



Symptoms of downy mildew

Other topics in this Viti-Notes series include:

- Characteristics of downy mildew
- Monitoring for downy mildew

Look for symptoms of downy mildew after suitable warm wet nights particularly in late spring and early summer. Pay particular attention to blocks where the disease has previously been a problem, and where vines may be dense, sheltered or remain wet. Monitor in a 50 m radius around previously identified and tagged primary infection sites.

Varietal susceptibility

All varieties of *Vitis vinifera* are susceptible to downy mildew, particularly Sultana (Waltham Cross) and Pinot Noir.

Leaf symptoms

Spots on leaves, commonly called 'oilspots', are the most obvious symptoms of primary infection. The main symptoms are:

- Yellow 'oilspots' initially with a chocolate-coloured edging, appear on upper leaf surfaces. The halo fades as the 'oil spot' matures and on some varieties such as Ruby Red the entire spot is red
- On young leaves 'oil spots' can expand to around 50 mm diameter. Numerous spots can grow and merge to cover the entire leaf
- As 'oil spots' age, or during hot weather conditions, the centres of the spots dry out and darken to a reddish brown colour, with only a yellow halo around the outside of the dead spot where the organism is active
- After favourable warm humid nights, white downy growth appears on the underside of the spots, growing out of the breathing pores, called stomata. Older 'oil spots' only produce the downy growth on the outer active edge of the 'oil spot'.
- Infection of mature leaves in late summer and autumn causes a 'mosaic-like' appearance of small angular yellow-brown spots confined by the leaf veins

- Severe infection of the foliage causes leaves to fall, leaving the petiole attached to the stem.

Shoot symptoms

Oily brown patches spread along infected shoots, stems and tendrils. Leaves on these shoots can die and fall, and shoots may break at the point of infection.

Inflorescence and bunch symptoms

Bunches are most susceptible around flowering although there is some resistance to infection once berries grow to about 5 mm diameter (pea sized). Mature berries are resistant, but can be killed if berry or bunch stems become infected. Principal symptoms are:

- Flowers, berries and whole bunches turn brown and have an oily appearance
- After suitable warm humid weather, white downy growth grows out through stomata and other pores on the surfaces of infected flowers, berries or stems
- Younger berries harden and turn purplish if diseased, then brown before shrivelling and falling
- Mature berries also shrivel and fall when berry or bunch stems are infected.

'Looks like'

Spray damage, from herbicides such as paraquat, or damage from sucking insects can also produce symptoms similar to downy mildew. However, these can be distinguished by the lack of downy growth on the underside of the spot, or by a small brown dead centre on the suspected 'oil spot'. A white 'down' on the underside of leaves which also have green blister-like galls on the upper surface is caused by the feeding activities of erinose mites and not downy mildew.

On some varieties, young downy mildew 'oil spots' are similar to young powdery mildew leaf blotches although spores of downy mildew are raised and white while powdery mildew spores form a thin layer and are ash-grey. Spores of fungi such as *Aspergillus*, *Rhizopus* and *Penicillium* are all raised and initially white, but later change to green, blue, brown and black.

Further information

Product or service information is provided to inform the viticulture industry about available resources, and should not be interpreted as an endorsement.

A useful reference with illustrations of the lifecycle and symptoms is

- Diseases & Pests, editors, Nicholas, P., Magarey, P.A. and Wachtel, M., 1994, Grape Production Series 1, Hyde Park Press, Adelaide, (available Winetitles, 08 8223 4700, or www.winetitles.com.au).

Also useful is the glove box edition of the above, Field Guide to Diseases and Pests IPM Viticulture: Research to Practice is a training program whose delivery can be fine-tuned to suit each region.

- Enquiries to Peter Mansfield on (08) 8222 9255 or visit www.crcv.com.au/education/rtp for more information.

Visit the web site at www.crcv.com.au/viticare/vitinotes/ for updates and more Viti-Notes titles.

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