MAGAREY PLANT PATHOLOGY

GrowCare Clare

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Western Electronic Design

CRWGA

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Downy Mildew

- In our previous message we indicated that the risk of downy mildew primary infection from the forecast rainfall was 'very low'.
- Well, the rains from Thursday 29th November to Saturday 1st December brought varying falls across the Clare District and these have resulted in a low risk of downy mildew primary infection!

Weather Data

- At the **GrowCare AWS (weather station) at Sevenhill**, the first rainfall started just after 4pm on Thursday. This brought about 6 hr of soil wetness, insufficient for risk of downy mildew.
- Then on Friday 30th, at around 5pm, a further rain event induced what appears to be sufficient soil wetness for oospores (the resting bodies of downy mildew in the soil) to germinate. Minimum temperatures were around 12°C which was above the needed threshold of 8-10°C.
- The oospores then needed 16 hr of soil wetness to germinate and release a second spore type called zoospores. The conditions were OK for this to occur. The zoospores then need to be kept wet in soil moisture – if the soil dries for more than 3 hr, they die. A rainfall on Saturday morning came 30min outside the critical time for zoospores to survive but the rain also caused sufficient splash for the zoospores (if still alive) to be transported to the vine canopy and for the leaves to be wet long enough for primary infection to occur.
- At the **GrowCare AWS in Auburn**, the rainfall of relevance started at about 6pm on Friday and induced at least 16hr soil wetness, sufficient for the oospores to germinate. The minimum temperature was above threshold so it was probable the zoospores were released into the soil.
- A further rain event on Saturday came after the leaves had dried for more than 3 hr but because the relative humidity remained high for most of the time, we assume the soil probably stayed wet enough for the zoospores to survive and to be splashed and transported to the canopy. The conditions that followed induced sufficient leafwetness at a temperature for primary infection to occur.

Other Issues to Note

- First: your vineyard conditions will vary a little from the conditions at the AWS sites [we have not yet been able to access the data from the GrowCare site at Clare North].
- Second: the vineyard soil has been relatively dry this season (unless there was another source of soil wetness eg irrigation). Dry soil takes a while to 'wet up' sufficiently for oospores to begin germinating.
- Third: at both sites, there was an interval between the first rain on Friday evening and the second on Saturday morning. Though we have to estimate soil wetness from a mixture of canopy wetness and relative humidity scores, the weather station at Sevenhill indicated the vine canopy dried for 3.5 hr, when a 3 hr threshold of soil dryness can interrupt the zoospore survival. At Auburn, the gap was just within the threshold limits for downy zoospores to survive.
- In addition, the berries of the more advanced varieties are approaching pea-size and will be moderately resistant to infection while the older leaves will also have gained some tolerance to infection. In contrast, the new leaves will be quite susceptible to infection.

What Does This Mean?

- It is likely that the recent rain events induced a low risk of primary infection of downy mildew in many vineyards across the Clare Region.
- Vineyards without adequate protection applied within 5 days before the rain, are at low risk of a few scattered oilspots showing up in 7-10 days time ie on or after 8th December.
- Vineyards sprayed before the rain event with a suitable downy mildew protectant fungicide eg a copper-based product, on or after 25th November are not likely to be at risk.
- In unprotected vineyards in which primary infection has occurred, there will be risk of a secondary infection, if a suitable rain occurs after the primary oilspots appear.

Option In Protected Vineyards

- Enjoy the rain!

Options In Unprotected Vineyards

Option 1:

- Do nothing at present. Infection may not have occurred and even if it did, if the conditions between now and harvest do not favour secondary infection (a warm humid night with the leaves wet in the morning), downy cannot spread and no damage will occur.
- To check for this, on or after December 8th, look for downy oilspots on any foliage unsprayed before the rains on Friday.
- To do this, use bread-bag tags or twist-ties etc, to tag the tips of growing shoots to identify the leaves that were present and unsprayed before this rain event. On or after 8th December, return to these shoots and look for oilspots. Look especially on the leaves that are deepest within the canopy and most likely to have stayed wettest for longest during the recent rains.
  This is a low cost, relatively low risk approach to the present events.

Option 2:

- If you are concerned about the risk of downy mildew infection from the recent rains, there are two strategies to consider:

1). Do nothing now. Look for oilspots as above and apply a suitable protectant fungicide as soon as possible before the next rain event that might induce a secondary infection. This will not prevent oilspots forming from this rain event but it will prevent them from spreading downy if and when favourable conditions occur.
This is a low cost, low risk approach to the present events.

An oilspot from Downy Mildew. After a primary infection, usually only 1-3 oilspots occur every 50m of vine row. Because they are usually hard to find, take care now to mark a sample of the shoots at risk of infection during the recent rains. This will greatly increase your chance of finding the oilspots if they do appear within 7-10days. Photo: PA Magarey, MPP.

2). Apply a suitable post-infection fungicide as soon as possible and before 8th December when any oilspots from this rain might appear. Consider products such as those that contain metalaxyl or its equivalent.
This is a high cost, low risk approach to the present events.

For further information on downy mildew, go to the GWRDC website at http://www.gwrdc.com.au/wp-content/uploads/2012/09/2010-03-FS-Managing-Downy-Mildew.pdf

Bunch Rots

- The recent rain events were not likely to induce bunch rot because the periods of leafwetness were too short for infection of the berries which are somewhat resistant at this time of the season.

This message was prepared for
The Clare Region Grape Growers Association by
Magarey Plant Pathology and Western Electronic Design.
