viti-notes

[Effective chemical use]

Research to Practice

Calculating chemical rates for vines

Viti-note Summary

- Dilute spraying

- Concentrate spraying

Once the dilute spray volume for a particular situation and stage of vine growth has been determined then it is relatively simple to calculate the amount of chemical to put in the spray tank to ensure a sufficient dose is achieved.

Dilute spraying

For dilute spraying the amount of product specified on the label is added for each 100L of water ensuring then that the tank mix is sprayed to run off.

SAMPLE CALCULATION:
Amount of chemical added to a 2,000 litre tank = 10ml/100L X 2,000L = 200mL

This tank mix is now sprayed to run off with a spray volume of 1,500L/ha.

The chemical application rate per hectare can also be calculated:

SAMPLE CALCULATION:
Application rate = 10ml/100L X 1,500L/ha = 150ml/ha

Concentrate spraying

For concentrate spraying the appropriate dilute volume for the vine canopy being sprayed is used to calculate the concentrate mixing rate that determines how much chemical to put into the spray tank.

Using another sprayer on your vineyard that produces fine droplets you select a concentrate spray volume of 500L/ha that provides good coverage as well as reasonable work rates.

The concentration factor is the dilute spray volume divided by the concentrate spray volume:

SAMPLE CALCULATION:
1500L ÷ 500L = 3 ie. 3X

The dilute label rate from the chemical label is 10mL/100L then the concentrate mixing rate becomes

SAMPLE CALCULATION:
3 x 10mL/100L = 30mL/100L

This then becomes the chemical rate per 100L that is added to the tank.

SAMPLE CALCULATION:
Amount of chemical added to a 2000 litre tank = 30mL/100L X 2000L = 600mL

Other topics in this Viti-Notes series include:

- Targeting sprays for vineyard pests and diseases
- Maintaining product performance in spray mixes
- Selecting and using spray adjuvants
- Understanding chemical 'modes of action'
- Managing chemical resistance in the vineyard
- Equipment adjustment and evaluation to maximise spray coverage
- A single rate per hectare – why it shouldn't be used
- Determining chemical rates for dilute and concentrate spraying
- Determining dilute water volumes for spraying
- *Calculating chemical rates for vines*

Table 1. Details used in example below.

Vine canopy:	Dense late season VSP
Dilute label rate:	10ml/100L (from the chemical label)
Spray tank volume:	2,000 litres
Dilute spray volume to 'thoroughly wet' the canopy being sprayed:	1,500L/ha

Calculating chemical rates for vines

The chemical application rate per hectare can also be calculated:

SAMPLE CALCULATION:
Application rate = 30ml/100L X 500L/ha = 150ml/ha

Using both dilute and concentrate spraying results in the same chemical application rate of 150ml/ha. By concentrating the chemical and utilising the coverage potential of fine droplets when concentrate spraying we are able to put out the required application rate in 500L/ha of water instead of 1500L/ha.

NOTE: CONCENTRATION FACTORS FOR DETERMINING A CONCENTRATE MIXING RATE CAN ONLY BE CALCULATED ONCE THE DILUTE VOLUME HAS BEEN DETERMINED.

Example
In the example below a grower has determined the dilute volume required to 'thoroughly wet' a vine canopy at six key growth stages. The grower has a large vineyard and uses concentrate spraying to maximise his work rates. The concentrate volumes applied during the season are listed for each growth stage and are sufficient to provide good coverage when the sprayer is adjusted correctly to match the canopy.
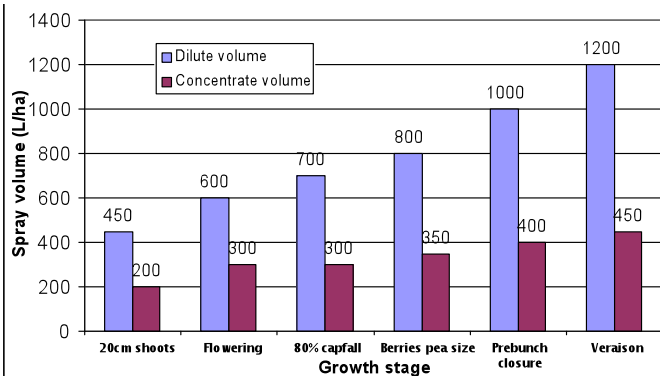

Figure 1. Example of dilute and concentrate spraying volumes at various growth stages.

The concentration factors at various growth stages can be simply calculated as follows:

- 20cm shoots:
  Concentration factor = 450 ÷ 200 = 2.25X

- Berries pea size:
  Concentration factor = 800 ÷ 350 = 2.30X

- Veraison:
  Concentration factor = 1200 ÷ 450 = 2.67X

In this example if the dilute label rate for a chemical used at veraison is 20g/100L then when concentrate spraying 53g/100L (2.67 X 20g/100L) will need to be added to the spray tank to ensure that a sufficient dose is applied to the vine.

Further information

Innovator network factsheets

Spray application by Alison MacGregor

http://www.gwrdc.com.au/webdata/resources/files/GWR_070_Spray_Application_Fact_Sheet_FINAL_WEB.pdf

Training
For regional specific training in pest and disease control, the AWRI is running Research to Practice: Integrated Pest Management for changing viticultural environments.

Contact
Marcel Essling: rtp@awri.com.au for more information.

Agrochemical information

Agrochemicals registered for use in Australian Viticulture - updated annually.

Visit www.awri.com.au for the latest version.

Useful references

Nicholas, P., Magarey, P.A. and Wachtel, M. (Eds.) 1994 Diseases and pests, Grape Production Series 1, Hyde Park Press, Adelaide (a glove box edition of this book is also available).

For images of grapevine symptoms visit www.winetitles.com/diagnosis/index.asp

Product or service information is provided to inform the viticulture sector about available resources and should not be interpreted as an endorsement.

AWRI
www.awri.com.au

gwrdc
GRAPE AND WINE RESEARCH AND DEVELOPMENT CORPORATION