



University of California Cooperative Extension

NEWS RELEASE

Kern County • 1031 S. Mt. Vernon Avenue • Bakersfield, CA 93307 • 661-868-6200



April 24, 2002

Jennifer Hashim
Viticulture Farm Advisor
(661) 868-6223

Assessing Nutrient Status in Grapevines

Determining the nutritional status of grapevines is much easier than one thinks. It simply requires collecting the petioles (leaf stems) opposite the bottom cluster near the base of the shoot at bloom. Sampling in this way allows for an easy, repeatable protocol for follow up nutrient sampling in years to come. In addition, tissue analysis is more efficient (shovels and augers not required) and accurate than soil analysis to determine the nutrient status of the vine because of the inherent differences in soil type, irrigation practices and variability in variety and rootstock nutrient uptake.

The timing of tissue sampling should be at or near full bloom, or when approximately 75% of the caps have fallen from the flowers. Samples should be collected from normally growing, minimally shaded areas on both sides of the canopy. Do not sample after a nutrient spray unless the samples are not being analyzed for the nutrients contained in the spray or they are thoroughly washed and blotted them dry. If one is analyzing a large vineyard, samples should be taken separately from a single block and should be of a single variety and rootstock. Areas with distinct soil types, different irrigation systems or vine appearance should also be sampled separately. 60-80 petioles per representative area should be sufficient for laboratory analysis. Those who plan to sample repeatedly from year to year can mark specific vines or areas in order to improve the consistency in results for tailoring fertilizer programs.

When the samples are collected, make sure that they are washed thoroughly, dried and placed in a labeled, clean paper bag and sent to the lab immediately. Only those nutrients known to be deficient or excessive need to be analyzed. Nutrients such as nitrogen (N), potassium (K), Magnesium (Mg), sodium (Na), chloride (Cl), zinc (Zn) and boron (B) are of common concern, however, a broader analysis can be

performed if requested. Survey and sampling establishes a nutritional baseline for vineyards and should be repeated for about two – three years. Thereafter, only questionable nutrients should be tested. One should also resume testing when noticeable deficiency symptoms arise, yields fluctuate, or there are changes in irrigation or trellising systems.

The following table presents the critical values for grapevine nutritional status at bloom that can be used while interpreting lab analysis:

| Nutrient | Deficient (below) | Adequate (above) | Excessive (above) | Toxic (above) |
|-------------------------|----------------------|---------------------|----------------------|------------------|
| NO ₃ -N, ppm | 350 | 500 | 2000 | 8000 |
| P (total), % | 0.10 | 0.15 | | |
| K (total), % | 1.0 | 1.5 | | |
| Mg (total), % | 0.2 | 0.3 | | |
| Zn (total), ppm | 15 | 26 | | |
| Mn (total), ppm | 20 | 25 | 300 | 1200 |
| B (total), ppm | 25 | 30 | 100 | 150 |
| Na (total), % | | | | 0.5 |
| Cl (total), % | | | 0.5-1.0 | 1.5 |

The critical levels for nitrate-nitrogen (NO₃-N) are only established for Thompson Seedless. The levels for other varieties are based on experience with several other varieties and can be applied generally among the varieties. Growers who wish to identify the symptoms of individual nutrient deficiencies or to locate laboratories that perform tissue analysis should contact their local extension farm advisors.

