

Vineyard:  
Post Harvest

# Energising Viticulture: Sam Bowman Post-harvest grapevine management

As everybody gets caught up in the whirlwind that is our harvest period and looks forward to a well-earned holiday after the fruit comes off – it is can be easy to forget the importance of post-harvest grapevine management. **Sam Bowman** reports.

THE BIGGEST QUESTIONS I get asked by growers tend to focus on the issues of timing and amount of nutrient/irrigation application; as well as how important it is to keep a healthy functioning canopy.

Every vineyard is different and there are many external factors which will influence the treatment during this period. But let's have a look at some general guidelines for ensuring a fruitful season next vintage.

## WHY IS IT SO IMPORTANT TO PROPERLY MANAGE YOUR VINEYARD AFTER THE SEASON IS FINISHED?

From budburst to flowering, each vine relies solely on stored carbohydrates from the previous season. The majority (50 to 75%) is stored in the roots, where the carbohydrates are stored as starch and as free sugars with the starch stored as granules in the xylem and phloem vessels.

The demand for mobilisation of stored carbohydrates reduces as functioning leaf photosynthesis takes over as the main source of energy production, this occurs around the eight-to-10 leaf stage, which is quite a long way from budburst and a crucial period of early canopy development.

Not only will canopy architecture be determined from the stored carbohydrate reserves - but also bud fruitfulness, flowering and the eventual fruit set are all directly linked with how the vines are handled going into dormancy.

Half of all stored carbohydrates are mobilised in the spring, the buffer that remains stored allows the vine to re-shoot in the event of a frost or a hail event, something we don't often think about after harvest.



With 16% of total Nitrogen coming from the leaf post-harvest, it shows this period can have a huge impact on the following season.

## HOW LONG SHOULD I KEEP WATERING AFTER HARVESTING?

The answer to this question, again, is different for each vineyard and each region.

I like to water directly after harvest (that day or night depending on whether it was handpicked or machine harvested) ▶

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and then continue to keep a healthy canopy for as long as possible to ensure adequate replenishment of carbohydrates. Crop load also plays a huge role in determining how long irrigation should be applied to restore reserves:

Crop Load – tonnes per Hectare	Irrigation duration
5-10	One week – mostly restored by harvest
10-20	Four weeks
20-35	Six-to-eight weeks

If water is not available after harvest, it should be applied two-to-three weeks before budburst to reduce stress symptoms. Vines will tolerate this for one season without declining significantly but it's not a great practice. Keeping sufficient supply in reserve for after harvest, especially in warmer regions is a must.

In cooler climates, where there is a shorter post-harvest

period than warm/hot regions, growers may only need two irrigations and some fertilizer applications.

Those in warm/hot climates will require more nutrient and irrigation after harvesting and will also need to ensure the duration of each irrigation is accurate – to match the vines' needs and not leach nutrients below the rootzone. Soil moisture probes can assist in this period to ensure water is not used in-inefficiently and minimal amounts are applied.

#### HOW MUCH FERTILIZER SHOULD BE APPLIED... AND WHEN?

Nutrient removal from the vines will vary based on the region; crop load; soil fertility; and the vine nutrient status during the season.

As mineral uptake is directly correlated with photosynthesis and transpiration, a healthy functioning canopy after harvest is crucial for nutrient replenishment.

Macro nutrients are in higher demand than micro nutrients, but all are essential for a healthy functioning vine the following season. For a vineyard cropping at 10 tonnes per hectare the

following macro nutrients are removed from the vineyard per tonne of fruit:

Nutrient	Kilograms removed per tonne harvested
Nitrogen	1.5
Phosphorus	0.4
Potassium	3
Calcium	0.4
Magnesium	0.1

This is no 'one size fits all' approach either and nutrient additions should be based on nutrient status throughout the season (petioles and leaf blade) and soil tests, but is a good guide to give you a rough idea of what will need to be replaced.

Within cool climates, where there is a shorter post-harvest period, growers may only need a small nutrient application directly after harvest. In warm and hot climates, if the canopy is in good condition, growers should wait to leaf fall before applying to ensure efficient uptake and less loss through leaching due to the longer irrigation period.

If water availability is low, there will be limited movement of nutrients through the soil so applications should be postponed until the following season.

### WHY WOULD I APPLY FUNGICIDES AFTER HARVEST?

Because it has been a high disease-pressure year in most regions (the Hunter seemed to get a well-earned break for a change) the risk of mildews and mites arriving late in the season was increased.

Powdery and downy mildews can disrupt nutrient uptake in the vine and the export of carbohydrates from the leaves. In young vines, infections can greatly disrupt carbohydrate export and also the lignification process in the canes which can lead to susceptibility to frost and cold damage in the winter.

More importantly, the post-harvest period gives rise to the formation of cleistothecia (the over-wintering, spore-forming structures of powdery mildew) which can cause issues in the following season by infecting young shoots.

For regions with a longer period between harvest and dormancy a copper/sulphur spray will reduce the incidence of cleistothecia formation and keep powdery and downy in check.

In addition, this application can also be used to apply foliar

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fertilizers if direct injection is not an option. If vines are severely infected, more dramatic action will need to be taken to reduce the spore load.

As vines lignify the susceptibility is dramatically reduced so vigilant monitoring after the fruit comes off is the best bet.

### WHAT IF I CAN'T DIRECT INJECT INTO MY DRIP SYSTEM OR I DRY GROW?

If this is the case, don't panic. I'm a big fan of post-harvest foliar nutrient application.

The fact you can cover off some end of season fungicide application and add vital macro and micro nutrients in one fowl swoop is a huge bonus.

In this scenario, an NPK for macronutrients and a product like tri-kelp seaweed added for some trace elements with be sufficient for most vineyards.

The chemical cost per hectare will be around \$32. Best to get this done close to harvest to maximise leaf uptake. If contract spraying (\$60-\$80 per ha), this is a pricier option but for owner operators can be a great way to ensure your vines go to bed happy and healthy.

### IN SUMMARY

With so much of the next season's crop relying on the management after harvest it is crucial to have a good plan in place to achieve the best results.

Tracking vine performance and tissue testing during the season are just as important as the right inputs after harvest. A little extra work at the end of the season can have a great effect down the track. Happy picking. 