



Managing grapevines after hail damage



Background

The purpose of this fact sheet is to provide growers that have experienced hail damage with guidance on how to assess and manage their vines.

Assessing hail damage

It is important to inspect damaged vines as soon as possible after a hail event, as the level of damage may be obscured by any new growth. It is also important for growers with hail damage insurance to contact their insurer and arrange for formal damage assessment processes to be initiated as soon as possible. For growers without hail damage insurance, it is still important to assess the crop loss and damage in a formal manner, in case other relief measures are made available. It is also wise to collect photographic evidence of damaged vines throughout each affected vineyard.

The damage caused by hail events will vary depending on the stage of vine development. Recent (2014) hail events occurred when most vineyards were at a phenological stage in the post-fruit set phase somewhere between berries at peppercorn size (4 mm diameter) and pea-sized berries (7 mm diameter; E-L stages 29 to 31). At this stage of grapevine growth and development the following symptoms can be observed in affected vineyards:

- Vines can be completely stripped of leaves and fruit.
- Leaves can be bruised, torn, tattered, holed or completely knocked off the plant.
- Shoots and trunks can be broken or bruised and scarred.
- Compound/lateral buds located on current season's shoots, in the leaf axils can be damaged – affecting the development of fruiting buds for the following season.
- Developing berries can be bruised, holed, split or knocked to the ground.



Although the hail damage can appear to be extreme, vines have the ability to recover by reshooting from other buds on the vine. The degree of recovery depends on the severity of damage on each individual vine.



Determining an appropriate vineyard management strategy

- **The amount of salvageable fruit remaining on the vine without any visible damage to berries or the bunch stem.**

If a grower decides when making the hail damage assessment that a significant and economic amount of fruit may be salvageable, then the management strategy may be to simply leave that fruit and wait for the canopy to reshoot and grow. This strategy should also include ensuring that both fruit and canopy are protected from key pests and diseases, including powdery mildew (canopy and fruit), *Botrytis* (canopy and fruit) and trunk diseases (e.g. *Eutypa*). The real issue with trying to salvage a crop in the current season is that many new shoots on the vine will grow, producing a second crop which will most likely not ripen to an acceptable level by the time the initial crop has achieved target Brix/Baume levels. Wineries may reject crops that have been mechanically harvested in 2015 from hail-damaged sites, as they may contain a mixture of ripe and unripe fruit. Wineries may decide to reject this fruit based on the proportion of green/unripe component within the load, as it can impart negative sensory characters into the final wine.

- **Significant physical damage of current season shoots (wounds/lesions).**

In these cases most of the fruit is also usually damaged and unsalvageable. It is critical to inspect the damage along shoots/canes and look at the amount of wounding and lesions. If the shoots/canes and compound/lateral buds (which provide the fruiting potential for the following season) are significantly damaged, the best vineyard management strategy may be to remove these shoots/canes down to the basal buds and allow new ones to reshoot and develop from secondary buds. While this is a radical management decision, it would allow for secondary buds to burst and develop healthy canes for the following season. This strategy eliminates damaged shoots/canes, which can also be problematic to prune and manage for the following season. If not removed, excessive shoots can come out of damaged canes and these are very difficult to manage the following year as a lot of poor quality wood can be produced. It is important to monitor cane development toward the end



of the season to ensure new shoots/canes lignify properly. While this management strategy may appear severe, vines with little or no crop are able to regrow quickly. Do not expect the second crop that arises from this growth to ripen in the current growing season. Varieties such as Cabernet Sauvignon, Shiraz and Gordo have relatively fruitful secondary buds but varieties such as Sultana, Riesling and Chardonnay are typically less fruitful. The economics of undertaking this particular operation need to be carefully considered.

In young grapevines, hail can cause significant wounding on the shoot that is to become the future trunk of the vine. If the shoots extending up to the trellis wire are badly scarred, cutting them back and retraining a new shoot should be considered. The scarring on a shoot that will eventually become the trunk can both interfere with sap flow and may also provide sites for the entry of trunk diseases in the future. If the damage is not extensive, the vine will often recover quickly.

If the weather remains dry, wounds on mature vines that are properly managed should heal quickly. Hail damage at the E-L 29 to 31 stage of grapevine growth and development has been shown to reduce fruitfulness and crop in the following season. Therefore winter pruning may need to be adjusted to select and position spurs in appropriate locations for future crops and to retain extra buds to compensate for the anticipated lower fruitfulness.

Growers with hail damage who have decided not to harvest fruit in the season affected by hail damage should continue a basic preventative spray program for powdery mildew and *Botrytis* control. These growers do not have to follow the AWRI 'Dog book' recommendations and can use the label withholding periods. If the crop will be harvested, growers should follow the AWRI 'Dog book' recommendations. Where the trunk or cordon has been damaged, a spray aimed at reducing the risk of *Eutypa* or *Botryosphaeria* should be considered. The research of Mark Sosnowski has shown that the registered fungicides containing tebuconazole and pyraclostrobin should have the additional effect of protecting any damaged wood from both *Eutypa* and *Botryosphaeria* infection.

Botrytis is an opportunistic wound pathogen and protection of damaged tissue should be a priority. *Botrytis* rot can infect any damaged tissue and if weather conditions are wet toward the end of the season the risk of infection is very high. Treatments to protect against *Botrytis* infection should be applied immediately after hail damage and before any further wet weather.





Summary

Growers need to assess vine damage as soon as possible after the hail event and choose an appropriate vineyard management strategy that aligns with the visual symptoms observed in each specific vineyard. Growers should aim to regrow and retain a healthy canopy for driving good carbohydrate storages for the following season and maintain an appropriate pest and disease management strategy to protect against *botrytis*, powdery mildew and *Eutypa* trunk diseases.

Further reading

John Whiting (2012) <http://www.depi.vic.gov.au/agriculture-and-food/horticulture/wine-and-grapes/recovery-from-hail-damage-grapevines>

P. Dry. 1986. The effects of hail damage may carry over to next season. *Aust. Grapegrower Winemaker* 275: 22, 24.

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