

Sunscreen Continues to Protect Australian Apples

17 December 2010

TRIALS in Goulburn Valley and West Gippsland apple orchards last summer confirmed the effectiveness of a liquid sunscreen for maximising the output of marketable apples.

Victorian apple trees treated with an improved formulation of Parasol[®] liquid sunscreen produced significantly less sunburned fruit than untreated trees.

The Trials

The trials commenced in early summer on Granny Smith apple trees.

Treatments were applied five times at 12 to 23-day intervals – prior to predicted days of high temperatures, and to maintain good coverage of fruit. The protective liquid film was sprayed at a low water volume of 350L/ha to ensure thorough, even coverage of fruit and foliage.

Late in summer, fruit were scored for sunburn incidence and severity. (See sunburn rating scale photo and caption).

Conditions during the 2009/2010 summer were typical for each region, and less extreme than the summer of 2008/09. However there were still days that rated as high-risk sunburn events.

Significant Trial Results

The West Gippsland trial site was more severely affected by sunburn last summer.

- Sunburn severity score was halved with the use of Parasol.
- The proportion of apples with zero sunburn was only 23% in untreated trees, compared with more than 50% in trees treated with Parasol.
- More than 90% of apples from trees treated with Parasol were marketable, compared with 70% for untreated trees.

Goulburn Valley trial site

- The proportion of apples with zero sunburn was only 49% on untreated trees, compared with 70% on trees treated with Parasol.
- Treatment with Parasol resulted in almost 100% marketable fruit compared with 88% marketable fruit from untreated trees.

The Impact of Sunburn on Apples

Sunburn can significantly reduce the volume of marketable fruit - with a higher proportion of the apple crop downgraded or discarded, plus reduced fruit keeping- qualities - leading to lower returns from the season's crop.

Sunburn is caused by the combined impact of high air temperature and solar radiation. Critical fruit surface temperatures are 46-49°C for browning, and 52°C for necrosis of the skin. Fruit accumulates but cannot effectively lose heat through the day; so fruit temperature can be 18°C greater than the ambient temperature.

Sunburn injury typically occurs in the afternoon, with fruit on the western side of trees frequently suffering the most sunburn injury. Cool, cloudy weather, followed by a sudden change to sunny hot conditions, significantly increases the risk of sunburned fruit.

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Some varieties are more vulnerable to sunburn injury - including Granny Smith, Fuji and Jonagold. An early sign of sun damage is the loss of skin colour to a white/yellow/tan shade. Severe sunburn results in dark brown patches, and black spots of necrotic skin tissue.

Making the Most of the New Sun Protection Technology

The use of particle-film sunscreens is a relatively new technique for reducing solar impact on fruit, so requires new thinking in regard to application.

Nufarm R&D projects coordinator Doug Wilson: "Unlike other products sold for sun-damage protection, Parasol is based on calcium carbonate – a thin film of which reduces the surface temperature of crops by reflecting and scattering sunlight.

"For maximum advantage from the new liquid sunscreen, growers may have to adjust their spray rigs, including nozzle choice and reduction in fan speed.

"The target for Parasol coverage will be very different from where they usually aim insecticide and fungicide applications. A cover of Parasol needs to be placed on the top of the plants, where the sun is going to cause damage.

"It is also important to apply Parasol as a low-volume spray to get good coverage without runoff. Spraying at one-third the dilute spray volume will usually provide optimum coverage, with the spray remaining where it is deposited."

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SUNBURN RATING SCALE (0-5)

0. No Sunburn – 1st Grade Fruit
1. Some yellowing – 1st/2nd Grade Fruit
2. Noticeable yellowing (less than 5%) – 2nd Grade Fruit
3. Dark Yellowing/Browning (more than 5%) – Unmarketable
4. Sunburn/Dark Browning – Unmarketable
5. Severe Sunburn, Necrotic – Unmarketable



Treating apple trees with Parasol sunscreen last summer resulted in a higher percentage of marketable fruit.



Trees treated with Parasol liquid sunscreen in a West Gippsland orchard last summer produced more than 90% marketable fruit, compared with 70% marketable fruit from untreated trees.

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