Fungicide-Resistant Powdery Mildew In Australian Vines

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Powdery mildew is the industry's number one pest

A 2010 project commissioned by the Grape and Wine Research and Development Corporation identified powdery mildew as the industry's number one economic pest – with a national impact of $76 million annually – and ranked the disease as the highest research and development priority.

Grape growers planning their powdery mildew control program for next season need to be aware of two important developments:

- the recommended number of application of fungicides containing strobilurin (Group K) has recently been reduced to just two sprays per season, and
- strobilurin-resistant powdery mildew has been confirmed for the first time in Australia.

Strobilurin fungicides (such as Amistar, Cabrio and Flint) have been used successfully in Australian vineyards for powdery mildew control for more than 10 years. However, concerns about the potential for development of resistance to their single-site activity has always tempered advice to growers about their use.

Confirmed case of strobilurin-resistant powdery mildew

Strobilurin-resistance has now been confirmed by researchers at the South Australian Research and Development Institute (SARDI).

In a recent trial at the SARDI Lenswood Research Centre in the Adelaide Hills, neither Amistar nor Cabrio controlled powdery mildew on infected chardonnay vines. The researchers, led by Dr Trevor Wicks, confirmed strobilurin resistance by the presence of the G143A gene in powdery mildew samples from the stobilurin-treated vines.

Dr Wicks: "This is the first confirmed case of strobilurin resistance of grape powdery mildew in Australia, although some cases of poor performance of this fungicide group have been noted in Australian vineyards.

"Even though the trial vines had been subject to more strobilurin sprays than recommended commercially – and powdery mildew was already well established – the result demonstrates the potentially rapid onset of resistance typically seen, once strobilurin-resistant populations reach a critical level.

"Grape growers are therefore advised to adhere to the new two-application restriction for strobilurin fungicides, and to follow strobilurin use with alternative chemistry – to help to prevent or delay the development of strobilurin-resistant powdery mildew in Australian vineyards."

Powdery Mildew in Grapevines
Controlled (left) Vrs Untreated (Right)

Uncontrolled, powdery mildew can cause serious crop losses and impair wine quality. Infections occurring around flowering and up to five weeks later pose the greatest risk for crop damage and loss. More susceptible varieties include Chardonnay, Reisling, Chenin Blanc, Semillon and Cabernet Sauvignon.

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Powdery mildew overwinters in the vine

Growers who had a problem with powdery mildew last season need to be particularly vigilant, as high levels of the disease are likely to have overwintered in vines – in infected buds, in bark crevices and in leaf litter. With light rain and temperatures higher than 10°C, the disease will emerge to infect lower leaves. Severely infected canes may die back from the tip during winter.

Early detection and control is the key, so monitoring from budburst onwards is recommended at least every two weeks. A protective program beginning with an application of sulphur (for both powdery mildew and mite control) is recommended.

However, fungicides applied just before flowering and during the five weeks after fruit set are the most important – to protect the berries when they are most susceptible to powdery mildew, and when the potential for loss is greatest.

This year, grape growers have a totally new fungicide group to use in their spray rotation during this critical period, adding new chemistry for resistance management.

Vivando, containing metrafenone (Group U8), has been extensively trialed from 2003 in Australian grape-growing regions, including 2008/2009 trials by SARDI. It has provided equal or superior control of powdery mildew compared with standard control options. Crop Care R&D projects coordinator Doug Wilson said the product stopped powdery mildew from entering the plant; its vapour activity made it especially useful for protecting developing bunches, reaching into bunch airspace to protect the berries; it was rainfast within an hour; and it had excellent residual activity for up to 14 days.

Trevor Wicks - SARDI

An Australian Wine Research Institute (AWRI) study showed no adverse effects on fermentation or overall wine quality.

Doug Wilson: “Crop Care recommends that Vivando be used as part of a protectant spray program, commencing when shoots are less than 10cm in length. Application should be restricted to two consecutive sprays of Vivando, 7 to 10 days apart before changing to an alternative fungicide group; and no more than four applications of Vivando should be used on each crop.

“In most seasons a spray program of 4 to 6 applications of fungicide – alternating different chemical groups – will provide good control of powdery mildew; will ensure that no chemical is over-used; and will provide the best chance for fungicides to remain effective for many years.”

Vivando®

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