

Choosing rootstocks for New Zealand viticulture can be challenging. When we published *The Riversun Rootstock Project* in 2003, we found very little information about stocks' performance in this country – or, for that matter, anywhere else. Even the best international literature often presented conflicting data. While our collective knowledge remains limited, experience has taught me that a few basic principles apply to rootstock selection for cool climate viticulture:

- Timing of budburst and maturity – where the season is limited, we need early maturity.
- Vine vigour – where the soils, climate (including wind) and/or variety tend toward devigoration, we require more vigorous rootstocks.
- Site constraints – some rootstocks simply won't cope with problematic sites, particularly very wet sites or those with high sodium or high lime content.
- Scion compatibility – minor viruses in the stock and/or the scion can cause graft failures during vine establishment (think of the red leaf symptoms seen with Merlot 481 when grafted to 3306 and Riparia Gloire).

The rootstocks available in this country are typically either single species or (more often) hybrids formed from crosses between the three American vine species that are most resistant to phylloxera: *Vitis riparia*, *V. rupestris* and *V. berlandieri*.

Riparia and Riparia X Rupestris

This is the earliest ripening and least vigorous group – comprising Riparia Gloire, 101-14, 3309, 3306 and Schwarzmann. These stocks are often the best choice in cooler climates where early ripening is important. All of them require irrigation, however, and they are not particularly lime tolerant – nor are they tolerant of high sodium (apart from Schwarzmann).

The most widely planted stock is 101-14, accounting for about 35% of vine production between 1997 and 2002. In recent years, 101-14 has attracted some bad press and popularity has declined to about 20% of vine production (2003 to 2006). At the moment, nurseries are ripping out rootstock blocks of 101-14 to make room for the current favourites, 3309 and Schwarzmann. In terms of vine failures, the problems with 101-14 are difficult to quantify, given that the sheer numbers planted may have prompted more reported failures. Most (but not all) of the difficulties I have seen with vines grafted to 101-

14 have related to the destructive root-rotting disease commonly known as "Black foot," which is thought to be caused by the aptly named fungus *Cylindrocarpon destructans*. The problem vines have often been planted on what I would term "productive soils" – that is, heavier silt and clay loams – and in many cases the ground has previously been used for cropping. This may be a coincidence, but it certainly warrants further research.

I also know that 101-14 is producing good crops of excellent quality in every winegrowing region of New Zealand. Before we throw out the baby with the bath water, perhaps we should analyse our use and management of this stock. Only time will tell whether 3309 and Schwarzmann are better suited to all our soil types – in the meantime, many great wines are being made with the assistance of 101-14.

Riparia X Berlandieri

Here we have 5BB, SO4, 161-49, 5C and 420A. Except for the latter, these stocks are slightly more vigorous and later ripening – possibly between one to two weeks later. The Riparia/Berlandieri crosses are generally very lime tolerant (around 17% to 25% free lime) and are sometimes used where more vigour or higher production is called for. In this category, 5C is the most widely planted – ironically, that's because it was until recently thought to be SO4 (now corrected by most suppliers).

Berlandieri X Rupestris

This group is composed of Richter 99 and 110, Paulsen 1103 and Ruggeri 140 – all more vigorous and later ripening (suitable for warm non-irrigated areas). Based on our current knowledge, I wouldn't recommend any of these, although they may eventually find a niche in dry windblown areas with limited water supply.

Complex crosses

Other stocks – such as Fercal (reportedly tolerant up to 40% free lime) and 1616C (a salt tolerant stock) – may also have their uses as New Zealand pushes the viticultural boundaries. Given the continued spread of phylloxera, care should be taken with any stocks that have some Vinifera parentage such as ARG1 (Vinifera X Rupestris) as they may not prove sufficiently resistant.

For a printable version of our rootstock chart, go to www.riversun.co.nz and click on "Articles" for a link to "The Riversun Rootstock Project – Part 1."