



## Symptoms of powdery mildew

### Viti-note Summary:

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- Leaf symptoms
- Shoot symptoms
- Bunch symptoms
- Cane symptoms
- 'Looks like'—other similar disorders



Figure 1. Leaf symptoms of powdery mildew

### Summary

- Yellowish leaf spots which produce grey to white powdery spores. Severe infections might deform young leaves or turn leaves black.
- 'Flag shoots' are shoots which are characteristically distorted and stunted and might become covered in powdery spores. Later in the season, previously uninfected shoots might also become diseased, exhibiting oily grey blotches which develop spores. These blotches might eventually turn dark red-brown as canes mature.
- Powdery ash-grey spores can grow on berries and bunch stalks causing berries to become scarred and distorted, and to split, rot and shrivel.
- Diseased canes might mature irregularly and in winter might die back from the tip, or exhibit a red-brown to black web-like pattern on their surfaces.

- Leaf spots are first seen as yellow-green blotches up to 2–10 mm in diameter.
- Web-like fungal growth on the surface of blotches can be seen with a hand lens.
- The webbed fungal growth might grow to cover the whole leaf.
- Ash-grey to white powdery spores are produced.
- The finer veins on the underside of diseased leaves turn brown.
- Leaves might blacken when infection is severe.
- Web-like patterns of dead, darkened leaf cells can be seen at a later stage, if the fungus is rubbed off.

### Shoot symptoms

- Buds infected in the previous season produce 'flag shoots' with distorted leaves which curl upwards. Initially, flag shoots are entirely or partly diseased.
- Oily grey blotches appear on green shoot stems.
- Ash-grey to white spore patches develop, spreading until whole shoots are covered by the mildew.

### Other topics in this Viti-Notes series include:

- Characteristics of powdery mildew
- Symptoms of powdery mildew
- Monitoring for powdery mildew
- Managing powdery mildew

### Leaf symptoms (Figure 1.)

Severely diseased young leaves are distorted and crinkled. Leaves older than two months are less readily infected. In mid-late season severely infected vine canopies smell musty, and severely diseased leaves might fall prematurely.



Figure 2. Immature berries showing powdery ash-grey growth



Figure 3. Diseased cane showing powdery mildew symptoms

- Severely diseased shoots are often stunted and can die.
- Old or earlier infections appear as dark red-brown patches on mature canes.

## Bunch symptoms

- Infected cluster parts produce powdery ash-grey growth on immature berries and bunch stalks (Figure. 2).
- Diseased berries become scarred, distorted, split, rotted, and shrivelled.
- Black grape varieties can exhibit patchy colouration as they mature, but this is difficult to see after the red colour develops.
- Post-veraison, web-like patterns of dead cells develop on the surface of diseased berries.

## Cane symptoms

- Severely diseased canes mature irregularly and in winter might die back from the tip.
- Red-brown to black web-like patterns develop on infected canes in winter (Figure. 3).

## 'Looks like'—other similar disorders

Powdery mildew grows on all green parts of vines including both upper and lower leaf surfaces. It is often confused with downy mildew, but downy mildew only produces spores on the lower surface of leaves. Late in the growing season, powdery mildew damage can occasionally be confused with rust mite damage. Some powdery mildew infections can resemble herbicide damage, and leaf hairs can occasionally be mistaken for powdery mildew mycellium.

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## Further information

### Innovator network factsheets

Managing Powdery Mildew

[http://www.gwrdc.com.au/webdata/resources/files/PowderyMildewFact\\_Sheet.pdf](http://www.gwrdc.com.au/webdata/resources/files/PowderyMildewFact_Sheet.pdf)

### Training

For regional specific training in pest and disease control, the AWRI is running Research to Practice: Integrated Pest Management for changing viticultural environments.

### Contact

Marcel Essling: [rtp@awri.com.au](mailto:rtp@awri.com.au) for more information.

## Agrochemical information

Agrochemicals registered for use in Australian Viticulture - updated annually.

Visit [www.awri.com.au](http://www.awri.com.au) for the latest version.

## Useful references

Nicholas, P., Magarey, P.A. and Wachtel, M. (Eds.) 1994 Diseases and pests, Grape Production Series 1, Hyde Park Press, Adelaide (a glove box edition of this book is also available).

For images of grapevine symptoms visit [www.winetitles.com/diagnosis/index.asp](http://www.winetitles.com/diagnosis/index.asp).



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