Factsheet

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Sunscreen for winegrapes: demonstration trial

Liz Riley, Vitibit

Introduction

Heat events which occur following veraison may delay fruit ripening and directly impact fruit condition leading to berry sunburn or scorch. The factsheet 'Managing grapevines during heatwaves' provides more information on this phenomenon www.wineaustralia.com

In the Hunter Valley, a heat event is considered a series of days over 35°C or a single day over 40°C. Berry sunburn can result following a heat event and is of particular concern for white varieties, such as Semillon, because sun damage may negatively influence wine quality leading to undesirable phenolic flavours. Anecdotal evidence indicates Semillon grapes which have been subjected to prolonged heat events are more difficult to manage in the winery, particularly processes such as pressing and must settling.

Commercially available kaolin clay based 'sunscreen' products are reported to reduce berry temperature and the impact of sunburn during heat events. Between 2012 and 2014, a demonstration trial in the Hunter Valley assessed the use of sunscreen products on Semillon to enable local growers and winemakers to assess these products in the vineyard and understand their potential use prior to heat events. Two products were used in this demonstration – Surround® (AgNova Technologies) and Screen Duo® (Agricrop).

Application strategy

The trial site was located in the Lower Hunter Valley, NSW in a commercially run Semillon block with north-south row orientation. The vines were planted in 1997 and drip irrigated. For the demonstration trial, both sunscreen products were applied across approx. three hectares of the vineyard, using an air assisted fan sprayer at a water rate of 800L/ha. While both product labels recommend multiple applications per season, only two applications were made for both products (see Table 1). Applications were made in December, approximately 10 days apart. At this time, the grapes were at pre-veraison. Application areas were compared with an adjacent unsprayed control area. Following the second application, there were 7 days over 35°C (temperatures ranging between 35-38.6°C) prior to harvest (28 Jan 2014).

Final outcomes

The Hunter Valley demonstration showed there is value in applying sunscreen products prior to a heat event. When a sunscreen is applied prior to a heat event:

- Grapes may maintain quality rather than be downgraded.
- Ripening may be earlier – this may be especially important where there are risks associated with late ripening e.g. increased risk of rain or more heat events. Operating costs, such as irrigation or fungicide sprays, may be reduced or avoided due to an earlier harvest.
- Processing grapes in the winery may be easier. Quicker pressing and better settling means additional time is not lost which often occurs with heat affected grapes.

Figure 1: A Semillon bunch following the application of sunscreen product.

Application strategy			
Product	**Application date**	**Application rates**	**Cost per hectare**
Screen Duo® 20kg = $150	13/12/13 23/12/13	2.5kg/100L @ 800L/ha 1.25kg/ha @ 800L/ha	$150 $75
		Total	**$225**
Surround® 12.5 kg = $63	13/12/13 23/12/13	5kg/100L @ 800L/ha 5kg*/100L @ 800L/ha	$201.60 $201.60
		Total	**$403.20**

Table 1: Timing of application, rates and costs of two sunscreen products applied in the Hunter Valley during the 2013-2014 growing season.

* The Surround® label states the initial rate is 5kg/100L, but subsequent applications can be made at 2.5kg/100L. In this trial, the second application was made at 5kg/100L. If applied at the lower label rate, the cost/ha would be reduced.

Figure 2: Semillon vines following an application of a sunscreen product.

Figure 3: A Semillon bunch following the application of sunscreen product.

Treatment	Control (untreated)	Surround	Screen Duo
Unaffected bunches – western side	25	44	34
Sunburnt bunches – western side	25	6	16
Unaffected bunches - eastern side	28	41	44
Sunburnt bunches – eastern side	22	9	6
% unaffected	**53%**	**85%**	**78%**
% sunburnt	**47%**	**15%**	**22%**

Table 2: Observed numbers of bunches unaffected and sunburnt on untreated and sunscreen treated vines just prior to harvest.

Outcomes – Vineyard assessment

The treated vineyard had good canopy size, leaves were in good condition and was regularly irrigated. Approximately 10 days prior to harvest, the vineyard was visually assessed for 'sunburnt' or 'unaffected' bunches. Both sides of the canopy, east and west, were visually assessed and a bunch was scored if at least one berry was sunburnt.

From the observation, the level of sunburnt bunches observed between sunscreen treated areas was minor but there was an obvious visual difference between the treated and untreated control (Figure 3).

Figure 4: Once applied to a vine, a sunscreen product can be an excellent way to assess spray coverage.

Outcomes – Winery assessment

The sunscreen treated grapes (with Surround and Screen Duo) were harvested and combined together while the untreated grapes (control) were harvested separately. The treated and untreated grapes remained separate for winery processing. After processing in the winery, comments from the winemaker regarding the treated grapes were 'that the fruit was riper analytically and flavour-wise and had a better pH and TA as well. Compared to sunburnt fruit, there was better colour and juice required less fining. The juice settled better, maybe due to bentonite effect, but it was not kept separate past juice stage to observe it further.'

Final comments from the winery indicated the use of sunscreen products was beneficial and the winery would continue to support growers applying sunscreens on a case by case basis as required. Their support for the use of sunscreen would extend to other varieties, including red varieties.

Important considerations

- Speak with your winery and check if they allow the use of sunscreens on your vineyard
- Sunscreen products are only of value when applied prior to heat events
- As per the label, sunscreen products must be applied when the ambient air temperature is 28°C or less. If it is hotter, the product will dry before being applied to the plant surface.
- Only apply sunscreens when there is a potential risk of a heat event. Apply to risk areas or varieties when they are needed during the season.
- Ensure you have stock available at around flowering ahead of heat events later in the season.

Other outcomes

The use of the sunscreen products also provides other benefits:

- Excellent way to assess spray coverage, both on foliage and fruit.
- Easy way to measure growth of new shoots following spray application. It provides a guide as to how much foliage is 'unprotected' in the context of fungicide coverage.
- Anecodotal observations suggest sunscreen products may provide some protection from fruit fly – applications earlier in the season would be required.

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Wine Australia
Industry House, Cnr Botanic and Hackney Roads, Adelaide SA 5000
PO Box 2733, Kent Town SA 5071
Telephone: (08) 8228 2000
Facsimile: (08) 8228 2066
Email: research@wineaustralia.com
Website: www.wineaustralia.com

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