



Plant Surface Protection can mean better packout of high-quality apples – and a more profitable orchard.

Sunburn and heat stress take a toll on apple orchards. As part of a planned treatment program, Surround® WP crop protectant can significantly reduce losses from sunburn and heat stress, resulting in increased fruit quality and higher marketable yields (packout). That can add up to greater profitability.

Surround represents a breakthrough opportunity for Plant Surface Protection in apple crops

When applied before severe summer conditions set in and maintained throughout the hot season, Surround covers plant surfaces with a protective film – a layer of specially engineered kaolin particles that reflect harmful infrared and ultraviolet radiation.

Proven to reduce sunburn damage by up to 73 percent

When applied according to label directions, Surround has been shown to reduce sunburn in apples by as much as 73 percent, and improving packout by up to 34% significantly increasing profitable yield potential. Damage reduction depends on application rate and timing as well as the severity of sunburn damage and tree canopy characteristics.

Sunburn can occur in apples when air temperatures reach 30°C. Some apple varieties can lose 20 to 30 percent of production to sunburn damage and heat stress with even greater losses in times of extreme heat. On top of this loss is unmarketable fruit that is left unpicked.

Australian growers have successfully used Surround since 2001 in apples, plums, pineapples and other fruit and vegetables with significant reductions in sunburn, bleaching and heat stress.

The Surround particles can increase light scatter within the canopy, often improving fruit colour. Other benefits can include reduced fruit cracking and russetting.

Surround® WP Crop Protectant

Sunburn reduction of 73% in Granny Smith apples – Potential packout increase – 34%

Percentage of Granny Smith Apples in each of Five Sunburn rating categories					
	Category 0	Category 1	Category 2	Category 3	Category 4
Untreated	66.0	16.5	8.8	6.0	2.8
Surround® WP	88.3	5.0	3.5	2.5	0.8

Yarra Valley – Victoria. 2002/2003

Sunburn reduction of 73% in Fuji apples – Potential packout increase – 33%

Percentage of Fuji Apples in each of Five Sunburn rating categories					
	Category 0	Category 1	Category 2	Category 3	Category 4
Untreated	68.8	11.8	8.0	5.8	5.8
Surround® WP	91.6	5.8	1.5	0.6	0.5

Yarra Valley – Victoria. 2002/2003

Sunburn damage ratings:

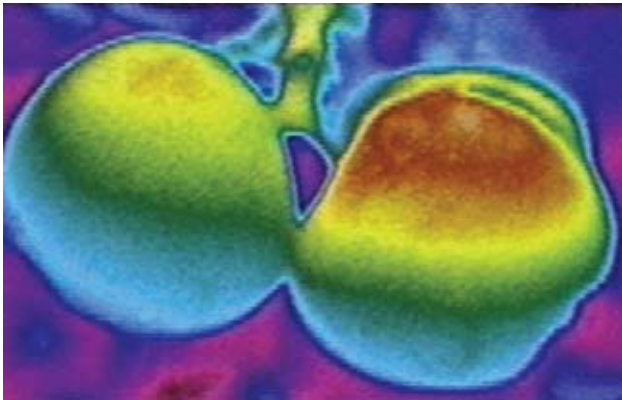
- 0 = no sunburn
- 1 = slight yellowing on exposed side (<5% fruit area)
- 2 = noticeable yellowing on exposed side (>5% fruit area)
- 3 = moderate sunburn with pronounced lenticels (some fruit unmarketable)
- 4 = significant sunburn/fruit unmarketable

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Engineered particles protect against heat stress

Temperatures higher than around 30°C can both stress the tree and further damage fruit. The worst damage occurs when cooler weather precedes high temperatures and the fruit has not acclimatized. The best way to protect the orchard is to protect the fruit with Surround in order to avoid the sudden exposure of fruit to intense heat and solar radiation. The Surround protective particle film layer can lower peak apple skin temperatures by 6° to 8°C.

Consistent coverage with Surround can also lower canopy temperature and thus reduce heat stress on the whole tree. Ultimately, this can contribute to a net increase in photosynthesis.



Surround® can lower peak apple skin temperatures by 6°C to 8°C, and leaves typically are 3°C to 5°C cooler.

Infrared photography – Left: Surround treated apple, Right: Untreated apple. Orange/red indicates the hottest area.

There's nothing like Surround. Surround has superior reflectance of UV and Infrared radiation because of its unique formulation. Based on kaolin – a naturally occurring, inert white mineral used in food and toothpaste – Surround particles are engineered to reflect significantly more of the sun's heat and radiation than any other sunscreen product. The convenient WP formulation provides:

- Easy mixability in water
- Good coverage capacity
- Controlled adhesion to the fruit

Offering all these qualities, Surround represents a real breakthrough in plant surface protection.

Strategic application timing = effective protection

As a planned treatment, Surround plant surface protection throughout the season gives growers the opportunity to markedly improve quality and packout.

For best results, apply Surround before heat events to create a protective white barrier film. Maintain coverage throughout the high heat period.

Recommended application rates

- Calibrate sprayer and spray according to tree/plant row volume.
- Use 5 kg Surround WP per 100 litres of water for the first application (usually during November and December) and 2.5 kg Surround WP per 100 litres of water for subsequent applications.
- Apply at adequate volumes to cover the fruit uniformly. Large droplets can run off and collect in stem end of fruit which may increase difficulty of film removal at pack out.
- Reapply to maintain coverage after heavy rain, wind, erosion or new growth. (See figure 1 and 2)

NOTE: Before purchase and application, make sure that your packing plant can remove Surround. AgNova strongly recommends overhead high-pressure water sprays and brushes for this purpose. See Post-harvest Packing and Washing instructions on the label. For best results, maintain coverage (as shown in Figure 1), throughout the sunburn season. When fruit appears as in Figure 2, reapply Surround.

Figure 1



Optimum coverage

Figure 2



Apple needs re-application

Important: Always read the label before buying and follow label instructions when using this product.

Surround® Protection you can see. Performance you can trust.

For more information contact your local retailer or visit www.agnova.com.au

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