

Does cutting costs on vineyard nutrition really make savings?

Yasmin Chalmers & Ben Thomas, September 2009

As in recent years, many vineyard managers are approaching the 2009-10 season with considerable financial pressure and the daunting prospects of water restrictions, depressed grape prices, uncertain contracts and higher fertiliser costs. As a result, many are considering a reduction in vineyard operating costs such as reduced fertiliser inputs and less use of soil and plant analyses. This article answers some of the more common questions posed to the Scholefield Robinson Horticultural Services team regarding grapevine nutrition and the use of diagnostic tools.

Which nutrients are required by vines?

Vines require macro-nutrients (nitrogen, phosphorus, potassium, magnesium, calcium and sulfur) and micronutrients (iron, zinc, manganese, boron, copper and molybdenum). In early spring, reserves of nutrients in the vine supports initial root and shoot growth. Following this period, root and shoot growth increases and the vine absorbs nutrients from the soil or through the leaves. For more detailed information on the role of the various nutrients in grapevines, readers are directed to a series of fact sheets produced by the former Co-operative Research Centre for Viticulture:

<http://www.crcv.com.au/viticare/vitinotes/>

I am considering skipping soil and petiole analyses for this season to reduce costs. Is this wise?

Some growers see the cost of soil and plant analysis and decide that it is too expensive. However, in our experience, the money saved in reduced fertiliser costs as a result of the use of soil and plant analyses far outweigh the cost of soil and/or petiole analyses. When comparing the costs, be sure to calculate the cost of the actual nutrient in the fertiliser. For example, if urea (46% nitrogen) costs \$715/t, then you will be paying \$715 for 460kg of actual nitrogen or \$1.55 per kg of actual nitrogen. For more information on fertiliser costs refer to the article by Tony Hoare in the September/October 2008 issue of Australian Viticulture titled 'The rising cost of fertiliser -strategies to reduce the risk'.

What sort of fertiliser should be applied?

Fertilisers are available as single element or compound (multiple elements) products with single element fertilisers usually being cheaper than compound fertilisers. Apart from price, fertiliser selection is often influenced by the method of fertiliser delivery to the vines. Fertilisers are either broadcast, delivered through the irrigation system (fertigation) or applied as foliar nutrient sprays. Typically, macro-nutrients (nitrogen, phosphorus, potassium, etc.) are broadcast or applied via fertigation, whereas micro-nutrients are often applied as foliar nutrient sprays.

How do I know whether a fertiliser is required?

Use diagnostic tools, such as leaf and soil analyses, assessments of growth, balance sheets and visual symptoms to determine whether the nutrition program used is

appropriate or whether the vines are suffering from a nutrient deficiency or toxicity. Growers should attempt to use as many of these diagnostic tools as possible when deciding on fertiliser requirements. Growth dilutions, diseases, target yields can all influence analytical results and so relying on one type of analysis can be misleading. For example, low petiole phosphorus values often occur when growth of the vines is rapid but there are good reserves of phosphorus in the soil. In this situation, the vines are not suffering from a true phosphorus deficiency, but rather are unable to take up phosphorus from the soil fast enough to match the demands from the rapidly growing shoots. In this case, failure to conduct the soil analysis may have resulted in the unnecessary application of phosphorus fertiliser.



What is the difference between monitoring and diagnostic tests?

Monitoring: Many growers utilise soil and plant analyses to monitor the nutrient status of their vines. This allows subtle changes in the fertiliser program to correct minor nutrient deficiencies and also acts as a guide to possible future problems. For monitoring purposes, soil and petiole samples are collected from 'typical' or 'index' blocks that are performing normally. **Diagnosis:** If the petiole analyses are being conducted to try to diagnose a problem, then samples should be collected from both affected and unaffected vines so that they can be compared.

There is a lot of discussion at the moment about how to keep vines healthy with minimal inputs, especially until prices improve and demand for certain varieties increases. Vines can generally survive with little fertiliser inputs but it is important to ensure there are no negative impacts on carbohydrate reserves required to produce uniform budburst and fruitful buds. Care and maintenance options need to be considered without compromising vineyard viability.