

Guidelines for Sampling Plant Tissue

Soil Analysis

The first analysis a grower should consider is that of soil analysis. This is useful before planting to establish lime and fertilizer requirements and can be used after planting to understand the cause of any nutritional problems (confirmed by foliage analysis) and to modify fertilizer applications accordingly.

Soil analysis is only one management tool for determining nutritional disorders and fertilizer requirements. It will give the grower an idea of which nutrients are likely to be deficient in the crop and also indicates if lock-up through interaction with soil pH or a high level of another nutrient is likely. For example, a high pH can lock up manganese and zinc, high levels of potassium can reduce the availability of magnesium, and high calcium levels in the soil can inhibit boron availability.

Plant Tissue Analysis

Tissue analysis in a vineyard can be much more effective than soil analysis; tissue analysis represents the concentrations of nutrients the grapevine is able to remove from the soil. Petiole (leaf stalk) analysis is the most popular method, sampling the petiole of a basal leaf opposite a bunch cluster.

Leaf blade analysis is also a popular method of sampling and is the method of choice with A&L because of the timing. Either method can be used depending on your preference.

Time to Sample

Timing is extremely important. Samples must be taken during the proper stages. A good tissue program should be pro-active and used as a management tool to correct nutrient disorders before they become critical to the quality and development of the crop. The timing is dependent on the part of the plant that you will be sampling.

Plant Part to Sample

Petiole Sampling

Sampling is most commonly undertaken when the majority of vines are flowering but can also be taken at veraison. One petiole from each of 100 vines from a planting should be taken to ensure a representative sample.

Petiole Sample Timing

Full Bloom

Veraison

Leaf Blade Sampling

Leaf blade analysis is also used and is the sample of choice because we can begin sampling earlier in the season to get an idea of nutrient status earlier. This allows us to take corrective action earlier in the season if a problem is occurring. With leaf blade-sampling data is available for leaf material taken 2 - 3 weeks prior to flowering. At this time it would require too much petiole material to get a sample but leaf material is a larger volume. This sampling time would be a stage 12 on "The Grape Life Cycle" chart.

A second sample as a follow up can be taken at "full blossom" stage 23 and a third at "veraison" stage 35.

Leaf Blade Sample

2 - 3 weeks prior flowering

Full Bloom

Veraison

Enough samples need to be taken to get a representative sample, making sure not to combine different varieties or plants that are growing in different soil types. Each sample should represent not more than 4 hectares, even in uniform vineyards. Areas of different soil types and or strong vine areas should be sampled separately. In order to get enough material to run an analysis we will need 1/2 a pint of loosely packed leaf material.

Care of Samples

Put each sample in a new, clean paper bag. Do not use a plastic bag because of moisture condensation and possible moulding. Label and keep a record of the pertinent information - name, date, variety, location, condition of vineyard, and foliar sprays used. Samples should be shipped by courier to the lab. If there is a delay, keep bags open in a warm, dry, well-ventilated place. This begins the drying process and prevents moulding and decay. Foliage contamination from a nutrient spray can give erroneous laboratory results. Do not sample after a nutrient spray unless you, (1) are not considering analysis of any nutritional element contained in the spray, (2) have made arrangements with the laboratory for sample washing, or (3) are sampling uncontaminated tissue later in the season.