Viticulture Foliar Programs

FACT SHEET

Foliar Fertilization of Grapevines

The grapevine is a crop that responds well to foliar fertilization. Foliar fertilization helps correct a nutrient deficiency before it becomes a problem if it is identified ahead of time by soil and tissue analysis.

Soil analysis helps to identify hidden hungers and allows the grower to put into place a pro-active foliar program.

Supplementation of nutrients following a tissue program will help detect the needed nutrient that is required or that is becoming short in supply prior to it creating a yield or quality problem. A well-planned foliar program supports the ground applied fertilizer program and helps the grower overcome environmental conditions that may be causing nutrient shortages.

Flowering and Fruit set

The time of flower initiation in the vine occurs 12-15 months before the fruit is harvested. At the same time as flowering is occurring in the vine, the tissue in the buds on the cane is commencing to differentiate. The buds become either vegetative or fruiting.

Differentiation continues for much of the season, but is most active between flowering and veraison. Any stress to the vine during this period can effect two crops.

Flowering to Fruit Set

The priority nutrients during flowering to fruit set in vines are Zinc, Boron, Magnesium and Phosphorus. Nutrient stress during the early part of the season can cause early bunch stem necrosis, excessive flower abortion (coulure) or poor fruit set resulting in many small shot berries (millerandage). This will translate to low sugar levels, high acidity, and lack of “matter” (colour and unripe tannins).

Foliar Program to Ensure Good Flowering and Fruit Set

Application of foliar products that are required to increase flowering and fruit set such as Zinc, Boron, and Mg when required should be prior to bloom just when the flower truss is visible which is 2-3 weeks before bloom. The second application if required of these products would be again when the flower buds are separated.

Magnesium early to ensure good photosynthesis and fruit set
Boron and Zinc early to ensure good flowering and fruit set

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Fruit Swelling and Ripening

Berries ripen in two stages; the first stage is a period of rapid growth until the berry approaches its mature size but stays hard and green. The second stage commences when the berries change colour and start to soften and show a further increase in size. The time at which this change occurs is known as veraison. It is normally more noticeable in the red varieties than the white, but there are still easily visible changes in the white berries.

The priority nutrients during fruit swelling and ripening are Magnesium, Phosphorus, Potassium and Calcium. The correct balance of these four nutrients is a determining factor for the transport of sugar to the berries, the occurrence of grape stalk necrosis (which stops the ripening process) and the acidity of the must (particularly potassium).

Application of Mg, P, K, and Ca during this period will help the crop finish with the quality that is required. Each of these products should be recommended based on a ***"plant analysis"*** at full bloom to veraison for the best results.

In Mg deficient conditions these applications will help to reduce GSN and ensure good ripening.

Magnesium and or Phosphorus application timing based on plant analysis.

1. **Pea-sized berries**
2. **Veraison**
3. **One month before harvest**

Potassium timing:

Potash foliar application can help the vines in accumulation and transfer of sugars from the leaves to the grapes and increase the potential alcoholic degree in the wine. Potassium deficiency in grapes can cause high levels of acidity which is bad for wine quality giving the wine a rough, aggressive character. This application should begin earlier at fruit set and continue through to harvest but usually 3 applications beginning at fruit set, again when grapes are pea-sized and then again at Veraison. Potassium deficiency if not corrected not only affects the quality of the wine but will increase the vines potential for winter injury.

1. **Fruit set**
2. **Pea-sized Berries**
3. **Veraison**

Calcium

Calcium improves the quality of the grape in protecting the cell from toxins and slowing down the aging process. Good Calcium levels increase shelf life and aid in the reduction of disorders such as GSN, and pre and post splitting of table grapes. The timing should begin at fruit set and be applied in 7—10 day intervals to one month before harvest.

1. **Fruit Set**
2. **Pea sized Berries**
3. **Veraison**
4. **One month before harvest**