

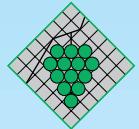
PRECISION VITICULTURE

A new approach to vineyard experimentation

Where and How?

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Grape and Wine
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Background

Growers or researchers interested in conducting an experiment in a vineyard are faced with a problem (Figure 1) – where should they locate their trial? The traditional approach to experimentation is to use randomised designs, small experimental units (single vines or panel) and statistical methods based on analysis of variance which explicitly ignore and/or seek to exclude the effects of spatial variability (Figure 1a).



But vineyards are highly variable! Recent research suggests that in terms of yield, a tenfold range of within-vineyard variation is typical, with much of this variation attributable to soil variability. This raises interesting questions about the locations of trial plots (Figure 1b) and the interpretation / adoption of results. We are concerned that most experimenters have forgotten that the vineyard manager has to manage the whole block – not just the area covered by the experimental plots.

A new approach

The recent commercial availability of the suite of tools which has collectively become known as 'Precision Viticulture' (GPS, yield mapping, GIS, etc...) presents a response to this problem. By using highly replicated designs (Figure 2) in experiments conducted over whole vineyard blocks, treatment effects – both positive and negative – can be assessed over the whole management unit (Figure 3). Rather than ignoring it, such designs embrace variability and have the potential to enable the manager to optimise management processes in variable vineyards.

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