Winter Hardiness of The Vineyard

FACT SHEET

Vine nutrition has a lot of questions and concerns. How much Nitrogen should a grower use on what variety and age of vine.

Frequently growers withhold fertilizer in an attempt to reduce vigor or increase sugar content in the grape. However any practice, which reduces the fundamental health of a vineyard, will result in increased winter injury. This includes unbalanced nutritional status and low pH soils.

Commonly growers are afraid to supply vinifera vines with sufficient nitrogen because it will stimulate too much growth. Too much growth will result in soft wood that will not harden off in time for winter and it will increase winter injury.

Research study has shown that the reverse is true in that in not supplying enough supplemental nitrogen not only does yield and quality suffer but it also increases winter injury.

The key here is balance. Apply enough nitrogen to supply the crop needs but do not over do it and make sure that applications are timed in a manner that the vine will get the most benefit.

Over application of Nitrogen is never a good idea. Tissue analysis should be your guide to Nitrogen requirements throughout the season.

In vine crops other nutrients such as Potassium and calcium have a bigger influence on winter survival than Nitrogen alone. These nutrients are harder to get into balance than Nitrogen because when we apply them only about 15% of these nutrients will get into the crop that year. With Nitrogen between 50 and 75% of what we apply will get into that seasons crop.

The other nutrients are more difficult to balance and this takes time. The use of foliar fertilizers helps the grower manage the short falls within the season.

This past season was a very difficult season in most growing areas, as it started out cool and wet.

Every year due to environmental factors there is a particular nutrient that becomes limiting to the crop even when soil levels are adequate.

This season the spring was cool and wet and potassium became that limiting nutrient early and this carried throughout the season.

This puts a lot of stress on the health of the plant and root growth; as a result insect and disease pressure throughout the season is always a battle.

Potassium plays a major role in the construction of the cuticle layer. This cuticle layer is the plants first line of defence to disease and insect attack.

Plants receiving adequate Potassium nutrition have a stronger enzyme activity and are capable of withstanding more fungal attack. Increasing Potassium nutrition will reduce the amount of disease both in the root and in the above ground parts of the plant.

The most significant impact that we see with adequate potassium nutrition is that of increased defence that the plant has to sucking insects (mites and leaf hoppers). When the potassium levels are adequate and the sap pH is in the 7 – 8 range sucking insects are not attracted to the sap.

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Although Potassium and Nitrogen balance play a major role in winter hardiness these nutrients do not go it alone. All nutrients contribute to the overall health and hardiness of the plant.

Maintaining adequate levels of both zinc and boron in season enhance maturity and sugar levels in the crop. Late applications of both prior to leaf drop also fortify the over wintering bud reducing the amount of winter injury directly to the bud.

Those grapes that are kept to make ice-wine put an even larger nutrient demand on the vine. Nutrient status of these vines throughout the season is of even greater importance.

In season foliar programs directed at the ***"Hidden Hunger"*** areas of the vineyard supplement some of the nutrient short falls and environmental pressures that we are faced each and every season.

In summary a properly balanced fertilizer regime will provide the nutrients necessary for a vine to mature and harden off ready for the cold winter conditions. Proper placement and timing of nutrient applications is critical. Follow the soil test information to design both a ground application of fertilizer and lime. Use this information to design a foliar supplemental strategy to address those short falls in nutrient levels that cannot be addressed in a single year. Apply supplemental fertilizers on a timely basis do not wait until a problem occurs before you address it. In season tissue analysis will help you monitor the crops progress and additional requirements.

Using this pro-active approach will address nutrient short falls before they become both yield and quality limiting. A proper balanced fertility program will make for a healthy vine that will be able to withstand the cold winter.