

Improved wine flavour and structure with the applications of biostimulant Mycorrcin through fertigation

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Key words

Phosphate uptake, wine flavour and structure, Mycorrcin, Gimblett Gravels

Overview

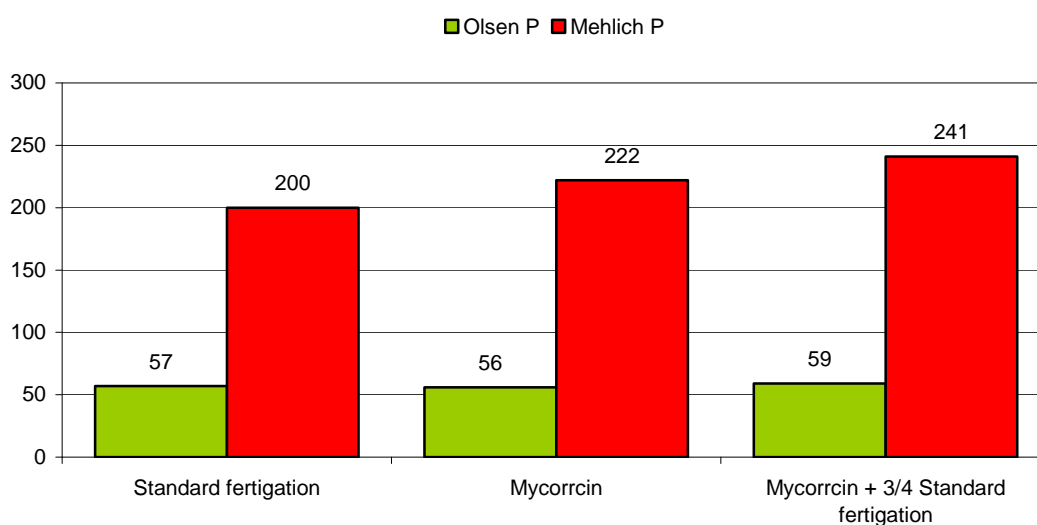
- The Gimblett Gravels soils are unique in that they are 90% gravel, have very low organic matter levels, low CEC are in a low rainfall region. As a result of these characteristics they suffer from low phosphate retention.
- This trial was set up to investigate whether applying Mycorrcin by itself or in combination with reduced fertigation NPK had any impact on soil and tissue phosphate levels
- The trial has run on the same block for 4 years. The block was divided into groups of 3 rows (averaging 600m²) which were then assigned as either Standard fertigation which received the standard fertigation NPK program, or Mycorrcin at the rate of 4lt/ha for the first fertigation in early spring and then at the rate of 400ml/ha once a fortnight for the rest of the growing season or Mycorrcin at the previous rate plus $\frac{3}{4}$ of the standard fertigation program
- Soil samples were taken analysed for phosphate using both an Olsen and Mehlich phosphate test. The Mehlich test was used, as it is more sensitive extraction and would give a better indication of available phosphate in the gravels



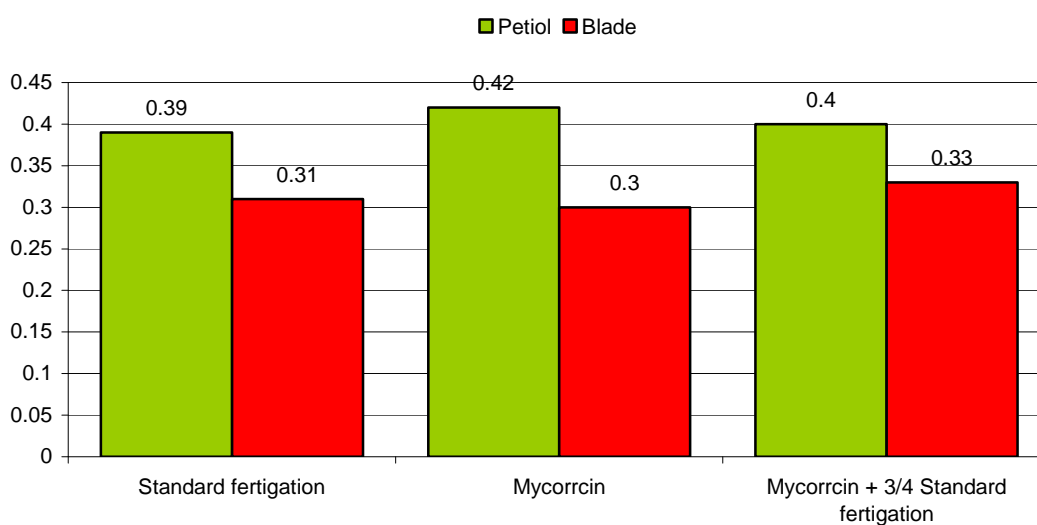
- Root samples were taken and analysed for mycorrhizal colonisation. An increase in colonisation has been shown to increase phosphate uptake in the literature.
- Blade and petiole samples were taken at flowering and veraison and analysed for phosphate levels.
- The rows were individually harvested and microvinted at EIT.
- The wine was tasted by Bob Campbell MW

Results

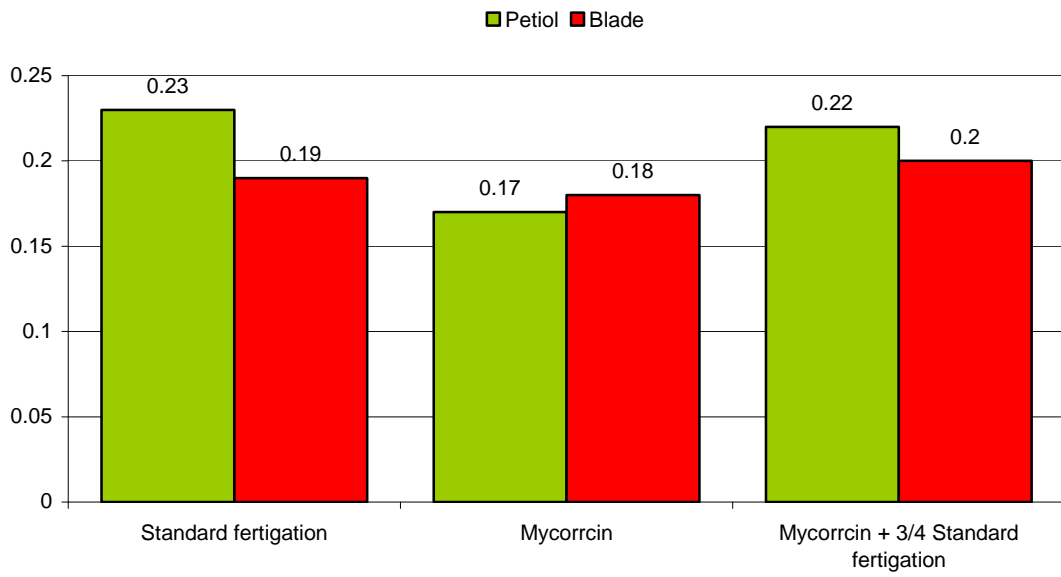
SOIL PHOSPHATE LEVELS



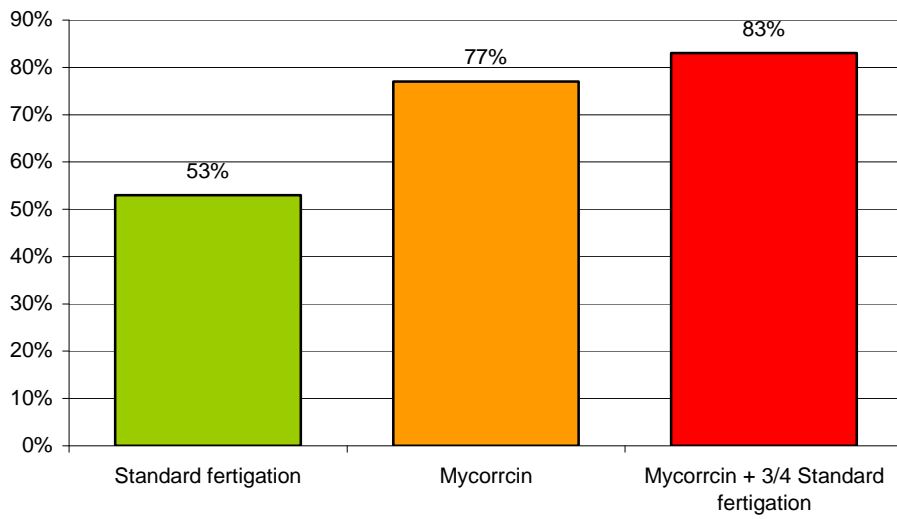
FLOWERING PHOSPHATE LEVELS



VERASION PHOSPHATE LEVELS



ECTO MYCORRHIZAL COLINISATION



Wine tasting notes



The wine was tasted in a random order. The wines have been filtered but not exposed to any oak.

Treatment	Comments	Score
Standard fertigation	Reasonably deep, purple. Quite a dense wine although less than the previous sample. Good berry flavours with slightly hard tannins.	8
Mycorrcin	This appeared to be the deepest wine in the group with a pronounced purple colour. Dense red with good berry fruit flavours and good concentration. Impressive.	8
Mycorrcin + Standard fertigation	Reasonably deep, purple. Dense wine with good berry and plum flavours. The most concentrated wine in the group. Firm tannins are balanced by good fruit density and appealing fruit sweetness.	9

Conclusion

- The Mycorrcin treatment had only a minor impact on Olsen phosphate test, however the more sensitive Mehlich test showed the Mycorrcin to increase Phosphate levels
- The increase in phosphate levels correlated with an increase in Ecto Mycorrhizal colonisation. An increase in Mycorrhizal activity has been shown to increase phosphate uptake.
- Both petiole and blade sampling at flowering and veraison showed very little difference between the treatments. The Mycorrcin treatment has had no additional phosphate applied to it. The levels recorded have been etched out of the small reserves in the gravel by the mycorrhizal fungi.
- The Mycorrcin treatment despite having no NPK for the season scored the same as the standard fertigation treatment. The combination of Mycorrcin and $\frac{3}{4}$ standard fertigation program scored the highest with firm tannins balanced by good fruit density and appealing fruit sweetness.