

Using Ethephon to remove wine-grape crops and reduce management costs

Background

The Australian wine industry is currently experiencing an oversupply of red wine grapes. Growers with uncontracted fruit may wish to consider resting their vineyard – that is, maintaining the vineyard asset under reduced management costs until market conditions improve.

One option for vineyard resting is to use a treatment to significantly reduce fruit set in grapevines. Research trials completed in 2022-23 by the Department of Primary Industries, NSW and the South Australian Research and Development Institute (SARDI) in Chardonnay (Riverina) and Shiraz (Riverland) confirmed that foliar applications of the plant growth regulator Ethephon at growth stages E-L 25 to 27 can be highly effective at reducing the crop (Figure 1). Stopping bunch development allows growers to reduce inputs and removes harvesting and fruit disposal costs.

Trial results

Two approaches to using Ethephon to reduce grape crops were included in the Riverland trial – a single Ethephon spray and two Ethephon applications. Both treatments succeeded in reducing yield but at this stage only the single application is approved by the Australian Pesticides and Veterinary Medicines Authority. In these trials the applications were made with a hand spray unit until the canopy was saturated.

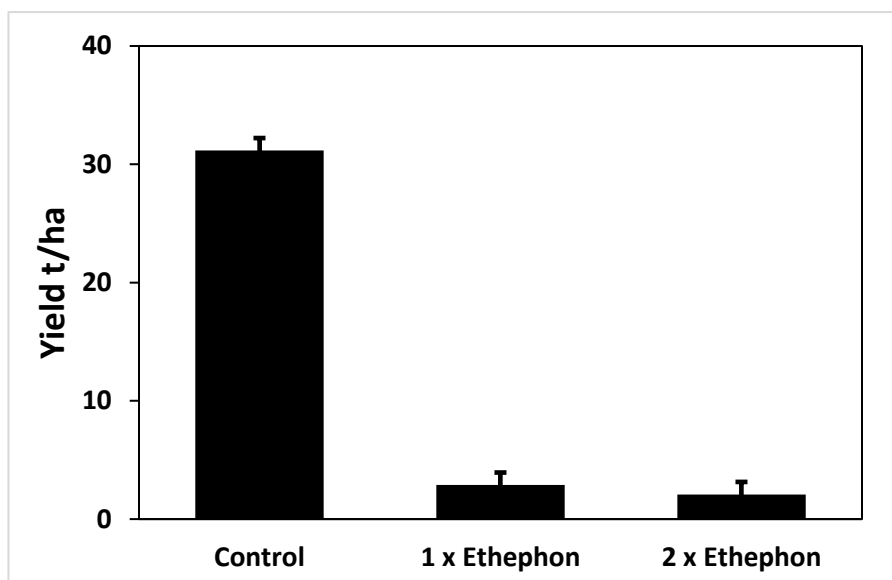


Figure 1. The effect of Ethephon treatments (1,000 mg/L + wetting agent) in reducing overall yield in Shiraz (t/ha) in the SARDI trial conducted in the Riverland, South Australia in 2022-23. Standard error of mean is shown as error bars. Data is from vines that received full irrigation.

Tips for using Ethephon effectively

The conditions outlined in the [Australian Pesticides and Veterinary Medicines Authority permit for Ethephon \(PDF 89 KB\)](#), outlined below, must be complied with:

Directions for use:

Crop	Purpose	Rate
Grape vines used for wine production	Bunch removal	900 g/L products: 104 mL/100 L 720 g/L products: 130 mL/100 L 480 g/L products: 190 mL/100 L

- The spray must be applied between growth stages E-L 25 and E-L 27, and it is recommended for most effective fruit removal that growers target the completion of flowering (E-L 27) when fruit has just set. Berries become resistant to Ethephon as they develop, so sprays later than E-L 27 will not be as effective.
- The spray should be applied using an air-blast sprayer with a non-ionic wetting agent added at the label rate. This improves coverage and efficacy.
- The spray should be applied to the point of run-off and coverage is very important. There is no provision in the permit for concentrate spraying.
- After Ethephon application, spray units should be thoroughly washed to ensure all residue is removed before use on non-target vines.
- All safety directions on the Ethephon label must be followed, as repeated minor exposure to Ethephon may have a cumulative poisoning effect.

Other tips:

- In hand-pruned vineyards with a defined bunch zone, you can target the spray application to saturate the bunches.
- Performance of the Ethephon is best in warm conditions – over 17°C.
- The effects of the Ethephon should become obvious within a few days of application. (Figure 2).
- Do not apply if rain is expected within eight hours of application.
- Consult the product label regarding water quality requirements (pH).



Figure 2. (a) A shattered bunch after being treated with Ethephon; (b) an Ethephon-treated bunch at harvest.

How to maintain your vineyard after using Ethephon

The removal of bunches from a vine eliminates the need for bunch rot control, but powdery and downy mildew are diseases that still require management and may require spraying if conditions favour disease development. Irrigation requirements of vineyards that are not carrying fruit are likely to be reduced; growers should monitor canopy growth to ensure it is not being stimulated by water availability.

Technical advice

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Disclaimer

Ethephon appears to be an effective chemical option to reduce crop yield. The results presented in this article are preliminary, based on one season's data from trials conducted by SARDI and the Department of Primary Industries, NSW. As such the long-term effects of these treatments are not known. While inflorescence counts conducted early this season on vines that were treated last season suggest that bunch numbers will be similar to the control treatment at harvest, it is possible that Ethephon used in accordance with the APVMA permit may lead to reduced crop yields in following seasons. This fact sheet is intended to provide information to growers and should not be interpreted as a recommendation to adopt this management option. All producers must consider their own circumstances before deciding to rest a vineyard and the method used to do so.

Acknowledgements

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