

Why was there more powdery mildew than usual this season?

POWDERY MILDEW is caused by the fungus *Erysiphe necator* (formerly *Uncinula necator*). Unlike most fungi, the powdery mildew fungus relies on wet weather for only a small part of its lifecycle.

It usually develops in dry conditions but spreads most extensively at high humidity in mild, cloudy weather, inside shaded canopies. One reason for this is that the fungus grows on the surface of infected foliage and is retarded by direct exposure to sunlight.

WHY WAS THERE MORE POWDERY MILDEW THAN USUAL THIS SEASON?

Several factors have contributed to high levels of powdery mildew this season. First, the weather around the time of budburst in many grapegrowing regions was extremely wet, making it difficult to get access to the vineyard and apply critical early-season sprays.

Secondly, the high levels of soil moisture triggered vigorous vine growth, which meant the rapidly developing foliage provided larger amounts of susceptible foliage.

Thirdly, the dense canopies created a shaded, humid microclimate that favoured the growth of powdery mildew but hindered the penetration of fungicide controls.

Finally, during the growing season there were relatively few extremely hot days with low humidity to inhibit growth of the fungus.

HOW CAN I IDENTIFY POWDERY MILDEW IN THE VINEYARD?

Powdery mildew is identified by the grey-white mildew that develops on infected tissue. The dusty or powdery appearance is easy to identify when the infection is well established, but can be harder to see in the early stages.

A good trick to help see young mildew spots is to angle the leaf into the light and look for whitish fungal spores. After veraison, infected material is often found on aborted green berries and on bunch stems which may show greasy black infected spots when the bunch is pulled apart.

HOW DOES POWDERY MILDEW START IN THE VINEYARD EACH SPRING?

Powdery mildew, if not controlled in the previous season, will carry over winter in infected buds. The shoots (flag shoots) that emerge from these infected buds provide the main source of inoculum to spread the disease early in the season.

If it is a practical option, growers should remove flag shoots to reduce the

number of fresh spores in the vineyard. Also, by marking the area where flag shoots emerged and monitoring the adjacent foliage, growers can check for any subsequent development of powdery mildew. This can be a powerful guide to the success of a spray program.

WHAT COULD HAVE BEEN DONE TO PREVENT POWDERY MILDEW THIS SEASON?

Control throughout the season relies on early management of inoculum levels. This is achieved primarily through fungicide applications focussed on protecting all green tissue.

The sprays should ideally begin shortly after budburst and continue for at least six weeks, spraying at intervals of 10 to 14 days.

When opportunities to spray are rare, for example due to bad weather or vineyard waterlogging, it is important to make the most of every chance to apply appropriate fungicides. Achieving good spray coverage at the correct chemical label rate is essential.

Cultural practices that promote an open canopy can also assist with powdery mildew prevention. This is because an open canopy, being more exposed, will be less humid than a dense closed canopy and will provide a microclimate that is less favourable to the disease.

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It is also easier to achieve good spray coverage in the hard-to-reach parts of the canopy where the disease is most likely to develop if the canopy is open.

LATE-SEASON POWDERY – WHAT ARE THE TREATMENT OPTIONS?

In typical years, if good early-season control has been established, the need for late-season sprays is reduced. However, once the disease is present and has spread inside shaded canopies, regaining adequate disease control is challenging.

In this case, a combination of canopy management and thorough spray coverage is critical.

There are many effective fungicides registered for control of powdery mildew, but careful selection and rotation of activity groups is imperative because the disease is prone to developing resistance against single-site fungicides.

To reduce the risk of resistance, alternating among different chemical groups and including multi-site fungicides such as sulfur is recommended. Guidelines to manage resistance are developed by CropLife Australia and published in the AWRI's 'Dog book'.

Chemical control should focus on maintaining protection on uninfected tissue to restrict the disease from spreading and potentially defoliating the vines.

Fungicides with vapour activity such as sulfur are useful because the fumes can get to hard-to-reach parts of the canopy and bunch.

Late-season canopy control strategies such as trimming and leaf plucking increase the penetration of light into the canopy and promote airflow. Importantly, this also allows better spray coverage.

WHAT SHOULD I DO NEXT SEASON?

It is likely that there will be higher levels of powdery mildew inoculum present in many vineyards next season, so it will be important to spray thoroughly early in the season.

Careful control of powdery at that time will also help reduce the carry-over of infected buds to the following season. An effective powdery mildew spray program will begin with at least three to four consecutive sprays at 10 to 14-day intervals from budburst.

After this, vineyards should be monitored carefully to look for any sign of active powdery mildew. If active powdery mildew is detected, the spray program should be maintained. If good control has been achieved, the spray schedule can be relaxed, but continued monitoring is important.

FURTHER INFORMATION

More information about the lifecycle and management of powdery mildew can be found in several fact sheets on the AWRI and Wine Australia websites. Support is also available from the AWRI helpdesk via helpdesk@awri.com.au or 08 8313 6600.

Acknowledgement

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*Did you know?

While the name of the AWRI 'Dog book' does relate to the simple fact there's a dog on the cover, the image of the 'customs beagle' was chosen because the book is a resource for those exporting wine.



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