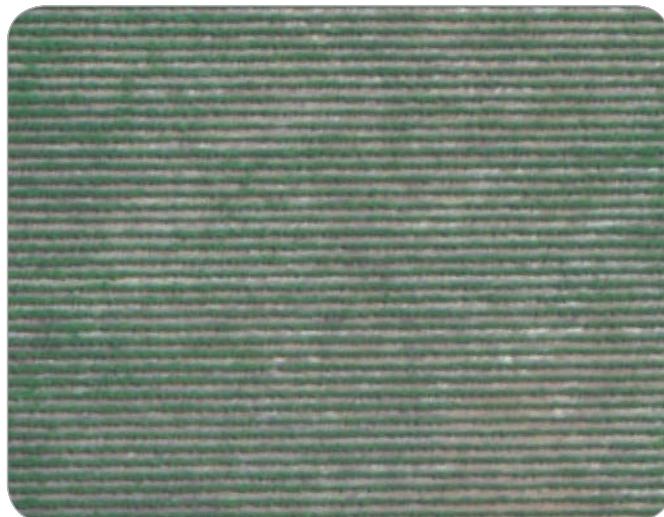
GIS program update: no news is good news

Vineyard inspections were undertaken in the McLaren Vale and Adelaide Plains wine regions during February by PGIBSA staff. A total of 49 sites were inspected across the regions with no phylloxera detected. The single major cause of low vigour was weeds (mainly convolvulus) followed by water stress and replants. Two sites were the result of accidental fire. Emergence traps were placed at one site where root samples could not be extracted. The contents were analysed by Dr. Kevin Powell, DPI Victoria, and no phylloxera insects were detected. In the McLaren Vale region the 2007 imagery was compared with previous imagery taken in 2002, to eliminate sites of low vigour where the decline was unchanged compared to the 2002 imagery.

Imagery covering Clare, Barossa and Eden Valleys and Southern Fleurieu was acquired in January 2008. This imagery and the vigour maps produced from the imagery will be used to identify sites of low vigour and inspections of these sites will be carried out in December.

Road names

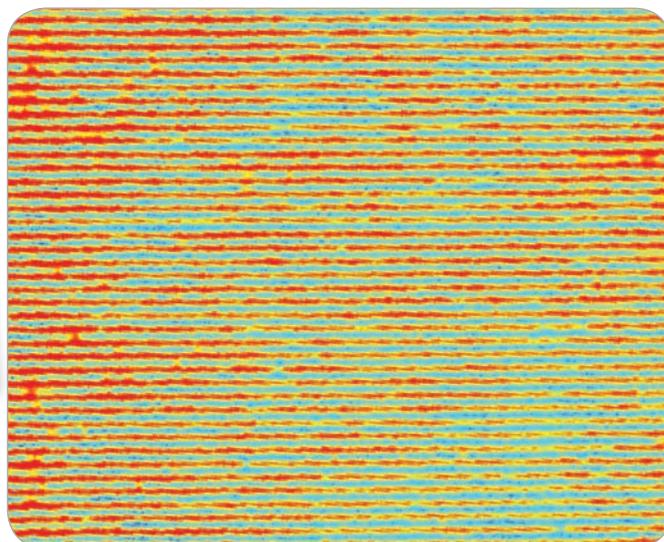
Thanks to all those who have been adding or correcting road names on their vineyard maps supplied by the Board. This information has been passed on to the Department for Transport, Energy and Infrastructure to help in the task currently underway of producing an up-to-date and accurate GIS file of South Australia's roads. These road name changes as well as any changes notified to block boundaries should be reflected on your vineyard return this year. For more information contact Martin Nolan on (08) 8362 0488.



TRUE COLOUR IMAGE OF A MCLAREN VALE VINEYARD BLOCK TAKEN IN JANUARY 2007 AT A SPATIAL RESOLUTION OF 0.5M.



COLOUR INFRA-RED IMAGE OF THE SAME BLOCK.



PCD IMAGE OF THE SAME BLOCK.

Do you need digital aerial imagery?

An increasing number of growers are using farm management software into which aerial imagery can be imported. This enables the user to overlay imagery over other farm elements such as soil type, topographical data, irrigation plans and yield maps.

The Phylloxera Board currently contracts SpecTerra Services to collect aerial imagery for our early detection program. To keep the cost of this down, we have agreed to only distribute printed vineyard maps to registered growers. If you require the imagery in a digital format you need to contact SpecTerra and obtain a quote from them. One of the most popular products is a plant cell density map which highlights variability in vine canopy growth and vigour. As well as being useful for identifying areas of low vigour for phylloxera inspections this type of image product can assist in vineyard management. If you require more information or contact details please ring Martin Nolan at our office.

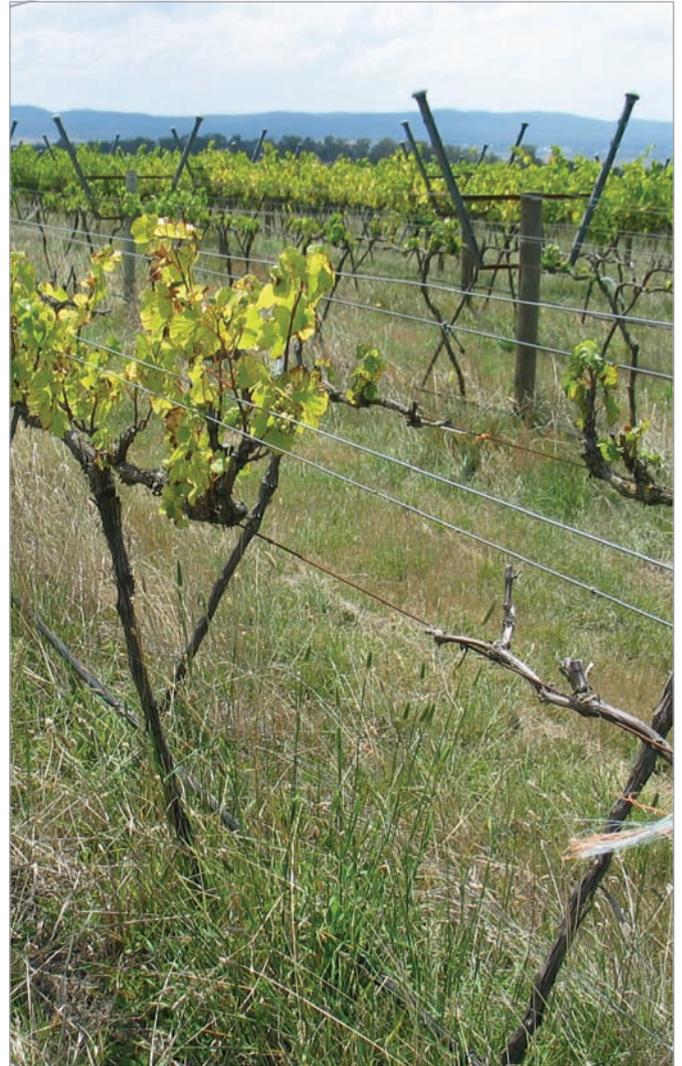
Phylloxera heads west

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This phylloxera infestation most likely pre-dates the one detected in the Yarra Valley last summer; however, the presence of another source of phylloxera, even closer to the South Australian border, is of concern. The Board feels that the lesson to be learnt from this particular situation is the critical importance of growers putting "phylloxera" on their list of considerations, if they find a patch of non-thriving vines. Once you have eliminated the most obvious possibilities, such as blocked drippers or weeds, then ask yourself: *could this be phylloxera?* The Board's *Grower's Guide to Inspecting Vineyards for Phylloxera* can guide you through the identification process. Copies are available free from the office. The updated Phylloxera Management Zones map can be downloaded from our website or obtained from our office.



ABOVE: EARLY VISUAL SYMPTOMS.
RIGHT: SEVERELY INFESTED VINES.



New limits on bird-scaring noises

EPA issues new guidelines

The EPA has released new guidelines for bird scaring devices. The guidelines, which came into effect in March 2008, now include maximum "accumulated peak level" (APL) limits.

The accumulated noise is measured (in decibels) from all scaring devices over a 24 hour period and the total figure is expressed as an APL. The maximum APL in a primary production zone is 118dB, reducing to 115dB where the property is near a residential or rural living zone. The noise is measured at the source of the noise-affected premises. Between 7am and 8pm, the maximum noise level from a device must not exceed 100dB and no more than 6 shots are allowed in any one hour.



The maximum drops to 45dB outside those hours. The formula for calculating the APL is included in the guidelines.

The EPA provides the following as a general guide for operating gas guns:

- one 'typical' gas gun located more than 300m from a residence in a horticultural zone restricted to six shots per hour for 10 hours of the day should stay within the maximum allowable APL
- one gas gun located more than 500m from a residence in a residential country township, or rural living zone restricted to six shots per hour for 10 hours of the day should achieve the APL.

The guidelines recommend preparing a management plan and this will be compulsory if the operating of the scaring devices has an 'unreasonable interference' on the surrounding community.

In 2005 PGIBSA produced 'A Grower's Guide to Managing Birds' which includes information on how to prepare a management strategy. Copies of that publication are available free from our office. Phone 8362 0488 or email admin@phylloxera.com.au. The EPA guidelines can be downloaded from www.epa.sa.gov.au/pdfs/guide_bird.pdf



The 2008 Phylloxera Identification workshop – from the other side

To give you a different perspective, we asked Tom Ayers, attending the phylloxera workshop for a second time, to share his thoughts about the experience.

Three things come to mind that really struck me on the Phylloxera Identification and Management workshop in early February this year.

The risk

The staggering number of Phylloxera insects that exist in an infested vineyard at vintage. One of our hosts, Dr Kevin Powell, team leader of the phylloxera research team at DPI Rutherglen, mentioned work in the King Valley where the mean number of insects found in emergence traps was 16000! These insects (crawlers and adults) are not just on the infested vine roots but also on the surface of the soil and particularly easy to pick up on footwear. Also, while in much smaller numbers but still alarmingly mobile, some insects are present in the canopy and on the fruit. One of the members of our group had a phylloxera crawler on his shirt which was thankfully noticed before we left the vineyard.

Remember it only takes one crawler to start an outbreak!

“One of the members of our group had a phylloxera crawler on his shirt which was thankfully noticed before we left the vineyard.”

The consequences

The potential is for rapid decline of vines in an infested vineyard. This rate depends on many factors such as the soil type and exposure to vectors for spread and therefore is by no means constant. The infested vineyard we visited and many others we talked about had significant decline in as little as three years. The decline and vine death was so apparent it was very hard to imagine how the vineyard manager had not noticed it a year or two earlier. This short time frame contrasted with a common impression that vine decline following an outbreak was more in the 10+ year timeframe.

The solution

Rootstocks have so much to offer. Phylloxera resistant rootstocks are clearly the primary strategy to protect vines from eventual death in the event of a phylloxera outbreak but they offer so many other positive attributes providing they are managed accordingly. Once you come face-to-face with the risks of phylloxera (as you do at the workshop) and couple that with the other benefits of rootstocks (drought and salinity tolerance to mention just two) it is no wonder there is a steady rise in their use. Catherine Cox is a great resource for growers in her role as the Rootstock Project Manager for PGIBSA, based in Stepney.

One image that is burnt into my memory for life is the vision of a perfectly healthy vine with a nicely balanced crop on it right in the middle of a large area of dead and dying vines affected by phylloxera. You've guessed it... one grafted vine on a resistant rootstock which I can only imagine was probably planted as a replacement in amongst a block of own-rooted vines. Just think how different would be the situation facing this grower, if he had planted all his vines on rootstocks in the first place.

The Phylloxera Identification and Management workshop has been going for many years now and is running like a well-oiled machine. It is informative, efficient and great fun. The depth of understanding gained will change the way you think about phylloxera and your vineyard management future. I strongly recommend the trip to all South Australians connected with the grape growing industry.

Tom Ayers is the Adelaide Hills delegate and current Chair of the Central Regional Committee of the Phylloxera Board.



TOP: VIEWING WINERY DISINFESTATION FACILITIES AT BROWN BROTHERS.
BOTTOM: WORKSHOP PARTICIPANTS AT THE RUTHERGLEN RESEARCH INSTITUTE, JANUARY 2008.



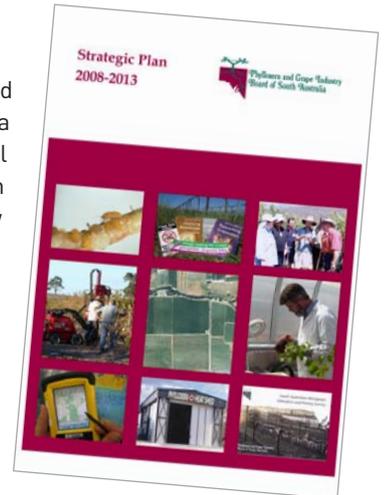
Board 5-year plan released

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Phylloxera-resistant rootstocks will also remain a priority into the future as they remain the only long-term answer if phylloxera was found in South Australia. The Board recognises that there is still reluctance to purchase grafted vines, not least because of their initial higher purchase price but also because of uncertainty about their influence on quality. However the prolonged drought and rising salinity in some regions is causing a change of thinking and the Board is determined to ensure that high quality information on selection and management is provided to producers. New rootstock trials are planned for the Adelaide Hills and Coonawarra in 2009 and 2010 and management trials are being undertaken in commercial vineyards with a particular focus on rootstocks as a key tool for reducing water use.

Finally, the Board has resolved not to increase the Phylloxera Levy until 2010. The general levy was last increased in 1997 and the Board will draw down from its reserves for the next two years rather than seek additional revenue from producers facing uncertainty over water supply and grape prices.

Copies of the Board's 2008-2013 Strategic Plan are available from the office or can be downloaded from www.phylloxera.com.au/board/tasks/#vision



New Phylloxera Board

Rory McEwen, the SA Minister for Agriculture, appointed a new Phylloxera Board in February. The full Board had its first meeting in March and elected Richard Hamilton as its new Chairman. The Board welcomed three new members:



Alison Phillips is a Viticultural Technical Officer with Leasingham Wines in the Clare Valley. In this role she liaises with some 40 growers across the region and also provides technical support for the company vineyard. She has previously worked for the Houghton Wine Company in WA and in the

Barossa and Eden Valleys. Alison has been involved in vine improvement and is currently a committee member of the Clare Region Winegrape Growers' Association.



Mark Gilbert is the General Manager of Davidson Viticulture. He is also their Senior Viticulturist with degrees in Horticulture from the University of Melbourne and in Viticulture from Charles Sturt University. He has served on the Langhorne Creek Wine Growers' Association and on the Langhorne

Creek Vine Improvement Association. He is a previous Vineyard Manager with Balgownie Estate and Simon Gilbert Wines.



Peter Dry is an Associate Professor in the School of Agriculture, Food and Wine, Faculty of Sciences, University of Adelaide (although soon to be retiring). Since 1975 he has taught viticulture at both Roseworthy Agricultural College and University of Adelaide, and conducted research on many aspects of

viticulture and plant physiology. He is the senior editor of Viticulture Volumes 1 and 2 and is a regular contributor to scientific and industry publications. This is his second term on the Board (previously 1992 to 1995).

The other members are:

Dr Richard Hamilton (Chairman) – National Viticulturist with Foster's Wines Estates;

Robin Nettlebeck – Manager of Viticulture for Yalumba Wines;

Jim Caddy – private grape grower and Chairman of CCW Cooperative Ltd which represents about 750 Riverland growers;

Kirsty Waller – Viticultural Manager at Barossa Valley Estates;

Peter Balnaves – Vineyard Manager at the family winery, Balnaves of Coonawarra; and

David Cartwright – Chief Inspector Plant Health PIRSA.

Outgoing members acknowledged

One of the first tasks of the new board was to thank the three outgoing members: Peter Stephens, Dr Jim Hardie and Craig Richards. Peter Stephens served for 12 years including six as Chairman, a period which saw the introduction of major programs including phylloxera surveillance and research into phylloxera-tolerant rootstocks.

Dr Jim Hardie served for nine years and provided important technical advice on rootstocks, phylloxera management and research. Craig Richards served for three years and provided expertise in the areas of vine improvement and winegrape production, as well as a very strong local knowledge of the Clare region. A special commemorative poster (pictured), a reproduction from one of the earliest phylloxera publications, was presented to each of the three previous members.





Boerner rootstock: the ultimate weapon against phylloxera?

The PGIBSA, in conjunction with the Adelaide Hills and Clare Valley Vine Improvement Societies and the Adelaide Hills Wine Region Inc is currently trialling the performance of the Boerner rootstock. Boerner is reported to be immune to phylloxera.

Bred by crossing *Vitis riparia* x *Vitis cinerea* (Arnold) the Boerner rootstock derived its name from Carl Boerner who discovered different biotypes of phylloxera during the early part of the 20th century. Boerner observed that galls did not develop on the leaves or roots of *Vitis cinerea* (Arnold) upon exposure to phylloxera. This led to the crossing of *Vitis cinerea* with *Vitis riparia* by later researcher Helmut Becker.



The resultant cross is a rootstock that confers a hypersensitive and fast wound reaction to phylloxera, thereby preventing the formation of galls on the roots or leaves of the vine.

The Boerner rootstock has also been found to be resistant to *Xiphinema index* the vector for Grapevine Fan Leaf Virus (GFLV) and therefore prevents the transmission of GFLV virus (*Schmid et al. 1998*).

The significance of this rootstock lies in its apparent ability to be completely resistant to a range of phylloxera populations found in Germany, Italy, France and USA (*Becker 1988*).

The aim of the Boerner project is to determine its viticultural suitability under Australian conditions. The Clare Valley trial involves four rootstock treatments (Boerner, 110 Richter, SO4 and own roots) in combination with three different Riesling clones. In the Adelaide Hills the trial comprises four rootstocks treatments (Boerner, 5C Teleki, 110 Richter and own roots) each in combination with three Chardonnay clones.

The trials were planted in spring 2006 and at both sites the vines are up to the wire, with training of these vines ongoing throughout the season. Data collection is expected to begin in 2009/2010 when all vines have settled down and growth is even. Records will be kept on the rate of establishment of the rootstocks as this is an important commercial feature for rootstock selection. Once fully established we will be comparing growth and yield factors as well as comparison of grape composition.

For further information contact Catherine Cox at the Phylloxera and Grape Industry Board on 08 8362 0488

YOUNG BÖRNER VINE PLANTED IN SPRING 2006 AND GRAFTED TO RIESLING CLONE GM198.

Rootstocks and drought: pushing the limits

Catherine Cox, our Rootstock Project Manager, commenced a pilot trial in season 2007–2008 to assess the response of a range of rootstocks when they are grown without irrigation. Catherine worked with John Crocker of SARDI on the trial which was conducted at the Nuriootpa Research Station. With reduced water availability becoming an increasing issue, it is important to understand which rootstocks have the most potential to deliver the required yields and quality. Measurements were taken from both irrigated and unirrigated plots and the results were then compared.

The results are only preliminary and the project will be repeated over several years. Not surprisingly there was an overall reduction in growth and productivity across all rootstocks subjected to the treatment (ie not irrigated). Interestingly, not all rootstocks within a genotype behaved in the same way.

For example 1103Paulsen and 140 Ruggeri, both hybrids of *V. berlandieri* x *V. rupestris*, had differences in drought tolerance as measured by yield and berry composition.

The early results confirmed Ramsey and 1103 Paulsen as having the highest drought tolerance while 140 Ruggeri and Schwarzmann confirmed their status as rootstocks that are not drought tolerant.

Unfortunately the control, own-rooted Shiraz, was mistakenly watered and so a comparison between the rootstocks and own-rooted vines was not able to be made. That will have to wait for future years.

To read more about this project or for a full text including references go to the rootstock section of our website www.phylloxera.com.au

Choosing rootstocks

Find out about their parents

Some rootstocks are more drought tolerant than others (see article on page 6). Rootstocks also vary in vigour, salt tolerance, and influence on ripening and fruit set. To a large extent, these characteristics are a result of the rootstock's root system, which in turn depends largely on its parentage. For example, *V. berlandieri* x *V. rupestris* hybrids (1103 Paulsen, 140 Ruggeri, 110 Richter and 99 Richter) have a root system that is dense and penetrates deep into the soil. *V. riparia* x *V. berlandieri* hybrids (5C Teleki, 5BB Kober, SO4, 420A) have a relatively shallow, lateral spreading root system and *V. riparia* x *V. rupestris* hybrids (101-14, Schwarzmann and 3309C) have a relatively shallow, lower density root system (Dry 2007). These basic differences to some extent give rootstock hybrids their classic characteristics.

These root characteristics determine which soil environments different rootstocks are best suited to. For example – figure 2 illustrates the rooting pattern of 5C Teleki. From the diagram it is obvious that 5C Teleki would not be well suited to a sandy soil that may be prone to drying out, as the majority of its roots are within the top soil layers. Rather, it would be best suited to clay or loam soils with adequate moisture levels throughout the season.

Soar and Loveys (2007) have shown that root systems with a higher proportion of roots 2mm in diameter or greater with thick, dense structured roots and a smaller proportion of finer roots do better in dry conditions. Therefore in a situation of low water availability, the most appropriate rootstock choice would be one of the *V. berlandieri* x *V. rupestris* hybrids. This is consistent with the preliminary findings of the research trial being conducted by PGIBSA in conjunction with PIRSA (see report on page 6).

For a full description of the characteristics of the different rootstock hybrids, see the PGIBSA publication: *Grapevine Rootstocks: Selection and Management for South Australian Vineyards (2007)* pg 5-27.

REFERENCES

- Dry N (2007) *Grapevine Rootstocks: Selection and Management for South Australian Vineyards*. Lythrum press, Adelaide South Australia
- Soar C.J. and Loveys B.R (2007) *The effect of changing patterns in soil-moisture availability upon grapevine root distribution, and viticultural implications for converting full-cover irrigation into a point source irrigation system*. *Australian Journal of Grape and Wine Research* **13**, pp.2-13

Figure 1: Rootstock root systems of the common hybrids Adapted from Dry 2007

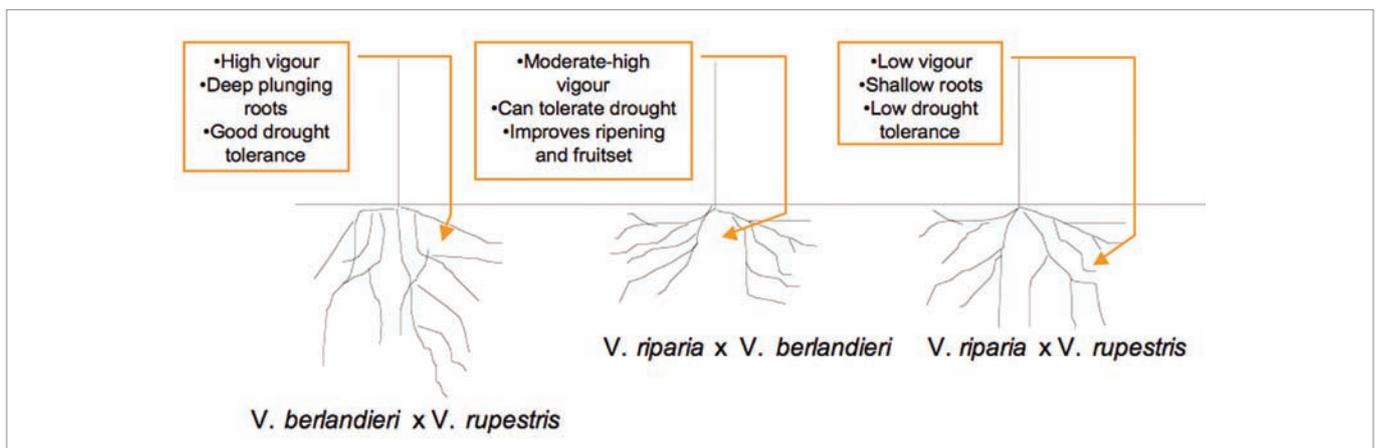
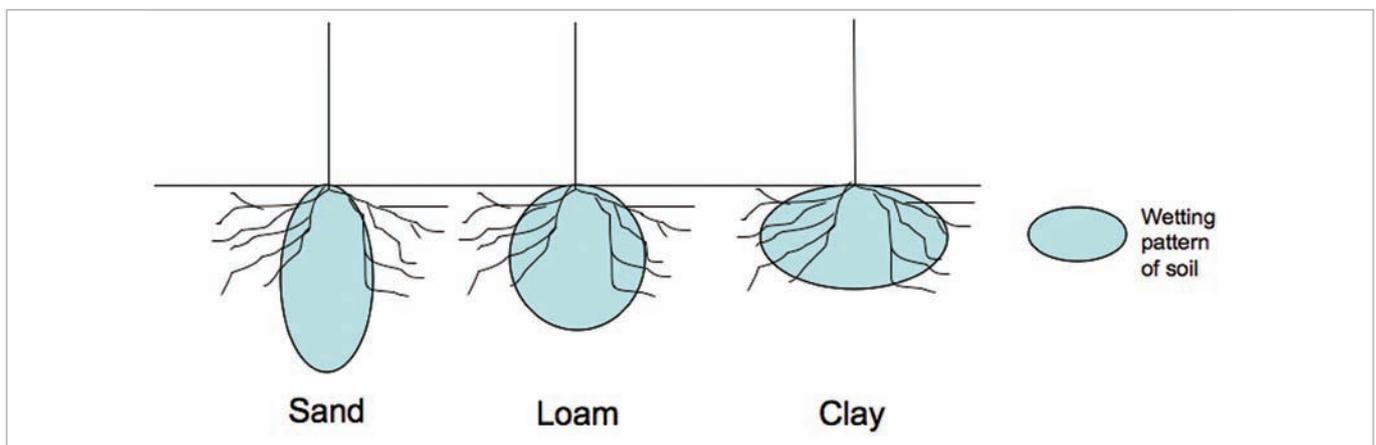


Figure 2: Rootstock root system of 5C Teleki Adapted from Dry 2007

Teleki has a shallow, lower density root system that is more suited to a soil with a higher water-holding capacity such as clay and loam soils.





Bringing in vines from interstate?

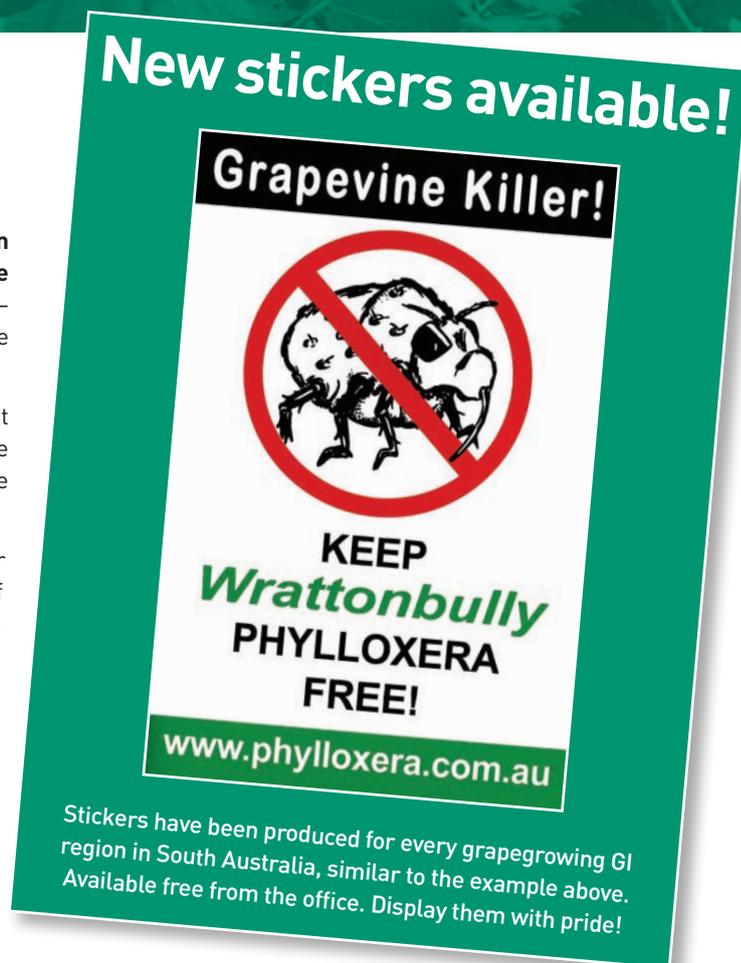
To import grapevines into South Australia, a PGIBSA declaration form must be completed by the person wishing to import the vines. The application process can now be completed online – making it much simpler and quicker. Go to the Board's website www.phylloxera.com.au

Once we have received your application, we will process it normally within 24 hours. If it is approved, documentation will be sent to the supplier. The original form will then travel with the plants or cuttings, as well as the Plant Health Certificate.

When you have received your consignment, you must call or email us with the Plant Health Certificate number and date of arrival. You are required to keep the import declaration form and the Plant Health Certificate for a minimum of 12 months, as we do conduct audits of imports each year.

Full instructions for importing vines are provided on our website as PDF files.

Please note: Grapevines can only be imported into South Australia from declared Phylloxera Exclusion Zones in Victoria and New South Wales, and from WA and Tasmania. The vines must be hot water treated by the interstate nursery immediately before transport to SA.



Future of Winegrape Survey secured

The 2008 Winegrape Utilisation and Pricing Survey will be published following agreement from three key state groups to provide long term funding. The Phylloxera Board sought and received assistance from the SA Wine Industry Association, the Winegrape Growers Council of SA and PIRSA Food and Wine after being advised by the Crown Solicitor's Office that the Phylloxera Levy could not be used to fund the survey. The commitment of these stakeholders to fund the survey for the next three years is an indication of the value it has throughout the SA wine industry and beyond.

The survey has been an important resource for both grapegrowers and wineries for over 10 years, providing a summary of the size of the vintage by variety and region, average purchase values for grapes and projected supply and demand for the next five years. We recognise that the survey does have its critics. One of the most common criticisms is that the prices reported don't include bonuses and therefore the calculated average purchase value –

or as it is commonly known, the Weighted District Average Price, is not accurate. However, there is no simple solution to this problem as including the bonuses would delay publication until at least December of each year. As there are still a number of contracts based on the prices published in the survey, delaying publication or changing the basis for calculation of average prices, would cause problems for some growers. Previous research conducted by the AWBC has indicated that bonuses do not increase average prices by more than 10% for most varieties. In addition, changing the information collected would prevent us being able to compare results over time. We have data going back to 1993 for all major regions and varieties, which is an extremely valuable reference.

The 2008 survey will be published on our website www.phylloxera.com.au in mid-September. At this stage it is not intended to produce a hard copy. Copies of earlier surveys can also be purchased – contact our office.

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