

Parasol Sunscreen for Winegrapes

Introduction

Produce in the field is always susceptible to sun damage. Parasol™ is an engineered thin film sunshield. Growers can apply it to crops to reduce sun damage, heat stress and produce loss. Reducing sun damage assists with an improvement in produce quality and returns. Parasol can also aid by reducing watering requirements as it reduces the crop water stress index when applied to cool the leaf canopy.

Sun damage in winegrapes

Damage in winegrapes occurs during very hot days when the UV levels may also be high. From December through to February; especially when there is no breeze to remove heat build up from around the vines, hot conditions can cause water stress. This may adversely effect yields and reduce wine quality. Sun damage can cause a range of effects from slight burn and subtle changes in wine quality to total loss of the bunch and a large impact on yield. Figure 1 shows sun damage in winegrapes in a trial conducted by Peracto Research staff at Nagambie, Victoria during 2007. The grapes were rated for degree of sun damage.

What is Parasol?

Parasol is a special grade of calcium carbonate, which is available in an easy to use liquid formulation. Parasol is sprayed directly on to the produce throughout the growing season to build up a protective coating that blocks harmful UV and IR light (heat) while still allowing photosynthesis and fruit colouring. Using Parasol to reduce heat stress throughout the growing season can assist to increase fruit size and fruit yield per hectare.

Key features:

- **Liquid formulation is easy to store, mix and spray**
 - ♦ Proprietary formulation has built-in stickers and spreaders, will not settle out in the spray tank and thus provides a consistent concentration of product.
 - ♦ Can be applied by aircraft at low volumes.
- **Maximum Protection from UV and IR**
 - ♦ Parasol provides protection from harmful UV and IR light while still allowing for natural fruit colouring and photosynthesis.
- **Submicron particle size**
 - ♦ Product stays in suspension during spraying to give a consistent coat of protection.
 - ♦ Less abrasive to equipment than alternative sunscreens.
 - ♦ Less abrasive on produce due to the smaller, rounded particles.
- **Compatibility**
 - ♦ Parasol is compatible with most crop protection products but not with oils, stickers, fertilisers or any product that is supplied in water-soluble packaging.
- **Rainfastness**
 - ♦ Once dry, Parasol is rainfast in up to 40mm of rain.
- **Economic Benefit**
 - ♦ Sun damage can cause produce losses of between 20 to 40%. Crops successfully protected with Parasol will return a proportion of this loss.



No burn to low burn
0 to 2% sun damage



Colour beginning to change, minor shrivelling
5% sun damage



More substantial colour change and skin wrinkling
25 to 30% sun damage



Severe colour change and skin damage
70% sun damage

Figure 1: Winegrape sun damage assessment method, Peracto trial, Nagambie, 2007

Application Guidelines

Ground Application

An application rate of 20L per hectare is recommended and a spray volume of half or one third of the dilute volume will assist in maintaining the correct deposition of Parasol on grapes and foliage.

Protection of berries

Apply the first application just prior to veraison to protect berries from sun damage. A second application should be made post veraison. To assist with the coverage of berries Vitiwet® should be added at 10ml/100L.

Protection of foliage

Apply to the whole canopy using a spray volume of half to one third of the dilute volume required for the target. DO NOT add a wetter.

The most important aim is to build up a good level of Parasol coverage prior to extreme heat events and then maintain that level throughout the season. Good coverage does not mean that the crop has to appear white. Parasol applications do not appear as white as kaolin based products that may have been used previously. There is no point in applying the product after the crop has already been damaged. Parasol applications should be made before the first heat event.

For best results Parasol should be applied in early morning or late evening. Application should occur when the ambient air temperature is between 5 and 25°C. Additional applications may be required under conditions of persistent high temperature, increased UV exposure, rain or any other circumstances that may reduce coverage on the crop. Quantum mist sprayers have provided the best results in grower trials. Covering the plant surfaces directly exposed to sunlight is critical for product performance. If the water volume is too high, coverage may be compromised due to the product running off the foliage. If this occurs reduce the spray water volume.

Aerial Application

Application should occur when the ambient air temperature is between 5 and 25°C. Aerial application of Parasol at a rate of 20L per Ha in 50L to 90L of water per Ha is recommended.



Coverage on leaves at Peracto trial at Nagambie, Victoria, 2007.



Sun damage on Marsanne grapes in Peracto trial at Nagambie, 2007



Parasol treated Marsanne grapes Peracto trial at Nagambie

Trial Results

Parasol has been tested on wine grapes in Australia and in overseas countries including the USA and South America. In Australian trials conducted by Melissa Quinn of Peracto Research during 2007, one application at 20L per Ha on Marsanne grapes resulted in a reduction in the level of sun damaged berries by 62%.

A trial organised by the supplier of Parasol, Purfresh, on Pinot Grigio grapes at Visali in California and conducted by Helena Chemicals (2008) showed not only a reduction in sun damaged fruit but also an increase in respiration rates in the Parasol treated vines. This indicated that the treated vines were more able to deal with extreme weather conditions.

Additional trials conducted by the University of Talca in Chile have also shown excellent results with Parasol. In Chardonnay grapes sun damage was reduced by 34 to 38% and cluster weight increased by 12.5%. These results showed that the best time to apply Parasol was when the berry size was less than 7mm. In Merlot grapes, sun damage was reduced by 19.4%. In Cabernet Sauvignon, there was an increase in cluster weight of 7% and 16% at early and late leafing respectively.

In order to further study the benefits of Parasol use in grapevines in Australia, Crop Care has purchased a Sap Flow Monitoring Machine for use at the South Australian Research and Development Institute (SARDI) station at Noorooopta during 2008. This machine uses a system of sap flow monitoring devices to measure water utilisation. From this study Crop Care hopes to extend information on water conservation in grapevines. Further studies will also be conducted in other horticultural crops including topfruit.

Effect on wine fermentation

The University of Talca trials in Chile showed that there was no adverse affect on fermentation for Chardonnay, Merlot or Cabernet Sauvignon grapes. Further fermentation studies are scheduled to be conducted by the Australian Wine Research Institute during the 2008/2009 season.

Parasol™ trademark pending.
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Before using, always read the product label.

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