

GRAPE FERTILIZATION AND NUTRITION

There have been many questions raised regarding the “care and feeding” of grapevines in Nebraska vineyards in the past few years. There has been considerable attention given to these subjects in the press, by the workshops held this past summer and at a variety of conferences and other educational programs. A few key observations emerge as worthy of remembering.

- 1) Too much is worse than none at all. Adequate levels of nutrients already exist in many Nebraska vineyard soils. Adding more fertilizers, especially nitrogen (N) can lead to excessive vine growth and unbalanced vines. Excessive levels of nutrients cause reduced wine quality and may cause reduced vine quality and yields.
- 2) Do your homework - **Soil tests** before planting can greatly assist one in determining fertilizer needs, if any. **Foliar analysis**, or tissue testing, is useful after the vineyard has become established - young vines seldom exhibit the true nutritional condition, but as vines mature and enter the fruiting period, stresses will begin to emerge if nutrient deficiencies begin to appear.
- 3) Foliar versus soil application? In general, it is best to apply macronutrients (N, P, K, Ca, Mg, S) as soil applications and micronutrients (Fe, Zn, Mn, Cu, B, Mo) as foliar applications. Countless studies have shown that little uptake of macronutrients takes place when applied as foliar applications, but it is generally agreed that micronutrients applied as foliar applications are indeed effective, probably because they are needed in such small quantities (“micro”).
- 4) Because phosphorus is very immobile in the soil, if soil tests show a need for additions, it is very helpful to apply phosphorus before planting and working it into the soil, preferably to a depth of at least 10 to 12 inches (25-30cm).
- 5) Most Nebraska soils are relatively high in potassium, so application of potassium (“potash”) is rarely necessary. Overfertilization with potassium can cause high levels in the fruit and may lead to high pH levels in wines. Australian work has shown that high levels of K can also alter the color of red wines in a negative fashion, causing lower levels of anthocyanins in the fruit and thus in the wine (Walker, Read and Blackmore, Australian J. Grape and Wine Research 6:227-239).
- 6) Application of macronutrients through the irrigation system will make the fertilizer available more rapidly than application of dry fertilizer to the soil surface. Soluble nutrients such as N and K can be easily leached into the root zone when applied to the soil surface if followed by rain or irrigation.
- 7) Application of fertilizers late in the season is extremely undesirable. Late-season applications may stimulate excessive vegetative growth and lead to poorly hardened vines that are vulnerable to winter damage. In addition, little uptake occurs after the leaves begin to senesce, or shut down, so application of fertilizers in the fall is usually of little use.