

Why is Post Harvest Nutrition so Important

During Autumn, as with most deciduous plants, nutrients are withdrawn into the plants from leaves prior to leaf fall. Post harvest is a critical period to apply soil based and foliar fertilisers as the vines are actively translocating nutrients from the leaves to the canes and the trunk of the vines to store these elements as a carbohydrate source. Multi trace minerals are always beneficial as they will supply the vines with all trace elements required for carbohydrate assimilation and metabolic reactions which occur when the vines are in the carbohydrate storing mode.

Not only is nutrition important, but irrigation management is also critical. Dry soils after harvest inhibit the second flush of root growth and cause early leaf fall thus limiting the build-up of carbohydrate and fertiliser reserves in the wood of the vines which is essential for bud and shoot growth during early spring.

There is also an active period of root growth after harvest and throughout the Autumn until two weeks before dormancy when carbohydrates can no longer be actively stored by the vines. The active root growth period (second root flush pictured in diagram 1) which occurs in the Autumn is a critical period to apply fertilisers into the soil as the roots are actively growing and therefore will have the capacity to uptake soil applied fertilisers and use these elements for carbohydrate conversion.

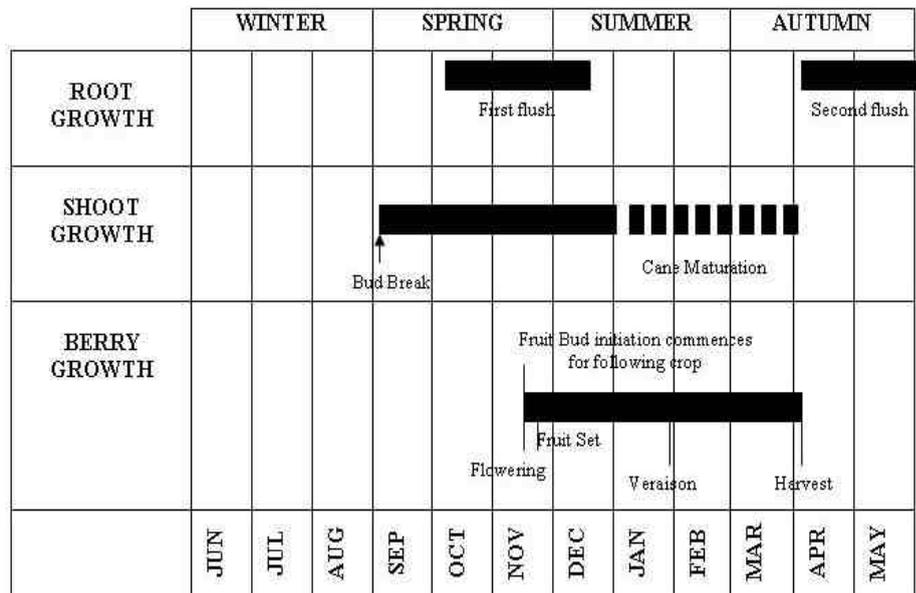


Diagram 1: Phenological stages of growth for grapevines.

Post harvest is also a critical time to correct any deficiencies which may have been present before or during harvest. This will eliminate the work required early in the season after bud burst and reduce the possibility of encountering disorders early in the season such as restricted growth, or poor flowering which will then result in poor fruit set and overall grape quality is reduced.

Balanced Fertilisation

Nutrition should be approached with a holistic attitude whereby all elements are considered equally and balanced fertilisation practices are implemented. However, vine nutrition is inevitably overlooked as an important aspect of vineyard management to improve vine health and fruit quality. Existing research into vine nutrition has indicated that major gains can be made in fruit quality by having a greater understanding of the uptake of nutrients by the vine, the best fertiliser sources to supply those nutrients and the rate and timing of application required to achieve the desired result.

Growers ultimately should document all fertiliser inputs into the vineyard and monitor the vine's performance in response to those fertilisers. Tissue and soil analysis programs should be an integral part of the vineyard manager's decision making on fertiliser inputs and selection. In many cases there may be environmental pressures to reduce application rates and or be more selective about the sources of nutrients being used. All elements are of equal importance in plant nutrition. There are many interactions and inter-relationships between elements, therefore the choice of fertilisers becomes very important.

Soil Or Foliar Applications – or both?

Soil chemistry is complex and the addition of nutrients is affected by existing levels as well as the nutrients that we are adding. For instance, high phosphate levels may reduce zinc uptake, the addition of nitrogen can accentuate copper deficiencies, high calcium levels can decrease boron and iron uptake and copper will influence iron.

This then emphasizes the requirement for the use of products which contain all macro and minor elements such as Potassium, Phosphorous, Nitrogen, Magnesium, Sulphur and all the trace elements (including Molybdenum) for a balanced approach to fertilisation, aptly named – Fertile™. This product has a high analysis of macro elements and the trace elements are chelated to reduce the possibility of these elements to interact in the soil and become unavailable. Fertile™ is a fertigation grade product which is totally soluble and plant available and has been used by many winegrape, tablegrape and dried fruit growers with superb results throughout the growing season as well as after harvest.

By supplying all elements through the one easy to handle and use product, the vines are given a complete selection of elements to supplement the depleted reserves after harvest without the guess work of what products to use and in which ratios. The only other supplementation required is a Calcium source and this can be readily achieved through the use of products such as Calcium Nitrate.

Foliar applications can be used as an adjunctive method of plant nutrition, especially post harvest where the nutrient application window is limited. Certain elements such as Boron, Zinc, Manganese and Iron are best applied as foliar applications due to the reduced availability of these elements through the soil. However the bulk of the major elements should be supplied through the soil as this is the most appropriate method of supplying the quantities required after harvest, especially in machine harvested vineyards where leaf coverage may not be adequate for foliar applications of elements.

Summary

Fertilisers are an important investment each grower makes in their production systems, however the choice of the right product between the myriad of soil and foliar fertilisers existing in the marketplace has made it more difficult for the grower to choose the right product for the right results. A balance of soil and foliar products is the best approach at the end of the season when making selections of products to use and fertigation has become a popular and efficient method of supplying readily available nutrients in sufficient quantities. A balance of elements is required by vines in order to best replenish the lost reserves of the vines before dormancy.

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