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Pre-harvest botrytis management

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Managing botrytis towards harvest

This fact sheet provides information about managing botrytis bunch rot between pre-veraison and harvest. Severe botrytis in the previous growing season, along with favourable conditions in the current growing season, can contribute to early disease appearance.

The first step is to confirm the presence of botrytis and assess the risk of further disease development according to weather and crop conditions. If the risk is high, decisions need to be made about the best pre-harvest management tactics to be used, if any.

If botrytis is present, will it get worse?

Botrytis is more likely to appear in bunches on vines with higher vigour in lower, more humid or wetter areas of vineyards.

If botrytis is detected, establish whether or not disease severity is still at an acceptably low level. You may need to ask your winery about their botrytis severity thresholds for crop acceptance. Typical threshold levels or limits are around 3%. If disease severity is low, hot dry weather may result in the first wave of diseased berries drying up naturally. Under cooler but dry conditions, moisture from overnight dews may promote further, but slow, disease development.

Figures 1 and 2: Discoloured berries and grey mould in bunches are symptoms of botrytis rot caused by Botrytis cinerea.
Photos: RW Emmett, DPI (left); KJ Evans, TIA (right)

Disease generally increases rapidly following one or more rain events when humidity remains high on cloudy still days. Rapid infection occurs when temperatures are 18–21°C (day or night) and surface moisture is present. Berry splitting or any other damage can promote infection and rapid disease development. If harvest is still 3–4 weeks away, then weekly disease assessments can give some idea of how quickly botrytis is developing in relation to the weather.

If botrytis becomes widespread and severe before harvest, then comprehensive disease assessments across multiple blocks may not be practical. There can be a clear case for crop rejection when nearly every bunch has some rot and many bunches have large areas of grey mould.

The decision to reject a crop should be made as early as possible in consultation with the winery or winemaker so that everyone understands that nothing more can be done to salvage the crop because of the severe circumstances.

Options for managing disease-affected fruit

When bunch rot appears, the main management goal is to minimise crop loss. It is very important to continually review disease levels and weather forecasts and reassess the options, including those listed below. Any action taken needs to be considered in relation to current viticultural practices, the potential value of the crop, the availability and cost of labour, and winery specifications for grape condition and fungicide use. Sometimes it is more cost-effective to do nothing.

Reducing humidity in the fruit zone

Keep the under-vine area weed free to improve airflow below the cordons.

- Trim shoots and/or remove leaves in the bunch zone of dense canopies to increase airflow around bunches and aid penetration of fungicide sprays, but be careful not to expose bunches to sunburn.
- Where bunches are in close contact, selective removal of some bunches to reduce bunch-to-bunch spread of botrytis maybe an option in smaller vineyards.

Fungicide applications

Ask your winery for specific recommendations or consult the guidebook '*Agrochemicals registered for use in Australian viticulture*' (Dog Book).

The latest version of this important booklet can be downloaded from the Australian Wine Research Institute website http://www.awri.com.au/industry_support/viticulture/agrochemicals/agrochemical_booklet/booklet.pdf.

The key principles for using fungicides are:

- Effective fungicides applied from veraison onwards generally slow development of botrytis.
    - Spray materials may not reach the inside of tight bunches where latent botrytis often emerges.
    - The product containing iprodione can be applied up to seven days pre-harvest according to the product label. Again, consult your winery on the use of this product.
- The botrytis fungus can develop resistance to products containing iprodione, a dicarboximide fungicide. To prevent resistance:
    - if three or fewer botrytis sprays are applied in the same season, only use one iprodione
    - if four or more botrytis sprays are applied, two iprodione sprays can be used, consecutively if necessary
    - do not apply this product if substantial rot has already developed

- do not apply this product if dicarboximide resistance has been confirmed.

Note: Iprodione is very pH sensitive, so ensure the pH of your water is less than seven.

- There is a strong argument not to spray when botrytis is present in very tight bunches that are leaking juice from berries being pushed off the rachis (main stem).
  - Further breakdown of this fruit is likely, with or without spraying.
  - In this situation, hand removal of affected bunches may be an option.
- Some biodegradable products and 'sanitisers' reportedly kill off surface mould. This may or may not be helpful because:
  - botrytis can emerge from internal, infected grape tissue,
  - rotting berries, with living or dead botrytis, may be colonised by secondary bunch-rot organisms.

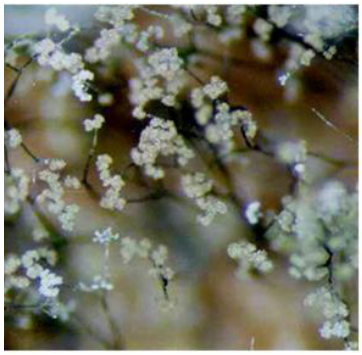

Figure 3: Close examination of the mould reveals clusters of light grey or colourless spores on branched, dark brown stalks.
Photo: KJ Evans, TIA

Options for harvesting grapes

- Attempt to harvest fruit early if botrytis severity is increasing rapidly.
- Consider harvesting blocks with the most valuable fruit first.
- If the winery requests that harvest be delayed, then the delay may be related to winery logistics. Effective communication with the winery about imminent disease thresholds can prevent unnecessary delays.
- If hand picking is possible, remove diseased fruit to reduce botrytis severity to winery specifications.
  - Train hand pickers to recognise contaminated fruit
  - Selective picking can be done prior to mechanical harvesting
- Adjusting the beaters/rods on a mechanical harvester to gently shake out botrytised berries before the main harvester comes through has been trialled in some vineyards. Anecdotal reports suggest that this approach may improve the quality of harvested grapes, but note that this technique has only been trialled in a limited number of growing regions.
- Mechanical (e.g. optical) or hand sorting of fruit of desired quality is possible, but not common at present.

Management next season

Bunch remnants and infected berries left on vines over winter can become important sources of botrytis spores for infection of flowers and fruit in the following growing season. This risk needs to be considered when planning next year's botrytis management program.

Factors that promote botrytis pre-harvest

The following pathogen, crop and weather factors can combine to create a high risk that botrytis will develop between veraison and harvest:

Pathogen factors

- high incidence of berries with latent infection (Determined by a specific laboratory-based technique. Many infections remain latent right through to harvest unless conditions promote growth of the fungus.)
- botrytis visible on any tissues in the grape bunch before veraison.

Crop factors

- thin-skinned varieties
- compact, tight bunches
- dense canopy with restricted air movement in the fruiting zone
- excessive soil moisture, pools of water
- berry splits
- berries pushed of the rachis and leaking juice
- damage from light brown apple moth, powdery mildew or other causes

Weather factors

- rainfall, fog, mist or dew that leads to long periods of fruit surface moisture (including intermittent rain)
- rapid infection when temperatures are 18–21°C (day or night) and surface moisture is present
- calm, cloudy days with high humidity

More information

Refer to the GWRDCs Innovators Network website for more information on season-long botrytis management:

- Botrytis fact sheet
  http://www.gwrdc.com.au/webdata/resources/files/BotrytisFactSheet.pdf
- Botrytis questions and answers
  http://www.gwrdc.com.au/webdata/resources/factSheet/GWR_Botrytis_QA_PDF.pdf
- Botrytis technical notes
  http://www.gwrdc.com.au/webdata/resources/files/BotrytisTechnicalNotes.pdf
- Botrytis presentation
  http://www.gwrdc.com.au/webdata/resources/files/Botrytis_Presentation.pdf

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