

### Here's How to Optimize Vine Recovery After Freeze Damage Occurs

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Following a frost event, the primary task of the grape grower is to ensure the affected grapevines recover. In order for recovery to happen, great care must be taken to ensure old and new vegetation remain healthy and is photosynthetically active to where the vine is able to outgrow the damage and store carbohydrates in preparation for the winter months and following budbreak.

#### Act according to the intensity of the damage

Evaluating the severity of vine injury is the first step in determining the appropriate course of action following a freeze event.

Typically shoot tips, newly emerged foliage, and clusters are more susceptible to freeze injury than shoots, older leaves, and woody tissues. Thus, if the apex of the shoot is damaged but the clusters are intact, often no response is necessary (Figure 1). Within a few weeks' time, lateral shoots will push out on the affected shoot and normal growth will resume. Thinning of lateral shoots in overcrowded areas within the canopy may be necessary to maintain proper canopy architecture. In this scenario, yield will be minimally affected.

Conversely, if the canopy of a vine is severely injured, such as where the apex, older foliage, shoot itself, and the clusters are significantly impacted (Figure 2), the grower has two options. If found cost effective, the grower can make a pass through the vineyard and remove any dead or greatly weakened primary shoots by hand. This action will hasten vine recovery by encouraging secondary or tertiary shoot growth and may also reduce disease pressure in certain circumstances. Additionally, it may be advantageous to remove dead primary shoots within one to



Figure 1



Figure 2

two weeks of injury to ensure improved vigor and increase winter hardiness of the remaining shoots. If not economically feasible, the grower can wait for the secondary shoots to emerge, naturally, without intervention.

Given the fruiting potential of the secondary buds, these strategies make it possible to limit the yield losses of the current year (20 to 40% of the initial yield depending on factors such as variety, the sunlight interception, and growing conditions...). In general, American hybrid varieties, such as Blanc du Bois, tend to be more precocious on non-primary shoots than European counterparts.

### **Achieve adequate nutritional status**

Regardless of whether or not a crop is held on the vines following a freeze event, it will be imperative to closely monitor vine health and do everything possible to reduce vine stressors. With a second flush of growth, vines will likely have depleted their energy and nutrient reserves. Therefore, growers should be vigilant in assessing vine nutrient status by conducting tissue testing, such as through a petiole analysis, coupled with frequent field scouting during the growing season. Adjustments to fertility scheduling should be appropriately made in order to meet the new demand of the vines.

Proper vine nutrition will not only promote healthy regrowth of vegetative tissues and support the remaining crop but will also be essential in ensuring the vines have adequate reserves going into next season.

### **Protect the foliage from pests and diseases**

With depleted energy reserves and a delay in available foliage that is photosynthetically active, vegetative tissue must remain at peak performance throughout the growing season in order for vines to recover. With this in mind, grape growers should re-evaluate their pest and disease management strategies and ensure they are continuing to prevent and control these stressors, even if a crop is not expected. Remember, as a perennial fruit crop, the management decisions we implement the current season will transfer into each subsequent growing season, for better or for worse.

### **Irrigate the vineyard properly**

It is important to keep the vines sufficiently irrigated throughout the entire growing season in order to support new vegetative and reproductive growth by avoiding water stress. Not only will proper soil moisture status help in successful root regrowth and canopy recovery but will also ensure newly applied nutrients are being taken up by the vine. Both under-irrigation and over-irrigation should be avoided.