

ask the
AWRIPests &
Disease

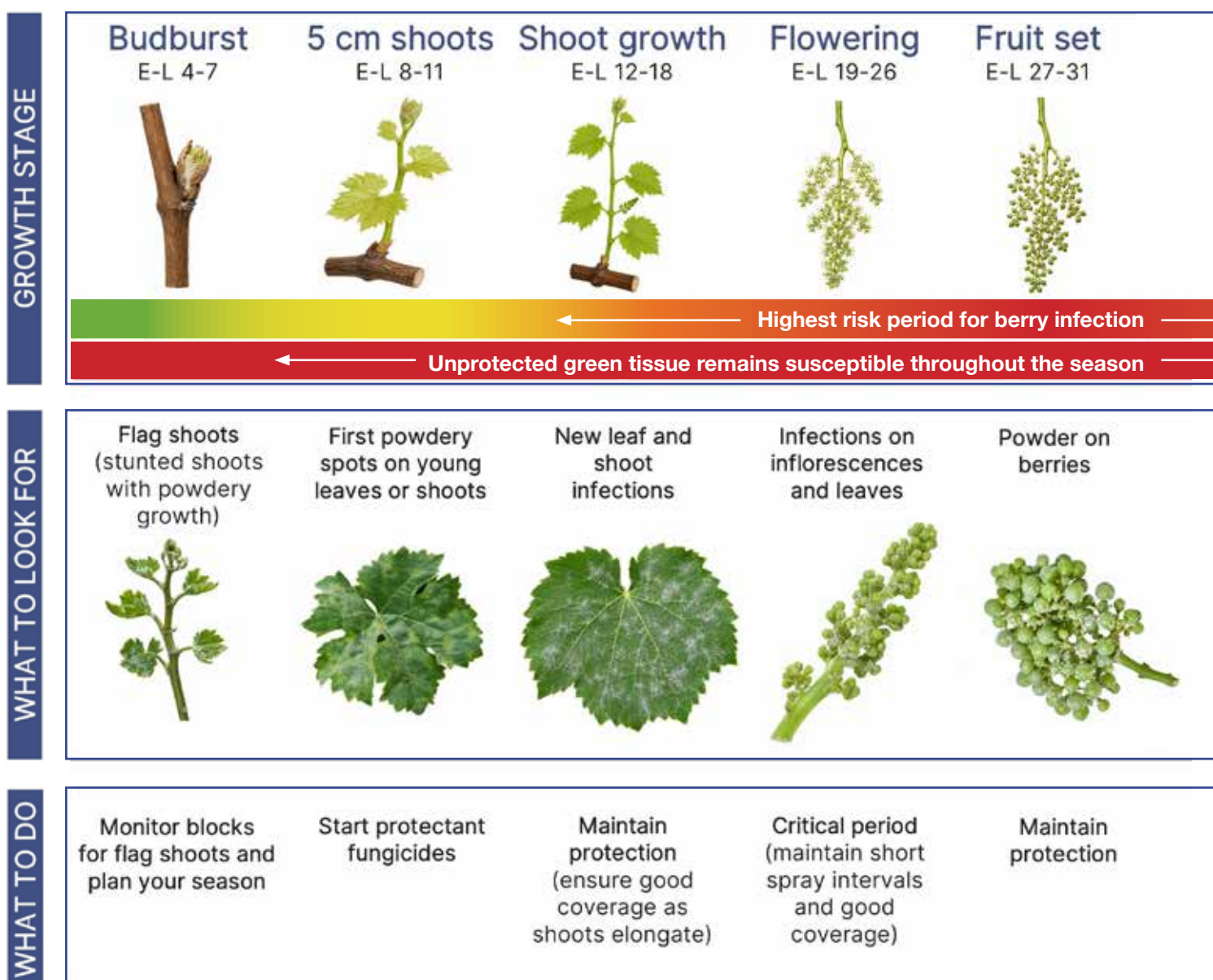
Powdery mildew - catch it early or chase it all season

Every season, the AWRI receives enquiries from growers about powdery mildew. Some are seeing the disease for the first time, while others are wondering why it has become so difficult to control after years of relatively few problems. The answer is usually the same: powdery mildew is much easier to prevent than to bring under control once it becomes established.

The biggest mistake growers make is waiting until powdery mildew is easy to see, before they act. By then, the disease has usually been spreading unnoticed for weeks.

In this article, AWRI Viticulturist **Spiro Papadopolous** discusses the importance of understanding the disease cycle, recognising periods of highest risk, detecting infections early, and protecting susceptible tissue before infection occurs.

GRAPEVINE POWDERY MILDEW MANAGEMENT



What are the keys to staying ahead of powdery mildew?

Successful programs are built around five key principles:

1. Focusing on prevention rather than trying to control established infections.
2. Prioritising activity in blocks with a history of infection and susceptible varieties.
3. Monitoring regularly from budburst.
4. Combining good canopy management with timely fungicide applications.
5. Keeping records to identify recurring hotspots and improving future programs.

How does powdery mildew spread?

Powdery mildew, caused by the fungus *Erysiphe necator*, survives winter in infected buds and produces characteristic 'flag shoots' in spring and resting spores (chasmothecia) on bark and old bunch material. Flag shoots are particularly important because they provide one of the first sources of inoculum each season. Missing even a small number of early infections can allow powdery mildew to establish before symptoms become obvious across the block.

As temperatures increase in spring, spores are dispersed by wind and infect

new green tissue. Each infection site produces more spores, allowing disease pressure to build rapidly if conditions are favourable.

Early detection not only improves disease control but also provides valuable feedback on whether the spray program is performing as intended.

Under what conditions are you most likely to find powdery mildew?

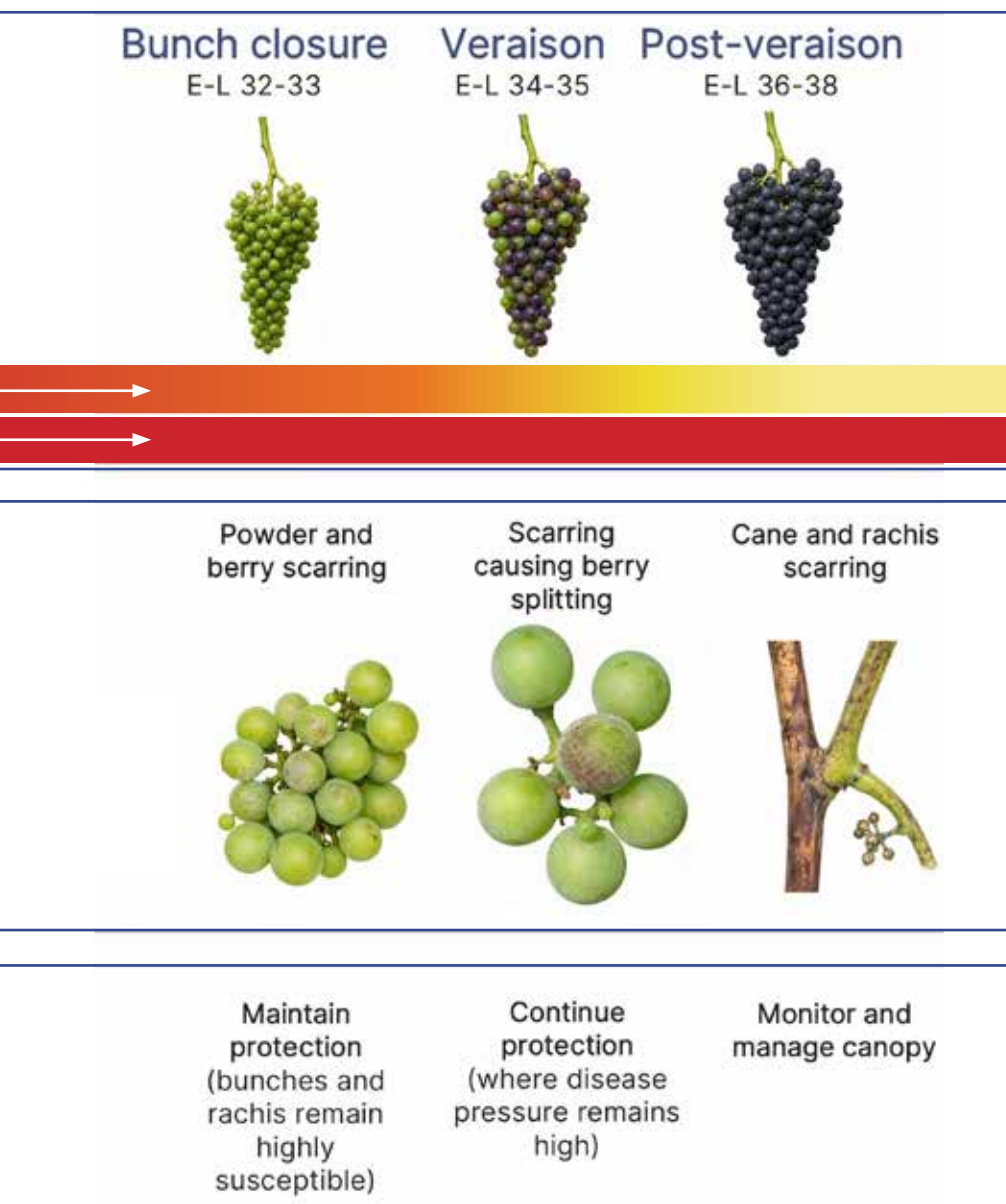
Powdery mildew favours temperatures between 20 and 30°C and moderate to high humidity. Sheltered sites with poor airflow are often the first areas where disease develops. These 'hot spot' areas are often associated with dense or shaded canopies found in low-lying areas or because of irrigation leaks. Dense canopies not only create a favourable microclimate for disease development but also make it more difficult to achieve good spray penetration, reducing the effectiveness of fungicide applications.

Varieties such as Chardonnay, Semillon, Verdelho, Riesling, Shiraz and Grenache are generally more susceptible to powdery mildew than other varieties and warrant closer attention when monitoring for signs of infection.

What should you look for in the field?

Monitoring should start at budburst and continue throughout the season. Early in the season, look for 'flag shoots' with stunted growth, curled leaves and the characteristic grey-white powder. Leaves usually develop small yellow-green spots before the powder becomes obvious, and young leaves may become distorted.

As the season progresses, the bunch rachis and berries become the main focus of monitoring. Infection can cause rachis and berry scarring, berry splitting, distortion and uneven colouring in dark-skinned varieties, while infected



canes often develop distinctive red-brown to black web-like markings after lignification.

Inspect multiple locations within each block, including the inner canopy and known 'hotspots'. If an infection is found, mark it with flagging tape and record the location so you can monitor its progress throughout the season. Early detection not only improves disease control but also provides valuable feedback on whether the spray program is performing as intended.

What's the best way to prevent and manage powdery mildew?

The most effective programs combine canopy management with timely fungicide applications. An open canopy improves airflow, reduces humidity, and allows sprays to reach inner leaves and bunches more effectively.

Good vineyard practices include:

- Maintaining open canopies using pruning, shoot thinning, and shoot positioning.
- Managing irrigation and nutrition to avoid excessive vigour, including timely fixing of irrigation leaks.
- Improving spray coverage by adjusting sprayer set up as the canopy develops throughout the season.

Most fungicides registered for the control of powdery mildew provide protectant rather than curative activity. Preventative applications made before infection becomes established are significantly more effective than attempting to manage active disease.

In vineyards with a history of powdery mildew, application of protectant fungicides should commence from the 5cm shoot growth stage. During periods of high disease pressure, maintaining short spray intervals is essential. Sulphur remains an effective and economical option early in the season when good coverage can be achieved, while synthetic fungicides play an important role before and during flowering.

Late-season powdery control is often more challenging because the disease is well established and dense canopies reduce spray penetration. This reinforces the importance of protecting vines early rather than trying to recover later in the season. Always refer to the current



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Agrochemicals Registered for Use in Australian viticulture (commonly known as the 'Dog Book') for registered products and timing for export wine (https://www.awri.com.au/wp-content/uploads/agrochemical_booklet.pdf).

Could fungicide resistance be contributing to your inability to control powdery mildew?

Fungicide resistance develops when a fungus survives a dose of a chemical that would normally kill or control it. Repeated use of the same fungicide acts as a selection process, killing susceptible fungi while allowing resistant ones to survive, multiply and eventually dominate the population. If you notice that your ability to control powdery mildew is diminishing year-on-year, it might be that you have 'reduced sensitivity' or 'field resistance' occurring. The only way to diagnose this is with laboratory testing (contact SARDI Horticulture Pathology Laboratory).

It is essential to manage fungicide resistance so that effective fungicides are preserved. This can be achieved by:

- Following product label directions.
- Following CropLife Australia's

powdery mildew resistance management strategy as outlined in the 'Dog book'.

- Rotating fungicide mode-of-action groups.
- Investigating suspected spray failures and testing for resistance.
- Reducing disease pressure using canopy management techniques.

How to access help

The AWRI helpdesk provides a technical advisory service for Australia's grapegrowers and winemakers. For free and confidential advice, call (08) 8313 6600 or email helpdesk@awri.com.au

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