Vineyard Establishment

Assessing rootstocks and wine quality

Rootstock trial yielding results

Planted in the spring of 2009, a rootstock demonstration project in South Australia's Coonawarra region has been providing some significant results. Researchers **Catherine Kidman[1,2],Chris Brodie[1,3], Suzanne McLoughlin[4], Inca Pearce[4]** reveal what the findings to date have been.

A rootstock trial, which has been running in Coonawarra for nine years, is yielding important data about rootstock performance for the wine industry.

The Coonawarra Rootstock Demonstration Project was planted in Spring 2009, with the intention of running as a long-term demonstration for the community.

It was initiated by Vinehealth Australia and supported by Coonawarra Vignerons and Wynns Coonawarra Estate in response to industry concerns about rootstock use and impacts on vine growth and wine quality, and the growing interest in the use of rootstocks in Australian viticulture.

The region was chosen as a rootstock trial site predominantly due to its historically low rootstock plantings. At the time of planting, less than two per cent of total plantings in Coonawarra were grafted to phylloxera tolerant rootstocks (Dry 2007). Since then, this number has increased to 11% (www.vinehealth.com.au).

This project is examining a range of rootstocks with Cabernet Sauvignon (*Vitis vinifera* L.) as the scion, which at the time of planting accounted for 58% of varieties planted within the region (Dry 2007).

The objectives of the project are to:

- Compare and report on the long-term performance of own-rooted clone CW44 Cabernet Sauvignon against that grafted to a range of moderate-high vigour rootstocks, all grown on the region's principle soil type, Terra Rossa.
- Continue to improve broader understanding of the attributes rootstocks can convey to scions, and the environments, seasonal conditional and purposes for which they are therefore best suited. This objective will also include the extension of knowledge gleaned from CSIRO rootstock trials undertaken in the Limestone Coast and other regions.
- Use the demonstration to evaluate some rootstocks not widely planted commercially, to provide local grape growers and winemakers access to alternatives.

- Raise the profile of the Limestone Coast of South Australia as a 'centre of excellence' for grapevine rootstock knowledge.
- Raise awareness of the importance of planting on rootstocks as a biosecurity preparedness strategy for phylloxera and as a management option for countering the impacts of climate change.

Based on the demonstration project objectives, a range of outcomes are expected at the conclusion of the project:

- Enhanced awareness of the ability of rootstocks to reflect the desired quality and style of the Coonawarra wine region (and the Limestone Coast more broadly) compared to own roots.
- Assistance to growers in choosing rootstocks for future plantings.
- Greater understanding of the potential for rootstocks to be used to combat climate change and seasonal variability.

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- Increased proportion of planted area of grafted vines compared to own-rooted vines measured over the life of the demonstration project in the Limestone Coast.
- Elevated profile of all parties involved in terms of contribution of rootstock understanding to the wine industry.

The project comprises a replicated randomised trial design, for data collection and statistical analyses; and a whole row trial design to replicate a commercial style planting. This trial is evaluating the following rootstocks:

- Ramsey (*Vitis champini*)
- 1103 Paulsen (*Vitis berlandieri x Vitis rupestris*)
- 140 Ruggeri (*Vitis berlandieri x Vitis rupestris*)
- 110 Richter (*Vitis berlandieri x Vitis rupestris*)
- Börner (*Vitis riparia x Vitis cinerea*)
- Merbein 5512 (*Vitis berlandieri x Vitis cinerea*)
- Merbein 6262 (*Vitis berlandieri x Vitis cinerea*)
- Merbein 5489 (*Vitis berlandieri x Vitis cinerea*)
- Cabernet Sauvignon ungrafted (*Vitis vinifera* L.)

Importantly, the trial is evaluating three CSIRO-bred low-moderate vigour rootstocks with reduced potassium uptake as well as the German-bred rootstock Börner. This rootstock, for which Vinehealth Australia reports only 0.15 hectares planted in SA, has been described as immune to phylloxera, but has been found to support some root-feeding in Australia.

A number of measurements have been consistently collected over the past few seasons including:

- Maturity (Baume, pH, Titratable Acidity);
- Yield (weight per vine, bunch number, bunch weight);
- Pruning measurements (trunk circumference, bud number, cane number, cane weight)

Key findings so far include:

- Rootstocks affect yield and growth habit.
- There is general consistency in results for yield and canopy measures, with Own roots, Börner and M6262 generally lowest for measured attributes and 110 Richter, 1103 Paulsen and 140 Ruggeri generally highest for measured attributes.
- As expected, rootstocks with high fruitfulness also had higher yield, larger bunches, higher pruning weight and larger trunk circumferences.
- M5489 shows the fastest rate of ripening and lowest pH at harvest; whereas Own roots and M6262 show lowest titratable acidity and Own roots have highest pH at harvest.
- Own roots appear slower growing than all rootstocks.
- Merbein clones planted as potted vines one year after other rootstocks, and especially M6262, were slow to establish.

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- The vigour of the Börner rootstock, rated overseas as conveying high vigour to the scion, appear in this trial to be moderated by the site's calcareous soil.

From most of the rootstock research assessing wine quality to date, it is clear that a combination of rootstock, scion variety, location and soil type impact the resultant wine.

This trial is, therefore, essential for Coonawarra to understand which combination of rootstocks will perform best for a particular wine style and quality.

Furthermore, the ability to diversify with clones and rootstock choice will increase the resilience of Coonawarra to seasonal variabilities and the challenges associated with them.

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References

Dry, N (2007) Grapevine rootstocks: Selection and management for South Australian vineyards. Lythrum press. Adelaide.

AT A GLANCE

- Rootstocks affect yield and growth habit
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