



What are the benefits of nutritional analysis and how do I get the most from the results?

WHEN THINGS ARE going smoothly in the vineyard, it's easy to drop things off the 'to do' list to make some short-term savings. Unfortunately, nutritional analysis is one activity that sometimes slips off that list until symptoms start to appear, rather than it being part of the regular maintenance program. Soil, water and grapevine nutrition is best monitored regularly, so that potential problems can be anticipated rather than waiting until vine performance is affected. Nutrient analysis is also a useful way to monitor the efficacy of past remedial measures and to ensure that fertilisers are being used efficiently and not wasted.

To maximise the results of nutrient analysis, standardise the methods used for sample collection, handling and analysis. Collect samples that are representative of the area of interest. Block variability will influence the number and location of samples collected (Figure 1). Collect samples at the same vine developmental stage each year and send the samples to a reputable laboratory. It is also a good idea to use the same lab each year, as laboratories might use different analysis techniques. Once you have found a good lab, stick with them so that you can compare your results from year to year.

It is also important to choose the appropriate type of analysis for your situation. Water quality directly affects vine performance and soil health. It might also affect the solubility of fertigation products or the efficacy of other chemicals such as fungicides. Water analysis can be either general or targeted (e.g. salinity or pH) for monitoring and/or problem diagnosis.

Soil nutrient analysis provides a measure of nutrients in the soil; however, it does not always reflect the availability of nutrients, therefore it may be more useful as a monitoring tool. For example, soil analysis can be used to track the movement of soil-applied fertilisers or other ameliorants, such as lime or gypsum at different depths. It is also a useful tool in monitoring rootzone salinity and/or acidification under drippers. Each of these requires a slightly different sampling strategy.

Plant tissue analysis gives a measure of nutrients in the vines and reflects nutrient availability and uptake from the soil. Plant tissue analysis can be used to verify suspected deficiencies and toxicities, or to diagnose or eliminate the possibility of other problems. There are published standards for dried grapevine petioles sampled at flowering that can be used as a guide to grapevine nutritional status. The standards for grapevine petiole sap analysis, however, have not been as thoroughly researched and as such there are no published standards. Sap analysis is best used in conjunction with petiole analysis, which allows calibration for a specific site/variety. Once several years of data have been collected, it may be used with more confidence as a standalone test.

The information gained from nutrient analysis is best interpreted as a component of the entire system. Other factors to consider include vine performance, seasonal environmental conditions and management objectives. Nutrient analyses are an integral part of the vineyard maintenance program and are critical to its long-term sustainability and efficiency.

More detailed information on water, soil or grapevine nutrient analyses is provided in the AWRI's 'Viti-notes' series, which is available online at: http://www.awri.com.au/resources_vineyards/



Figure 1. A high degree of vineyard variability will influence the sampling procedure in this vineyard.

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